



An Autonomous Scientific Society under Ministry of Electronics & Information Technology (MeitY),
Govt. of India

www.ernet.in

**TENDER For
SELECTION OF SYSTEM INTEGRATOR
For**

**Supply and Setting up of ICT Infrastructure at Data Centers and
Remote Sites and Operation & Maintenance**

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Section I: Notice Inviting Tender (NIT)

1. Notice Inviting Tender (hereinafter referred to as “NIT”)

ERNET India, an autonomous society of Ministry of Electronics and Information Technology, Govt. of India mandated to consult and deploy ICT solution utilising latest technologies for education and research institutions of country. ERNET India invites proposals (hereinafter referred as the ‘bid(s)’) for entering into a Contract for **“Selection of System Integrator for Supply and Setting up of ICT Infrastructure at Data Centres and Remote Sites and Operation & Maintenance”**. The Tender Document bearing No./ xxxx (hereinafter referred to as ‘the Tender Document’) gives further details with regard to the invitation.

Only Class-I or Class-II Local Supplier are eligible to participate in the tender. Bidder must ensure that it complies with the Public Procurement (Preference to Make in India) Order 2017 (MII) (Letter no P45021/2/2017- (BE-II) dated 15.06.2017) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section) as revised and amended from time to time until the date of submission of the bids by the bidders.

2. The Tender

- 2.1. Bidders must read the complete ‘Tender Document’. This NIT is an integral part of the Tender Document and serves a limited purpose of invitation, and does not purport to contain all relevant details for submission of bids. Bidders must go through the complete Tender Document for details before submission of their Bids.
- 2.2. Availability of the Tender Document: -The Tender Document shall be published on the Government E-Marketplace of Govt. of India (GeM Portal). It shall be available for download after the date and time of the start of availability till the deadline for availability as mentioned on GeM Portal.
- 2.3. **Clarifications:** A Prospective Bidder requiring any clarification regarding the Tender Document may do so using GeM Portal and also send to email on ictbid2023@ernet.in Also, please feel free to contact Sh. Anirudh Kumar, Joint Director (Contact no. 011-22170574) or Sh. Sunil Mishra, Joint Director (Contact no. 011-22170979), ERNET India for any query related to tender. **Clarification should be asked in below format in excel or PDF sheet on or before 22.03.2023:**

Sl. No	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Sought	Clarification

3. Eligibility Criteria for Participation in this Tender

Subject to provisions in the Tender Document, participation in this Tender Process is open to all bidders who fulfil the ‘Eligibility’ and ‘Qualification’ criteria. Bidder should meet the following eligibility criteria as on the date of bid submission and should continue to meet these till the award of the contract. Bidder shall be required to declare fulfilment of Eligibility Criteria in Form 1.2 (Eligibility Declarations).

1. The Bidder must: be a Company registered in India under the Indian Companies Act 1956/2013 (as amended) with their registered office in India for the last five years or more as on 31.12.2022.
2. The bidder must:
 - a. not be insolvent, in receivership, bankrupt or being wound up and not have its business activities suspended by Government.

- b. Not stand declared ineligible/ blacklisted/ banned/ debarred by Government.
3. The prices quoted should be competitive and without adopting any unfair/ unethical/ anti-competitive means. No attempt should be made to induce any other bidder to submit or not to submit an offer for restricting competition.
4. The Bidder must also fulfil other additional eligibility condition(s), if any, as prescribed in Tender Document (including addendums; if issued).
5. Bidders shall go through F.No.6/18/2019 – PPD dated 23rd July 2020 issued by Department of Public Procurement, Ministry of Finance, Govt. of India and declaration with regard to the of same should be given in Form 1.2 (Eligibility Declaration).
<https://doe.gov.in/sites/default/files/OM%20dated%2023.07.2020.pdf>

4. Pre-bid Meeting:

Prospective Bidders or their authorized representative may attend the Pre-bid meeting on 21.03.2023 for seeking clarification on Tender Document in online mode at 3.00 PM. Any other information related to pre-bid meeting such as meeting link will be uploaded on <https://ernet.in/tender>

5. Submission of Bids:

- 1) Bids must be uploaded on GeM portal till the deadline for submission mentioned on GeM Portal. Bidder must comply with the conditions of the GeM Portal, including registration, compatible Digital Signature Certificate (DSC) etc. In the case of downloaded documents, Bidder must not make any changes to the contents of the documents while uploading, except for filling in the required information.
- 2) Bidder must submit the bid complete in all respect; in the absence of which bid may be rejected.

6. Bid Opening

Bids received shall be opened online at the specified date and time mentioned on GeM Portal.

7. Disclaimers and Rights of ERNET India

The issue of the Tender Document does not imply that the ERNET India is bound to select bid(s), and it reserves the right, without assigning any reason, to:

- a) reject any or all of the Bids, or
- b) cancel the tender process at any stage; or
- c) abandon the procurement of Equipment(s) and Services; or
- d) issue another tender for identical or similar Equipment(s) and Services

Signed by
Tender Inviting Authority (TIA), ERNET India

Section II: Instructions to Bidders (ITB)

1. The Tender Document

1.1 Basic Tender Details

The 'Tender Document' (hereinafter referred to as the 'the Tender Document') details the terms and conditions for entering into a contract with System Integrator for the execution of turnkey project (BoM & Scope of work detailed as per Section-IV & Section –VII respectively). Bidders must go through the entire Tender Document for further details.

1.2 Interpretations, Definitions, Abbreviations

General Conditions of Contract (GCC), detailed Tenets of interpretation (GCC-clause 1.1), Definitions (GCC-clause 1.2), and Abbreviations (GCC-clause 1.3) in **Section III**, which shall also apply to the rest of the Tender Document.

1.3 Overview of Contents

- 1) the Sections, Forms and Formats comprising this Tender Document are described in Instruction To Bidders (ITB)-clauses 1.4, 1.5 and 1.6 below. Any generic reference to Tender Document shall also imply a reference to any/ all the sections, Forms, Formats and the BoM or other files that comprise this Tender Document.
- 2) Bidder must submit the bid in the Forms/ Formats mentioned in ITB-clauses 1.5 and 1.6 below along with signed tender document along with its all corrigendum and addendums. Bidder must declare in his bid Form (Form 1) that it has read, understood, complied, and stands bound by all requirements.

1.4 Sections of the Tender Document

1.4.1 Sections of the Tender Document

the Tender Document contains the following sections, which are described in subsequent sub-clauses:

- 1) Section I: Notice Inviting Tender (NIT)
- 2) Section II: Instructions to Bidders (ITB)
- 3) Section III: General Conditions of Contract (GCC)
- 4) Section IV: Bill of Material (BoM)
- 5) Section V: Technical Specifications
- 6) Section VI: Qualification Criteria
- 7) Section VII: Complete Scope of Work
- 8) Section VIII: Service Level Agreement

1.4.2 Section I: Notice Inviting Tender (NIT)

Section I – Notice Inviting Tender (NIT) provides a synopsis of information relevant for a Bidder.

1.4.3 Section II: Instructions to Bidders (ITB)

Section II: "Instructions to Bidders" - ITB provides the relevant information as well as instructions to assist the prospective Bidders in preparation and submission of Bids. It also includes the mode and procedure adopted for receipt/ opening/ evaluation of Bids, and contract award.

1.4.4 Section III: General Conditions of Contract (GCC)

Section III – General Conditions of Contract (GCC) describe the conditions that shall govern the resulting contract. In case of any conflict, provisions of GCC shall prevail over those in ITB and in case of any conflict of this tender document from GeM GTC, provisions of this tender document shall prevail over those in GeM GTC

1.4.5 Section IV: Bill of Material

Section IV – Bill of Material (BoM) describes the Equipment and Services required; Quantities and Units; City of Delivery; Bidder must fillup 'Form 2: 'Bill of Material-Compliance'.

1.4.6 Section V – Technical Specifications

Section V – This Section lays down the technical specification of the Equipment and services required. Bidders must give Compliance for all the specifications in Form 3: Technical Specifications compliance along with Form 3A- Unpriced Make & Model of offered equipment(s).

1.4.7 Section VI: Qualification Criteria:

Section VI: Qualification Criteria lay down the Qualifying Criteria for a bid/ Bidder to be considered a responsive bid/ bidder for further evaluation. Bids/ bidders not meeting these Qualification criteria shall be rejected as nonresponsive. Bidders must fill up 'Form 4: Confirmation from Qualification Criteria'. Bidders shall attach statements and documents to confirm conformity to Qualification Criteria.

1.4.8 Section VII: Scope of Work defined in this section.

1.4.9 Section VIII: Successful Bidder must adhere Service Level Agreement as defined in Section VIII

1.5 Forms (To be filled, digitally signed, and uploaded by Bidders)

Please refer to clause 1.4 above to relate the following forms to the corresponding Sections.

- 1) Form 1: Bid Form (To serve as a covering letter to both the Technical and Financial Bids)
 - a) Form 1.1: Bidder Information
 - b) Form 1.2: Eligibility Declarations
- 2) Form 2: Bill of Material - Compliance
- 3) Form 3: Technical Specifications- Compliance
 - (a) Form 3A: Unpriced Make and Model of Offered equipment(s)
- 4) Form 4: Qualification Criteria - Compliance
- 5) Form 5: Terms & Condition compliance
- 6) Form 6: Checklist for the Bidders

- 7) Form 7: Documents Relating to Bid Security
- 8) Form 8: Integrity Pact
- 9) Form 9: Make in India Certificate
- 10) Form 10: Non-Disclosure Agreement
- 11) Form 11: Land Border Related Declaration
- 12) Form 12: Financial bid (BOQ) Sheet (shall be uploaded under the tab of **“Upload Financial Document”** on GeM Portal).
- 13) Signed tender document along with its all Clarifications, corrigendum and addendums

1.6 Other Form & Formats

- 1 Format 1.1: Bank Guarantee Format for Performance Security
- 2 Format 1.2: No Claim Certificate

2 ERNET India - Rights and Disclaimers

2.1 ERNET India

ERNET India is the National Research and Education Network dedicated to support the needs of the research and education community within the country. It was established in 1998 as an autonomous scientific society registered under The Societies Registration Act, 1860 and works under the administrative control of Ministry of Electronics and Information Technology, Government of India. ERNET India operates terrestrial and satellite network and serving many institutions in various sectors, namely, health, agriculture, higher education, schools and science & technology.

Bids are to be addressed to the Registrar , ERNET India in the ERNET India. The Tender Inviting Authority or its representative is the designated officer for uploading and clarifying this Tender Document. The contract may designate, as required, Officer and Consignee(s) and paying authority who shall discharge designated function during contract execution.

2.2 Right to Intellectual Property:

The Tender Document and associated correspondence shall always remain the property of the ERNET India.

2.3 Right to Reject any or all Bids

The ERNET India reserves its right to accept or reject any or all Bids, abandon/ cancel the Tender process at any stage, and issue another tender for the same or similar Equipment at any time before the award of the contract. It would incur no liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for such action(s).

2.4 Disclaimers

2.4.1 Regarding Purpose of the Tender Document

The Tender Document is neither an agreement nor an offer to prospective Bidder(s) or any other party hereunder. The purpose of the Tender Document is to provide the Bidder(s) with information to assist them in participation in this Tender Process.

2.4.2 Regarding Documents/ guidelines

The Tender Document, ensuing communications, and Contracts shall determine the legal and commercial relationship between the bidders/ contractors and the ERNET India.

2.4.3 Regarding Information Provided

Information contained in the Tender Document or subsequently provided to the Bidder(s) is on the terms and conditions set out in the Tender Document or subject to which that was provided. Similar terms apply to any information provided in documentary or any other form, directly or indirectly, by the ERNET India or any of its authorised employees or its associated agencies in connection with this tender.

2.4.4 Regarding Tender Document:

- 1) The Tender Document does not purport to contain all the information Bidder(s) may require. It may not address the needs of all Bidders. They should conduct due diligence, investigation, and analysis, check the information's accuracy, reliability, and completeness, and obtain independent advice from appropriate sources. Information provided in the Tender Document to the Bidder(s) is on a wide range of matters, some of which may depend upon interpreting the law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The ERNET India, its employees and other associated agencies accept no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.
- 2) The ERNET India, its employees and other associated agencies make no representation or warranty for the accuracy, adequacy, correctness, completeness or reliability, assessment, assumption, statement, or information in the Tender Document. They have no legal liability, whether resulting from negligence or otherwise, for any loss, damages, cost, or expense that may arise from/ incurred/ suffered howsoever caused to any person, including any Bidder, on such account.

3 Bidders - Eligibility

3.1 Bidders

Subject to provisions in the following clauses in this section and provisions in Tender Document, this invitation for Bids is open to all bidders who fulfil the 'Eligibility Criteria' and 'Qualification Criteria' stipulated in the Tender Document.

3.2 Eligibility Criteria for Participation in this Tender

As defined in NIT. It is not being reproduced here for the sake of brevity.

4 Preferential Policies

4.1 Applicability of Make in India (MII) Policy

Prospective bidders must adhere the Make In India Policy in line with Public Procurement (Preference to Make in India) Order 2017" (MII) (Letter no P45021/2/2017- (BE-II) dated 15.06.2017) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section) as revised and amended from time to time and also clarifications issued by way of various communications including frequently asked questions by DPIIT in this respect. In addition bidders should also ensure compliance with the notification (F. No. W-43/4/2019-IPHW-MeitY 07.09.2020) issued by IPHW division of MeitY.

4.2 Eligibility to participate and purchase preference

- a) Only Class-I and Class-II local Suppliers shall be eligible to participate in this bid. Local content percentage for qualifying as Class-I and Class-II local Suppliers shall be calculated and declared by the respective bidders on the basis of Letter no P45021/2/2017- (BE-II) dated 15.06.2017 Public Procurement (Preference to Make in India) Order 2017" (MII) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section); as revised and amended time to time and also clarifications and FAQ issued by DPIIT in this respect from time to time.
- b) Non- local suppliers are not eligible to participate in this bid.**
- c) Purchase preference to Class-I supplier for Make in India would be provided in line with Public Procurement (Preference to Make in India) Order 2017" (MII) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section) as revised and amended from time to time. The margin of purchase preference shall be 20%.

4.3 Classification of Procurement and purchase preference methodology:

Under this tender, Procurement of Equipment(s) and services are not divisible in nature. This is an integrated work and objective of work is to setup equipment(s) at Data Center & at multiple remote locations. Remote Locations equipment(s) shall be connected with Data Center Equipment(s) over Internet/MPLS to transfer the data which requires the work to be carried out as turnkey project & in a comprehensive manner wherein contractor is responsible for design, supply, installation, configuration, commissioning, training and also operation and maintenance to ensure reliable functioning of envisaged project. As such work is clearly indivisible in nature and required to be carried out as a turnkey project consisting procurement and integration of networking, security and other hardware and software and thereafter operation and maintenance of installed equipment(s). Hence bids will be evaluated on total bid price and Class-I local supplier will get purchase preference over Class-II local supplier as per following procedure:

- a) Among all qualified bids, the lowest bid shall be termed as L-1. If L-1 is 'Class-I local Supplier', the contract shall be awarded to L-1.
- b) If L-1 is not 'Class-I local Supplier', the lowest bidder among the 'Class-I local Supplier' shall be invited to match the L-1 price subject to Class-I local Supplier's quoted price falling within the margin of purchase (20%) preference, and the contract shall be awarded to such 'Class-I local Supplier' subject to matching the L-1 price.
- c) If such lowest eligible 'Class-I local Supplier' fails to match the L-1 price, the 'Class-I local Supplier' with the next higher and so on, bid within the margin of purchase preference

shall be invited to match the L-1 price, and the contract shall be awarded accordingly. If none of the 'Class-I local Supplier' within the margin of purchase (20%) preference matches the L-1 price, the contract will be awarded to the L-1 bidder.

- d) No purchase preference will be given to Class-II local suppliers.

4.4 Verification of local content and violations:

- 1) The 'Class-I local Supplier' / 'Class-II local Supplier' at the time of tender, bidding, or solicitation shall be required to indicate the percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local Supplier' / 'Class-II local Supplier', as the case may be.
- 2) The 'Class-I local Supplier' / 'Class-II local Supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) certifying that the bidder qualifies as class-I or class-II bidder as specified in Form-9.
- 3) ERNET India reserves the right to seek any clarification/document/certification w.r.t compliance with MII orders referred above till the time of completion of tender process.
- 4) False declarations will be treated as breach of the code of integrity under rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.
- 5) Complaints (if any) in respect of local content will be dealt as defined in Letter no P45021/2/2017- (BE-II) dated 15.06.2017 Public Procurement (Preference to Make in India) Order 2017" (MII) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section) as revised and amended time to time and also clarifications and FAQ issued by DPIIT in this respect from time to time.

5 Bid Prices, Taxes and Duties

5.1 Prices

5.1.1 Competitive and Independent Prices

- a) The prices should be arrived at independently, without restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to:
 - i) those prices; or
 - ii) the intention to submit an offer; or
 - iii) the methods or factors used to calculate the prices offered.
- b) The prices should not be knowingly disclosed by the Bidder, directly or indirectly, to any other bidder or competitor before bid opening or contract award unless otherwise required by law.

5.1.2 Price Schedule

- 1) Bidders are to quote value of each line item in the Financial Bid (BoQ) which is to be uploaded on GeM Portal. Based on the scope of work specified in Section-VII, if the

bidder(s) feel it necessary to quote any other item other than the item specified in Bill of Material then it may quote the same in the financial bid (BoQ) under '**Any other item**' and also provide the specification of same along with technical bid. In case of any discrepancy between rates mentioned in figures and words, the latter shall prevail. In case of any arithmetic mistake committed by bidder in Financial bid (BoQ) then ERNET India reserve the right to correct the same by taking unit price quoted by bidder. The quoted unit price shall be considered to include all relevant financial implications.

5.1.3 Currencies of Bid and Payment

The currency of bid and payment shall only be Indian Rupees. All payments shall also be made in Indian Rupees only.

5.1.4 Non-compliance

Bids, wherein prices are quoted in way other than the specified format, may be rejected as non-responsive.

5.2 Firm/ Variable Price

5.2.1 Firm Price

Prices quoted by Bidder shall remain firm and fixed during the currency of the contract and not subject to variation on higher side on any account.

5.3 Goods and Services Tax (GST)

- 1) Bidders should ensure that they are registered under GST and furnish their GSTIN number and GST Registration Certificate in their bids.
- 2) Bidder/Contractor undertakes that in case of non-compliance by the Bidder(s) of the GST provisions which results in blockage/reversal of any input tax credit to ERNET India, Bidder/Contractor shall be liable to indemnify the ERNET India any such loss of input credit including interest, penalty and all incidental expenses incurred by ERNET India. Such indemnification may also be by way of invocation of any security deposit, deduction from any payment that ERNET India has to make to the Bidder/Contractor, as per the discretion of the ERNET India.
- 3) Bidder/Contractor undertakes to raise invoice within 15 days from date when the right to raise invoice and demand for payment accrues as per the contract terms, failing which ERNET India may not be able to make the payment. In case invoice is raised and submitted before the due date; then ERNET India reserves the right to return such invoice(s) to the Bidder/Contractor. In such a situation Bidder/Contractor would be required to raise fresh invoice as per the contract terms.
- 4) If the Bidder/Contractor fails to adhere the terms & conditions of the contract and ERNET deducts Liquidated Damages and/or SLA penalties for the same, then in such a case; ERNET India will charge GST over and above the Liquidated Damages and/or SLA penalties; as the case may be; and same shall be recovered from the

Bidder/Contractor. This may vary; depending on the prevailing rules on the subject when such deduction is made.

- 5) Along with the invoice; Bidder/Contractor would be required to submit relevant documentary evidence to the effect that invoice submitted was issued either through e-Invoice system of GST or has been updated on GSTN portal using Invoice Furnishing Facility (IFF).
- 6) In case, in future any GST liability is required to be borne by ERNET India; which was the responsibility of the Bidder/Contractor, then the same shall be claimed from the Bidder/Contractor by way of raising debit notes.
- 7) ERNET India reserves the right to ask the Bidder/Contractor to submit relevant documents to ensure that they are GST compliant and in such a case Bidder/Contractor shall forthwith provide all such documents as may be required by ERNET India.

5.4 Payments

5.4.1 General

Payment terms laid down in clause GCC 10 shall be applicable.

6 Downloading the Tender Document; Corrigenda and Clarifications

6.1 Downloading the Tender Document

The Tender Document shall be published and be available for download as mentioned on GeM portal. The Bidders can obtain the Tender Document after the date and time of the start of availability till the deadline for availability.

6.2 Corrigenda/ Addenda to Tender Document

Before the deadline for submitting bids, the ERNET India may update, amend, modify, or supplement the information, assessment or assumptions contained in the Tender Document by issuing Clarifications, corrigenda and addenda. The Clarification, corrigenda and addenda shall be published in the same manner as the original Tender Document published on GeM portal. Its bidders(s) responsibility to check the GeM Portal for any Clarification/corrigenda/ addenda. Any Clarification or corrigendum or addendum thus issued shall be considered a part of the Tender Document.

7 Clarification on the Tender Document

A Bidder may seek clarification of the Tender Document through GeM Portal or email ID given in NIT, provided the clarifications are submitted as per NIT. The response to the clarifications (If any) shall be shared on the GeM portal as well as on ERNET India's website. Any modification of the Tender Document that may become necessary in view of response given to the clarification; shall be made by the ERNET India by issuing an Addendum/ Corrigendum as per the sub-clause 6.2 above.

8 Preparation of Bids

8.1 The bid

8.1.1 Language of the bid

The bid submitted by Bidder and all subsequent correspondence and documents relating to the bid exchanged between Bidder and the ERNET India shall be written in English. However, the language of any printed literature furnished by Bidder in connection with its bid may be written in any other language provided a translation accompanies the same in the bid language. For purposes of interpretation of the bid, translation in the language of the bid shall prevail.

8.1.2 Local Conditions and Factors

Bidders shall themselves be responsible for compliance with Rules, Regulations, Laws and Acts in force from time to time at relevant places. On such matters, the ERNET India shall have no responsibility and shall not entertain any request from the bidders in these regards.

8.1.3 Cost of Bidding

The Bidder(s) shall bear all direct or consequential costs, losses and expenditure associated with or relating to the preparation, submission, and subsequent processing of their Bids, including but not limited to preparation, copying, postage, uploading, downloading, delivery fees, expenses associated with any submission of samples, demonstrations, or presentations which the ERNET India may require, or any other costs incurred in connection with or relating to their Bids. All such costs, losses and expenses shall remain with the Bidder(s), and the ERNET India shall not be liable in any manner whatsoever for the same or any other costs, losses and expenses incurred by a Bidder(s) for participation in the Tender Process, regardless of the conduct or outcome of the Tender Process.

8.1.4 Interpretation of Provisions of the Tender Document

The provisions in the Tender Document must be interpreted in the context in which these appear. Any interpretation of these provisions far remote from such context or other contrived or in between-the-lines interpretation is unacceptable.

8.1.5 Alternative Bids not allowed

Conditional offers, alternative offers, multiple bids by a bidder shall not be considered. The GeM Portal shall permit only one bid to be uploaded.

8.2 Documents comprising the bid:

8.2.1 Technical bid

"Technical Bid" shall include inter-alia the original or scanned copies of duly inked signed or digitally signed copies of the following documents in .pdf format. .Pdf documents should not be password protected. **No price details should be given or hinted in the Technical bid:**

- 1) Form 1: bid Form (to serve as covering letter and declarations applicable for both the Technical bid and Financial bid);
 - a) Form 1.1: Bidder Information;
 - b) Form 1.2: Eligibility Declarations;

- 2) Form 2: Bill of Material (BoM) - Compliance: Bidders should fill this form to detail the Schedules of Equipment & Services offered by them, maintaining the same numbering and structure. Bidder shall also provide compliance statement of Schedule-IV as per attached Form 2.
- 3) Form 3 - Technical Specifications- Compliance: Bidder shall upload the required and relevant documents like make & model, technical data, literature, drawings, datasheets, test Reports/ Certificates and or/ or Type Test Certificates (if applicable/ necessary) with supporting documents, to establish that the Equipment and Services offered in the bid fully conform to the Equipment and Services specified by the ERNET India in the Tender Document. Bidder shall also provide compliance statement of Schedule-V as per attached Form 3 along with filled Form 3.1
- 4) Form 4: 'Qualification Criteria- Compliance': Documentary evidence needed to establish the Bidder's and OEMs qualifications and MAF as stipulated in Section VI: Qualification Criteria as follows. Besides the stipulated documents, other supporting documents, literature, pamphlets may also be attached.
- 5) Form 5 – Terms & Condition Compliance: Bidder must submit compliance of Terms & conditions as per Form-5.
- 6) Form 6- Checklist for the Bidders. Bidder must also upload the Checklist given in the Tender Document as Form 6 to confirm that it has complied with all the instructions in the Tender Document, and nothing is inadvertently left out. This checklist is only for general guidance and is not comprehensive, and does not absolve Bidder from complying with all the requirements stipulated elsewhere in the Tender Document.
- 7) Form 7: Documents relating to Bid Security: A Bid Securing Declaration (BSD) in lieu of bid security in the format provided therein shall be uploaded as per ITB clause 8.4.
- 8) Form 8: Integrity Pact.
- 9) Form 9: Make in India Certificate [To be certified by statutory auditor or cost auditor of the company providing local content details as per Form 9].
- 10) Form 10: Non-Disclosure Agreement.
- 11) Form 11: Land Border Related Declaration.
- 12) Signed tender document along with its all Clarifications, corrigendum and addendums.
- 13) Any other format/ form if stipulated or if considered relevant by the bidder

8.2.2 Financial bid

Form 12: "Financial bid " shall comprise the Price Schedule considering all financially relevant details, including Taxes and Duties as per as per Financial Bid (BoQ) Proforma . This duly filled sheet must be uploaded under "**upload Financial Document**" tab on GeM Portal.

8.3 Bid Validity

- 1) Bid Validity shall be as per Bid Document of GeM Portal for this bid. Any bid valid for a shorter period shall be rejected as nonresponsive.
- 2) If required, before the expiry of the original time limit, the ERNET India may request the bidders to extend the validity period for a specified additional period. The request and the bidders' responses shall be made in writing or electronically or as per GeM portal. A bidder who has agreed to the ERNET India's request for extension of bid validity, in no case, bidder shall be permitted to modify his bid.

8.4 Bid Security - Related Documents

- 1) All Bidders shall furnish/ upload a Bid Securing Declaration (BSD) as Form 7: Documents Relating to Bid Security, along with its Technical bid. The BSD is required to protect the ERNET India against the risk of the Bidder's unwarranted conduct as amplified under the sub-clause below.
- 2) The BSD provides for automatic suspension of the Bidder from being eligible for bidding in any tender in ERNET India for 2 years from the date of such enforcement. This declaration shall stand enforced if Bidder breaches the following obligation(s) under the tender conditions:
 - (a) withdraws or amends his bid or impairs or derogates from the bid in any respect within the period of validity of its bid; or
 - (b) after having been notified within the period of bid validity of the acceptance of his bid by the ERNET India:
 - refuses to or fails to submit the original documents for scrutiny and/or the required Performance Security within the stipulated time as per the conditions of the Tender Document.
- 3) Unsuccessful Bidders' bid-Securing Declaration shall expire, if the contract is not awarded to them, upon:
 - (a) receipt by Bidder of the ERNET India's notification of cancellation of the entire tender process or rejection of all bids or
 - (b) declaration of the name of the successful bidder or
 - (c) forty-five days after the expiration of the bid validity (including any extension thereof)
- 4) The bid-Securing Declaration of the successful bidder shall stand expired only when Bidder has furnished the required Performance Security.

8.5 Non-compliance with these provisions

Bids are liable to be rejected as nonresponsive if a Bidder:

- 1) fails to provide and/ or comply with the required information, instructions etc., incorporated in the Tender Document or gives evasive information/ reply against any such stipulations.
- 2) furnishes wrong and/ or misleading data, statement(s) etc. In such a situation, besides rejection of the bid as nonresponsive, ERNET India will enforce Bid Security Declaration in such cases.

9 Signing and Uploading of Bids

9.1 Relationship between Bidder and e Procurement Portal (GeM)

The ERNET India is neither a party nor a principal in the relationship between Bidder and the organisation hosting the e-procurement portal (hereinafter called the GeM Portal). Bidders must acquaint and train themselves with the rules, regulations, procedures, and implied conditions/ agreements of the GeM Portal. Bidders intending to participate in the bid shall be required to register in the GeM Portal. Bidders shall settle clarifications and disputes, if any, regarding the GeM Portal directly with them.

9.2 Signing of bid

The individual signing/ digitally signing the bid or any other connected documents should submit Copy of Board Resolution and/ or Power of attorney on Stamp Paper for authorize signatory, which authorizes the signatory to commit and submit bids on behalf of the bidder in Form 1.1: Bidder Information. In case the bidder is awarded the contract then the person authorize by the bidder shall continue to act as the authorize representative of the bidder till the time of completion of contract. Any change in authorize signatory should be informed forthwith to ERNET India along with the relevant document of authorize signatory.

9.3 Submission/ uploading of Bids.

9.3.1 Submission/ Uploading to the Portal

- 1) No manual Bids shall be made available or accepted for submission. In the case of downloaded documents, Bidder must not make any changes to the contents of the documents while uploading, except for filling the required information – otherwise, the bid shall be rejected as nonresponsive.
- 2) Bids shall be received only through GeM portal on or before the deadline for the bid submission.
- 3) Only one copy of the bid can be uploaded, and Bidder shall digitally sign all statements, documents, certificates uploaded by him, owning sole and complete responsibility for their correctness/ authenticity as per the provisions of the IT Act 2000 as amended from time to time.
- 4) Bidders need to sign or up-load the Tender Document along with its clarifications, corrigendum & amendments. It is assumed that Bidder commits itself to comply with all the Sections and documents uploaded by the Tender Inviting Officer.
- 5) Bidder must upload scanned copies of originals (or self-attested copies of originals – as specified). Uploaded .Pdf documents should not be password protected. Bidder should ensure the clarity/ legibility of the scanned documents uploaded by them.
- 6) The ERNET India reserves its right to call for verification originals of all such self-certified documents from the Bidders at any stage of evaluation, especially from the successful Bidder(s) before the issue of Contract.
- 7) The date and time of the deadline for the bid submission shall remain unaltered even if the specified date is declared a holiday for the Tender Inviting Officer.

- 8) The ERNET India shall not be responsible for any failure, malfunction or breakdown of the electronic system/internet issues used during the e-Tender Process at bidder's end.
- 9) The ERNET India may extend the deadline for bids submission in which case all rights and obligations of the ERNET India and the bidders previously subject to the original deadline shall then be subject to the new deadline for the bid submission.
- 10) Bid submitted through modalities other than those stipulated in tender document shall be liable to be rejected as nonresponsive.

9.3.2 Implied acceptance of procedures by Bidders

Submission of bid in response to the Tender Document is deemed to be acceptance of the tender procedures and terms & conditions of the Tender Document.

9.3.3 Withdrawal of Bids

- 1) The bidder may withdraw his bid before the bid submission deadline.
- 2) No bid should be withdrawn after the deadline for the bid submission and before the expiry of the bid validity period. If a Bidder withdraws the bid during this period, the ERNET India shall be within its right to enforce Bid Securing Declaration in addition to other punitive actions provided in the Tender Document for such misdemeanour.

10 Bid Opening

The date & time of the opening of bid is as stipulated in on GeM Portal.

11 Evaluation of Bids and Award of Contract

11.1 General norms

11.1.1 Evaluation based only on declared criteria.

The evaluation shall be based upon scrutiny and examination of all relevant data and details submitted by Bidder in its bid and other allied information deemed appropriate by ERNET India. Evaluation of bids shall be based only on the criteria/ conditions included in the Tender Document.

11.1.2 Minor Infirmary

- 1) In case of any minor infirmity in the bid document of bidder, the decision of the ERNET India shall be final in this regard.
- 2) Wherever necessary; the ERNET India shall convey its observation to Bidder through GeM portal asking Bidder to respond by a specified date. If Bidder does not reply by the specified date or gives an evasive reply without clarifying the point at issue in clear terms, that bid shall be liable to be rejected as non-responsive.

11.1.3 Clarification of Bids and shortfall documents

- 1) During the evaluation of Technical or Financial Bids, the ERNET India may, at its discretion, but without any obligation to do so, ask Bidder to clarify its bid within 3 days. The request for clarification shall be submitted on GeM Portal, and no change

in prices or substance of the bid shall be sought, offered, or permitted that may grant any undue advantage to such bidder.

- 2) ERNET India may ask original documents of uploaded scanned copies. If any substantive discrepancy found between original and Scanned uploaded copies; then the bid shall be liable to be rejected as non-responsive. ERNET India may enforce Bid Security declaration in such cases.
- 3) The ERNET India reserves the right to seek any Clarification/information/ documents from the bidder. The requisite documents from any bidders may be taken as per GeM procedure after the technical bid opening. Decision in this regard shall be final and binding on all the bidders.

11.1.4 Contacting ERNET India during the evaluation

From the time of bid submission to awarding the contract, no Bidder shall contact the ERNET India on any matter relating to the submitted bid. If a Bidder needs to contact the ERNET India for any reason relating to this tender and/ or its bid, it should do so only in writing or electronically. Any effort by a Bidder to influence the ERNET India during the processing of bids, evaluation, bid comparison or award decisions shall be construed as a violation and bid shall be liable to be rejected as nonresponsive in addition to enforcement of Bid Security declaration. ERNET India may approach bidders to discuss their proposed solution/equipment information.

11.2 Evaluation of Bids

11.2.1 The evaluation process:

This Tender Process comprises of two Bid system i.e Technical and Financial Bids. Initially, only the technical bids shall be opened on the stipulated date of opening of bids. After that, the technical bids evaluation shall be done to ascertain whether and how many bids are meeting the eligibility, qualification criteria and technical aspects. Opening of financial bids and their evaluation will be done in respect of only those bids which were submitted by those Bidders whose technical bid are declared successful after the evaluation process.

11.3 Technical Evaluation

Only substantively responsive bids shall be evaluated for technical evaluation. While evaluating the technical bid, conformity to the eligibility and qualification criteria, technical specifications of the offered Equipment and Services in comparison to those specified in the Tender Document will be ascertained. Additional factors incorporated in the Tender Document shall also be considered in the manner indicated there-in. Bids with deviations leading to non-conformity shall be rejected as non-responsive. However, ERNET India reserves its right to consider and allow minor deviations in technical Conditions as per ITB-clause 11.1.2 ERNET India also reserves the right to ask for any additional documents, clarifications etc. during bid evaluation.

11.3.1 Evaluation of eligibility

ERNET India shall first determine, to its satisfaction, whether the Bidders are eligible as per NIT-clause 3 above to participate in the Tender Process as per submission in Form 1.2: Eligibility Declarations in Form 1: bid Form. Bids that do not meet the required eligibility criteria prescribed shall be rejected as non-responsive.

11.3.2 Evaluation of Qualification Criteria

Thereafter, ERNET India shall determine, to its satisfaction, whether the eligible bidders are qualified and capable in all respects to perform the Contract satisfactorily as per submission in Form 4. This determination shall, inter-alia, consider the Bidder's financial, technical or other prescribed eligibility for meeting requirements incorporated in the Tender Document. Bids that do not meet the required qualification criteria shall be rejected as non-responsive.

11.3.3 Evaluation of Conformity to Bill of Material and Technical Specifications and other parameters specified in Tender document

Thereafter, Technical Evaluation Committee (TEC) will finally shortlist Technical Bids on the basis of technical solution, conformity of technical specifications, parameters, features offered vis-à-vis tendered specifications requirements, etc. If required, the short listed bidders may be asked for a detailed technical presentation, discussion on the solution and items offered in the bid. Further, TEC may ask the bidder to bring any selected Equipment(s)/items, sub items of their quoted equipment(s) for technical evaluation at ERNET India or any other location decided by TEC in specified time limit within **Five** days. In case, bidder fails to bring their quoted equipment(s) within the stipulated time, for whatever reasons, their bid will not be considered for further evaluation. It is bidder's responsibility to showcase/Proof of Concept/confirm the desired parameter(s) quoted in the bid by bidder. To do this, if bidder has to bring different tools, it will be responsibility of bidder to arrange at no cost to ERNET India.

11.3.4 Declaration of Technically Suitable Bidders and Opening of Financial Bids

Bids that succeed in the above technical evaluation shall be considered for financial evaluation. The list of such technically successful bidders and the date and time for the opening of their financial bids shall be declared on the GeM Portal.

11.4 Evaluation of Financial Bids

11.4.1 Financial Bids

- 1) Evaluation of the financial bids shall be on the price criteria only. Financial Bids of all Technically qualified bidders will be evaluated and an e-Reverse Auction (e-RA) process which will be conducted on GeM portal to determine the lowest cost (L-1) bidder.
- 2) The Reverse Auction (e-RA) process will be governed as per GeM Portal's procedures.

- a. Bidder will be eliminated from participation in e-RA as per process defined in GeM Bid Document based on Grand Total Value quoted by the bidder on Gem Portal.
 - b. Price quoted on GeM Portal and Grand Total Value (GTV) of Financial Document uploaded in Pdf format on GeM portal should match. In case of any mismatch, ERNET India reserve the right to disqualify the bidder for further process and invoke the Bid security submitted in the form of Bid Security declaration.
- 3) In line with the policies of the Government of India, as amended from time to time, the ERNET India reserves the right to give purchase preferences to eligible categories of Bidders as indicated in the Tender Document.
- 4) Bidder must submit Price Break up {{Financial Bid(BoQ)}} sheet during e-RA {{Financial Bid(BoQ)}} if allowed on GeM, otherwise same shall be required to be sent within 24 hours from the conclusion of the e-RA process; on the email id given in NIT.
- 5) Bidder should ensure that during e-RA and negotiation, Bidders shouldn't increase the price of any of the item(s) quoted during bid submission.

11.4.2 Price Negotiation

ERNET India reserves its right to negotiate with the lowest acceptable bidder (L-1) after e Reverse Auction (e-RA) process. However, purchase preferences will be applicable as per MII policy.

12 Award of Contract

12.1 The ERNET India's Rights

12.1.1 Right to Vary Quantities

ERNET India reserves the right to decrease the quantity to be ordered up to 25 percent of final bid value at the time of placement of contract. The ERNET India also reserves the right to increase the ordered quantity by up to 25% of the final bid value at the time of placement of contract or within one (1) year period from the issuance of the contract. It may be noted by the bidder that the prices of SFPs and Patch cords quoted in the bid shall remain valid for the complete duration of contract period. Successful Bidder/ Contractor is bound to accept the orders accordingly failing which; ERNET India may declare this as an event of default and consequences for event of default will be applicable.

12.2 Signing of Non-Disclosure Agreement

- 1) The successful bidder/contractor shall sign a Non-Disclosure Agreement(NDA) with ERNET India as per Form-10 and submit the same within 14 days from the date of issue of contract.
- 2) The successful bidder shall also sign a Non-Disclosure Agreement with employees who are deployed in this project during implementation and operations.

- 3) The successful bidder/Contractor shall ensure that all persons, employees, workers and other individuals engaged by Bidder in rendering the Services under this Agreement have undergone proper background check, police verification and other necessary due diligence checks to examine their antecedence and ensure their suitability for such engagement. No person shall be engaged by the Bidder unless such person is found to be suitable in such verification and contractor shall retain the records of such verification and shall produce the same to ERNET India/CERT-IN as when requested. ERNET India/CERT-IN may also, if required, go for verification of manpower of contractor engaged for this project from government agencies.

12.3 Purchase Order and Signing of Contract

12.3.1 Selection of Successful Bidder(s)

The ERNET India shall award the contract to the Bidder whose bid is Technically successful and L-1 bidder (after e-RA process) if its final price (after negotiation if negotiation(s) are done found to be reasonable as per evaluation criteria detailed in the Tender Document.

12.3.2 Performance Security

Within fourteen (14) days of issuance of contract through GeM Portal, performance Security as per details in GCC-5.8 shall be submitted by the successful bidder to the ERNET India and if it fails to do so within the specified period, it shall be lawful for the ERNET India at its discretion to annul the award and enforce Bid Securing Declaration.

12.3.3 Publication of Tender Result

The name and address of the successful Bidder(s) receiving the contract(s) shall be published in the GeM Portal and website of the ERNET India.

13 Integrity Pact:

The bidder must comply with the Integrity Pact (IP) as a preliminary qualification and sign the Integrity Pact (IP) as at Form 8 on plain paper.

Section III: General Conditions of Contract(GCC)

1. General

1.1 Tenets of Interpretation

Unless where the context requires otherwise, throughout the contract:

- 1) The heading of these conditions shall not affect the interpretation or construction thereof.
- 2) Writing or written includes matter either whole or in part, in digital communications, manuscript, typewritten, lithographed, cyclostyled, photographed, or printed under or over signature or seal or digitally acceptable authentication, as the case may be.
- 3) Words in the singular include the plural and vice-versa.
- 4) Words importing the masculine gender shall be taken to include other genders, and words importing persons shall include any company or association or body of individuals, whether incorporated or not.
- 5) Terms and expression not herein defined shall have the meanings assigned to them in the contract Act, 1872 (as amended) or the Sale of Goods Act, 1930 (as amended) or the General Clauses Act, 1897 (as amended) or of INCOTERMS, (current edition published by the International Chamber of Commerce, Paris) as the case may be.
- 6) Any reference to 'Equipment' shall be deemed to include the complete work i.e delivery, installation, testing, training, commissioning, warranty & any other service stipulated in tender document.
- 7) Any reference to 'Contract' shall be deemed to include all other documents as described in GCC-clause 2.5.
- 8) Any reference to any Act, Government Policies or orders shall be deemed to include all amendments to such instruments, from time to time.

1.2 Definitions

In the contract, unless the context otherwise requires:

- 1) "bid" (including the term 'tender', 'offer', 'quotation' or 'proposal' in specific contexts) means an offer to supply Equipment, services or execution of works made as per the terms and conditions set out in a document inviting such offers.
- 2) "Bidder" (including the term 'Bidder', 'contractor', 'System Integrator', or 'service provider' in specific contexts) means any person or firm or company, every artificial juridical person not falling in any of the descriptions of bidders stated herein before, including any agency branch or office controlled by such person, participating in a Tender Process.
- 3) "Bill of Quantities" {(including the term Financial Bid(BOQ)} means the financial sheet and complete Bill of Quantities forming part of the bid.
- 4) "Commercial Bank" means a bank, defined as a scheduled bank under section 2(e) of the Reserve Bank of India Act, 1934.

- 5) "Consignee" means the person to whom the Equipment are required to be delivered as stipulated in the contract or intimates at later date.
- 6) "Contract" means and includes 'Contract issued from GeM Portal', 'Purchase Order' or 'Supply Order' or 'Withdrawal Order' or 'Work Order' or , or 'Agreement' or a 'repeat order' accepted/ acted upon by the contractor or any amendment thereof, or a 'formal agreement', under specific contexts;
- 7) "Bidder/ Contractor/ Successful Bidder" (including the terms 'Supplier' or 'Service Provider', 'System Integrator', or 'Firm' or 'Vendor' or 'Bidder' under specific contexts) means the person, firm, company, with whom the contract is entered into and shall be deemed to include the contractor's successors (which is/are approved by the ERNET India), representatives, heirs, executors, and administrators as the case may be unless excluded by the terms of the contract;
- 8) "Day", "Month", "Year" shall mean calendar day/ month or year (unless reference to financial year is clear from the context).
- 9) "General Conditions" means the General Conditions of Contract, also referred to as GCC.
- 10) "Government" means the Central Government or a State Government as the case may be and includes Autonomous Bodies, agencies and Public Sector Enterprises under it, in specific contexts;
- 11) "CERT-In" means Indian Computer Emergency Response Team, Ministry of Electronics and Information Technology Government of India who has entrusted ERNET India for procurement of Equipment(s) and services laid down in this tender document. CERT-In is end user of this project.
- 12) "Inspection" means activities such as measuring, examining, testing, analysing, gauging one or more characteristics of the Equipment or services or works, and comparing the same with the specified requirement to determine conformity.
- 13) "Intellectual Property Rights" (IPR) means the rights of the intellectual property owner concerning a tangible or intangible possession/ exploitation of such property by others. It includes rights to Patents, Copyrights, Trademarks, Industrial Designs, Geographical indications (GI).
- 14) "Parties": The parties to the contract are the "Bidder/successful bidder/Contractor" as defined in this clause (7) above and the ERNET India;
- 15) "Performance Security" (includes the terms 'Security Deposit' or 'Performance Bond' or 'Performance Bank Guarantee' or other specified financial instruments in specific contexts) means a monetary guarantee to be furnished by the successful Bidder or Contractor in the form prescribed for the due performance of the contract;
- 16) "Location of Delivery" the delivery of the Equipment shall be deemed to take place on delivery of the Equipment, at following places (as defined in BoM- Section-IV) as per the terms and conditions of the contract.
- 17) "Consignee" The consignee at his premises; or the consignee at the destination station in case of a contract stipulating for delivery of Equipment at the destination station.

- 18) "Procurement" (or 'Purchase', or 'Government Procurement/ Purchase') means the acquisition of Equipment/ Services/ works by way of purchase, either using public funds or any other source of funds (e.g. grant etc.), by ERNET India, The term "procure"/ "procured" or "purchase"/ "purchased" shall be construed accordingly;
- 19) "The Procuring Entity/Organisation" means ERNET India in its capacity as Implementing agency of CERT-In procuring Equipment & Services;
- 20) "Procurement Officer" means the officer dealing the project issuing the Tender Document, Purchase order from GeM and/or the signing contract or etc. on behalf of the ERNET India;
- 21) "Specification" or "Technical Specification" means the drawing/ document/ standard or any other details governing the supply of Equipment or performance of services that prescribes the requirement to which Equipment or services have to conform as per the contract.
- 22) "Signed" means ink signed or digitally signed with a valid Digital Signature as per IT Act 2000 (as amended from time to time).
- 23) "Tender"; "Tender Document"; "Tender Enquiry" or "Tender Process": 'Tender Process' is the whole process from the publishing of the Tender Document till the resultant award of the contract. 'Tender Document' means the document (including all its sections, forms, formats, etc.) published by the ERNET India on GeM Portal to invite bids in a Tender Process. The Tender Document and Tender Process may be generically referred to as "Tender" or "Tender Enquiry", which would be clear from context without ambiguity.
- 24) "Tender No./ xxxx" refers to the GeM Bid Number, Bidders should add this number same as GeM Bid Number in all documentation pertaining to this tender.
- 25) "GeM Portal"; (includes e procurement) Government e Marketplace website on which this tender will be hosted and other tender related activities will be performed.
- 26) "Central Sites/ Central Location"; Two Data Centres proposed in this bid, one will be used as Primary Data Center (DC) and another will be as Disaster recovery Data Center (DR).
- 27) "Remote Sites"; Locations where equipment(s) will be delivered and will be connected to Central sites through IPSec over MPLS VPN.

1.3 Abbreviations:

Abbreviation	Definition
BOQ	Bill of Quantities (Financial Bid)
BSD	Bid Securing Declaration
DC	Primary/ Main Data Center
DR	Disaster Recovery Data Center
DP	Delivery Period
DPIIT	Department for Promotion of Industry and Internal Trade
DSC	Digital Signature Certificate
e-RA	Electronic Reverse Auction
EFT/ NEFT	(National) Electronic Funds Transfer
GCC	General Conditions of Contract
GeM	Government e-Marketplace
GeM ATC	GeM Additional Terms and Condition
GeM GTC	GeM General Terms and Conditions
GeM STC	GeM Standard Terms and Conditions
GST	Equipment and Services Tax
IEM	Independent External Monitor
IPR	Intellectual Property Rights
INR	Indian Rupee
ITB	Instructions To Bidders
MII	Make in India
MPLS	Multi-Protocol Label Switching
NIT	Notice Inviting Tender
OEM	Original Equipment Manufacturer
PAN	Permanent Account Number
P.O	Purchase Order
RCM	Reverse Charge Mechanism
TDS	Tax Deducted at Source
TIA	Tender Inviting Authority

2 The Contract

2.1 Language of Contract

The contract shall be written in the Official Language or English. All correspondence and other contract documents, which the parties exchange, shall also be written/ translated accordingly in that language. For purposes of interpretation of the contract, the English documents/ translation shall prevail.

2.2 The Entire Agreement

The Contract to be issued on GeM portal and its related documents constitutes the entire agreement between the ERNET India and the contractor. The validity of Contract will be from the date of issue of contract on GeM Portal till the completion of warranty of equipment(s).

2.3 Severability

If any provision or condition of this Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of this Contract.

2.4 Parties

The parties to the contract are the contractor and the ERNET India, as defined in GCC-clause 1.2.

2.5 Contract Documents

The following documents shall be considered to be an integral part of the contract, irrespective of whether these are not appended/ referred to in it. Any generic reference to 'Contract' shall imply reference to all these documents as well:

- 1) Contract issued on GeM Portal.
- 2) Valid and authorized Amendments issued to the contract.
- 3) Final written submissions made by the contractor during negotiations, if any;
- 4) GeM GTC i.e General Terms and Conditions
- 5) GeM (STC i.e Special Terms & Conditions & ATC i.e Additional Terms & Conditions) if any
- 6) Bid document, Forms and Formats signed and submitted by bidder
- 7) Integrity Pact
- 8) Modifications/ Amendments, Waivers and Forbearances
- 9) Tender Document and its amendment/Corrigendum
- 10) Non-Disclosure Agreement

2.5.1 Modifications/ Amendments of Contract

- 1) If any of the contract provisions must be modified after the contract documents have been signed, the modifications shall be made in writing and signed by the ERNET India, and no modified provisions shall be applicable unless such modifications have

been done. No variation in or modification of the contract terms shall be made except by a written amendment signed by the ERNET India. Requests for changes and modifications may be submitted in writing by the contractor to the ERNET India. At any time during the currency of the contract, the ERNET India may suo-moto or, on request from the contractor, by written order, amend the contract by making alterations and modifications within the general scope of the Contract.

- 2) If the contractor does not agree to the suo-moto modifications/amendments made by the ERNET India, it shall convey its views within 10 days from the date of amendment/ modification conveyed. Otherwise, it shall be assumed that the contractor has consented to the amendment.
- 3) Any verbal or written arrangement abandoning, modifying, extending, reducing, or supplementing the contract or any of the terms thereof shall be deemed conditional and shall not be binding on the ERNET India unless and until the same is incorporated in a formal instrument and signed by the ERNET India, and till then the ERNET India shall have the right to repudiate such arrangements.

2.5.2 Waivers and Forbearances

The following shall apply concerning any waivers, forbearance, or similar action taken under this Contract:

- 1) Any waiver of ERNET India's rights, powers, or remedies under this Contract must be in writing, dated, and signed by an authorized representative of the ERNET India granting such waiver and must specify the terms under which the waiver is being granted.
- 2) No relaxation, forbearance, delay, or indulgence by ERNET India in enforcing any of the terms and conditions of this Contract or granting of an extension of time by ERNET India to the contractor shall, in any way whatsoever, prejudice, affect, or restrict the rights of ERNET India under this Contract, neither shall any waiver by ERNET India of any breach of Contract operate as a waiver of any subsequent or continuing breach of Contract.

3 Governing Laws and Jurisdiction

3.1 Governing Laws and Jurisdiction

- 1) This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Laws of India for the time being in force.
- 2) Irrespective of the location of delivery, or the location of performance or the location of payments under the contract, the contract shall be deemed to have been made at Delhi. The courts of such a location (i.e Delhi) shall alone have jurisdiction to decide any dispute arising out or in respect of the contract.

4 Communications

4.1 Communications

- 1) All communications under the contract shall be served by the parties on each other in writing (Letter/email), in the contract's language, and served in a manner customary and acceptable in business and commercial transactions.
- 2) The effective date of such communications shall be either the date when delivered to the recipient or the effective date mentioned explicitly in the communication, whichever is later.
- 3) No communication shall amount to an amendment of the terms and conditions of the contract, except a formal letter of amendment of the contract, so designated.
- 4) Such communications would be an instruction or a notification or an acceptance or a certificate from the ERNET India, or it would be a submission or a notification from the contractor.

4.2 The person signing the Communications

For all purposes of the contract, there under all communications to the other party shall be signed by:

- 1) The Authorise signatory on behalf of the contractor shall sign all correspondences..
- 2) the Procurement Officer issuing the contract shall administer the contract and sign communications on behalf of the ERNET India. consignees; Project excuting officer; Inspecting officers and the paying authorities mentioned in the contract shall also administer respective functions during Contract Execution.

4.3 Address of the parties for sending communications by the other party.

For all purposes of the contract, including arbitration, thereunder the address of parties to which the other party shall address all communications and notices shall be:

- 1) The address of the contractor as mentioned in the contract unless the contractor has notified the change of address by a separate communication containing no other topic to the ERNET India. The Contractor shall be solely responsible for the consequence of an omission to notify a change of address in the manner aforesaid, and
- 2) The address of the ERNET India shall be the address mentioned in the contract. The contractor shall also send additional copies to officers of the ERNET India presently dealing with the contract.
- 3) In case of the communications from the contractor, copies of communications shall be marked to the Procurement Officer issuing the contract, and as relevant also to Inspecting Officer; Project executing officer; interim/ ultimate consignee and paying authorities mentioned in the contract. Unless already stipulated in the contract before the contract's start, the ERNET India and the contractor shall notify each other if additional copies of communications are to be addressed to additional addresses.

5 Contractor's Obligations and restrictions on its Rights

5.1 Changes in Constitution/ financial stakes/ responsibilities of a Contract's Business

The Contractor must proactively keep the ERNET India informed of any changes in its constitution/ financial stakes/ responsibilities during the execution of the contract.

5.2 Obligation to Maintain Eligibility and Qualifications

The contract would be awarded to the contractor based on specific eligibility and qualification criteria. The Contractor is contractually bound to maintain such eligibility and qualifications during the entire duration (including its extensions) of the contract. Any change which would vitiate the basis on which the contract was awarded to the contractor should be pro-actively brought to the notice of the ERNET India within 7 days of it coming to the Contractor's knowledge. These changes include but are not restricted to the Change regarding declarations made by it in its bid in Form 1.2: Eligibility Declarations.

5.3 Consequences of a breach of Obligations

Should the contractor commit a default or breach of GCC-clause 5.1 to 5.6, the Contractor shall remedy such breaches within 21 days, keeping the ERNET India informed. However, at its discretion, the ERNET India shall be entitled, and it shall be lawful on its part, to treat it as a breach of contract and avail any or all remedies thereunder. The decision of the ERNET India as to any matter or thing concerning or arising out of GCC-clause 5.1 to 5.6 or on any question whether the contractor has committed a default or breach of any of the conditions shall be final and binding on the contractor.

5.4 Assignment and Sub-contracting

- 1) All the manpower to be deployed in project for delivery, installation, testing & commissioning and operation & maintenance including onsite support should be on the payroll of the Contractor or OEM whose equipment(s) are offered. Outsourcing of manpower will not be allowed.
- 2) The contractor shall not sublet, transfer, or assign the contract or any part thereof or interest therein or benefit or advantage thereof in any manner whatsoever.
- 3) The contractor shall take prior permission in writing from ERNET India for any sub-contracting that the contractor wish to enter into for limited Works (e.g loading/unloading, racking & stacking of equipment(s), laying of Data Center cabling etc.) .
- 4) If the Contractor sublets or assigns this contract or any part thereof without such permission, the ERNET India shall be entitled, and it shall be lawful on its part, to treat it as a breach of contract and avail any or all remedies thereunder.

5.5 Indemnities for breach of IPR Rights or from other issues

- 1) the contractor shall indemnify and hold harmless, free of costs, the ERNET India and its employees and officers from and against all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature,

including attorney's fees and expenses, which may arise in respect of the Equipment provided by the contractor under this Contract, as a result of any infringement or alleged infringement of any patent, utility model, registered design, copyright, or other Intellectual Proprietary Rights (IPR) or trademarks, registered or otherwise existing on the date of the contract arising out of or in connection with:

- a) any design, data, drawing, specification, or other documents or Equipment provided or designed by the contractor for or on behalf of the ERNET India.
 - b) The installation of the Equipment by the contractor or the use of the Equipment at the ERNET India's / CERT-In/ other end user Sites.
- 2) If any proceedings are brought, or any claim is made against the ERNET India arising out of the matters referred above, the ERNET India shall promptly give the contractor a notice thereof. At its own expense and in the ERNET India's name, the contractor may conduct such proceedings and negotiations to settle any such proceedings or claim, keeping the ERNET India informed.
 - 3) If the contractor fails to notify the ERNET India within twenty-eight (28) days after receiving such notice that it intends to conduct any such proceedings or claim, then the ERNET India shall be free to conduct the same on contractor's behalf at the risk and cost to the contractor.
 - 4) The contractor shall be solely responsible for any damage, loss or injury which may occur to any property or to any person by or arising out the execution of the works or temporary works or in carrying out of the contract otherwise than due to the matters referred to in this agreement hereinbefore. The bidder would ensure for observance of all labour and other laws applicable in the matter and shall indemnify and keep indemnified the ERNET India, end users/ its customers against the effect of non-observance of any such laws.

5.6 Confidentiality and IPR Rights

5.6.1 IPR Rights

All deliverables, outputs, plans, drawings, specifications, designs, reports, and other documents and software submitted by the contractor under this Contract shall become and remain the property of the ERNET India/ CERT-In and must not be shared with third parties or reproduced, whether in whole or part, without the ERNET India/ CERT-In's prior written consent. The contractor shall, not later than upon termination or expiration of this Contract, deliver all such documents and software to the ERNET India/ CERT-In, together with a detailed inventory thereof.

5.6.2 Confidentiality

All documents, drawings, samples, data, associated correspondence or other information furnished by or on behalf of the ERNET India/ CERT-In to the contractor, in connection with the contract, whether such information has been furnished before, during or following completion or termination of the contract, are confidential and shall remain the property of the ERNET India/ CERT-In and shall not, without the prior written consent of ERNET India/ CERT-In neither be divulged by the contractor to any third party, nor be used by him for any purpose other than the design, procurement, or other services and work required for the performance of this Contract. If advised by the ERNET India/ CERT-In, all copies of all such information in

original shall be returned on completion of the contractor's performance and obligations under this contract.

5.6.3 Obligations of the contractor

- 1) Without the ERNET India/ CERT-In's prior written consent, the contractor shall not use the information mentioned above except for the sole purpose of performing this contract.
- 2) The contractor shall treat and mark all information as confidential and shall not, without the written consent of the ERNET India/ CERT-In , divulge to any person other than the person(s) employed by the contractor in the performance of the contract. Further, any such disclosure to any such employed person shall be made in confidence and only so far as necessary for such performance for this contract.
- 3) The obligation of the contractor under sub-clauses above, however, shall not apply to information that:
 - a) now or hereafter is or enters the public domain through no fault of Contractor;
 - b) can be proven to have been possessed by the contractor at the time of disclosure and which was not previously obtained, directly or indirectly, from the ERNET India/ CERT-In ; or
 - c) otherwise lawfully becomes available to the contractor from a third party that has no obligation of confidentiality.
- 4) The above provisions shall not in any way modify any undertaking of confidentiality given by the contractor before the date of the contract in respect of the contract/ the Tender Document or any part thereof.
- 5) The provisions of this clause shall survive after completion or termination (for whatever reason) of the contract.

5.7 Performance Bond/ Security

- 1) The successful bidder shall submit a Performance Security @ 3% of total value of Contract within 14 days from the date of issuance of contract. The Performance Security if submitted in the form of Bank Guarantee, Fixed Deposit and Insurance Surety bond should be valid for a minimum period of 49 months (Implementation period+ Warranty Period+ Claim Period of 3 months). The Performance security shall be shall be submitted in one of the following forms:
 - a. Insurance Surety Bonds/ Account Payee Demand Draft/Fixed Deposit Receipt from a Commercial bank/Bank Guarantee from a Commercial bank or online Payment (Account details given below).

1.	Beneficiary Name & Address	ERNET India, 5th Floor, Block I A Wing, DMRC IT Park, Shastri Park, Delhi-110053
2.	Bank Name	Bank of India
3	Bank Branch & Address	Electronics Niketan 6 CGO complex New Delhi
4	Beneficiary Account No	604810100002033
5	IFSC code	BKID0006048

The performance security must be routed through Structured Financial Messaging System (SFMS) from issuing Bank to our Bank as per details given above; by sending IFN 760 COV Bank Guarantee Advice Message.

- b. Bank Guarantee should be issued by a scheduled commercial bank in India, in the prescribed form provided in Format 1.1.
- 2) If the contractor fails to furnish Performance Security within the specified period of 14 days, it shall be lawful for the ERNET India at its discretion to annul the award and enforce Bid Securing Declaration, besides taking any other actions.
 - (a) If the contractor during the currency of the Contract fails to maintain the requisite Performance Security, it shall be lawful for the ERNET India at its discretion to terminate the Contract for Default besides availing any or all contractual remedies provided for breaches/ default, or
 - (b) without terminating the Contract:
 - i. recover from the contractor the amount of such security deposit by deducting the amount from the pending bills of the contractor under the contract or any other contract with the ERNET India, or
 - ii. treat it as a breach of contract and avail any or all contractual remedies provided for breaches/ default.
- 3) Contractor needs to extend the validity of Performance Security as and when asked by ERNET India due to Extension of project timelines or if any other valid reason.
- 4) In the event of any amendment issued to the contract, the contractor shall furnish suitably amended value and validity of the Performance Security in terms of the amended contract within fourteen days of issue of the amendment.
- 5) The ERNET India shall be entitled, and it shall be lawful on its part, to deduct from the performance securities or to forfeit the said security in whole or in part in the event of:
 - any default, or failure or neglect on the part of the contractor in the fulfilment or performance in all respect of the contract under reference or any other contract with ERNET India or any part thereof for any loss or damage recoverable from the contractor which the ERNET India may suffer or be put to for reasons of or due to above defaults/ failures/ neglect.
- 6) Subject to the sub-clause above, the ERNET India shall release the performance security on completing all contractual obligations at the satisfaction of ERNET India, including the warranty obligations.
- 7) No interest will be payable by ERNET India on any security deposit, amount forfeited, liquidated damages, SLA penalty, amount withheld any delayed payment by ERNET India.

5.8 Permits, Approvals and Licenses

Whenever the supply of Equipment(s) and Services requires that the contractor obtain permits, approvals, and licenses from local public authorities, it shall be the contractor's sole responsibility to obtain these and keep these current and valid.

6 Scope of work, Project Management and Technical Specifications

6.1 Scope of work

- 1) This contract is for the supply, installation, testing & commissioning of equipment(s) of the description, specifications, in the quantities outlined in the contract on or before the dates specified therein.
- 2) Training: Contractor Shall provide the training for installation, operation and maintenance of supplied equipment(s) as detailed in Section-VII.

Note: OEM based training is required on individual products/equipment /solutions, Further, on overall solution, contractor's Subject Matter Experts may provide the training.

- 3) **Operation & Maintenance of Equipment(s)** : the contractor shall be required to perform operation(s) and maintenance of supplied and pre-existed Equipment(s) for one year from the respective date of acceptance of project as per specified milestones .
- 4) **Scope of Work detailed as per Section VII**

6.2 Project Planning and Management:

The Contractor is required to design and implement a comprehensive and effective project plan and management methodology using efficient and reliable tools. Project planning exercise shall ideally commence with the start of the project (issue of P.O) and shall continue till the O&M Phase of the project. However, high level project management & planning should commence during the preparation of the bid. To have an effective project management system in place, it is necessary for the Contractor to provide regular project monitoring reports to ERNET India/ CERT-In to monitor the Project Progress at different periodicity basis (during different phases of project) such as daily, weekly and biweekly and monthly basis.

The Contractor shall address at the minimum of the following but not limited to:

- i. Create an organized set of activities for the project;
- ii. Coordinate and collaborate with various stakeholders;
- iii. Establish and measure resource assignments and responsibilities;
- iv. Construct a project plan schedule including milestones, highlighting the dependencies, risks, sub activities wise plan with actions owners per milestone;
- v. Measure project deadlines and performance objectives;
- vi. Communicate the project plan to stakeholders with meaningful reports;
- vii. Provide facility for detecting problems and inconsistencies in the plan;
- viii. Development of Best Practices Document (to be submitted after each milestone, to gather the learnings) and updated version of plan;

During the project implementation, the Contractor shall report the following items to the ERNET India/ CERT-In via the reports:

- i. Results accomplished during the period;
- ii. Cumulative deviations to date from schedule of progress on milestones

- as specified in this RFP read with the agreed and finalized Project Plan;
- iii. Corrective actions & risk mitigation strategies to be taken to achieve milestones as per planned schedule of progress;
- iv. Proposed revision to planned schedule provided such revision is necessitated by reasons beyond the control of the contractor;
- v. Other issues and outstanding problems, and actions proposed to be taken;
- vi. Dependencies resolution plan / Interventions which Contractor expects to be made by ERNET India/ CERT-In and / or actions to be taken by the ERNET India/ CERT-In before the next reporting period. Progress reports would be prepared by Contractor on a fortnightly basis. These reports may be required to be shared with either the Nodal officer, NRC and ERNET India/ CERT-In, as the case may be;
- vii. Project Quality Assurance;
- viii. Project Management activities;
- ix. Issue Management to help identify and track the issues that need attention and resolution from the ERNET India / Cert-In / Other stakeholders ;
- x. Scope Management to manage the scope and changes through a formal management and approval process;

Risk Management to identify and manage the risks that can hinder the project progress The Project plan prepared by the contractor at the initial stage of the project shall be reviewed by the ERNET India/ CERT-In. The Contractor shall update and maintain the Project Plan throughout the duration of the engagement. All changes are to be reviewed and approved by the ERNET India/ CERT-In or appointed representatives.

Contractor must ensure that a PMP/Prince2 certified with minimum of ten (10) years experience in handling large Data Center project should be nominated as Senior Project Manager who will handle all activities of project (i.e. for implementation and Operation & Maintenance) till its completion. He must be placed in ERNET India/CERT-In office (i.e. at Delhi or Bangalore) as decided by ERNET India and contractor must ensure that person is dedicated for this project only. Contractor shall also ensure that sufficient skilled manpower shall be deployed during implementation and O&M of project in each milestone. Role & Responsibility of Project Head will be:

- Should be responsible for all kind of communications with all the stakeholders of ERNET India/CERT-In ;
- Should be responsible for the project management throughout the entire project lifecycle, including project initiation, project delivery, stakeholder management, post implementation review and project close out / handover;
- Should have to work closely with other team members and Shall be responsible for overall work assigned to Contractor;
- Should be responsible for delivery of all project deliverables as per tender.
- Should provide technical solutions and strategic recommendations to enhance services quality;
- Should communicate technical ideas to technical and non-technical stakeholders.

Additionally, the ability to document support procedures to ensure that deployed systems are properly maintained and supported;

Qualification and experience of Senior Project Manager shall be B.E./B.Tech/MCA + 10 Years relevant experience for managing large data centres projects + PMP/Prince2 Certified.

6.3 Technical Specifications and Warranty

The Equipment & Services to be provided by the contractor under this contract shall conform to the technical specifications mentioned in '**Technical Specification** ' under **Sections V** of the Tender Document. For standards and requirements where no applicable specifications are mentioned, appropriate latest authoritative standards and quality assurance issued by the concerned institution shall be applicable.

- 1) The Equipment supplied shall be entirely brand new and unused.
- 2) The Equipment(s) specifications provided in the tender is the minimum required and bidder may quote for higher specifications to optimize as per their solution requirements. The bidders should quote the products strictly as per the tendered specifications or of higher specifications giving exact make & model and specifications. All the technical literature for the products offered by the bidder may be enclosed in the bid.
- 3) The bidders should give clause-by-clause compliance for the technical specification of the equipment along with cross reference of individual points from product data sheet/ literature which is to be submitted in their technical bids.
- 4) Bidders must provide make and model of offered equipment etc. as per Form 3A i.e Unpriced Make and Model of Offered Equipment(s) compliance.

6.4 Warranty

The following warranty clauses shall apply:

- 1) The Equipment supplied and services rendered by the contractor shall be in accordance with the tender specifications. The Contractor shall carry onsite comprehensive Warranty for Three (3) year for all supplied equipment(s) and software. The warranty period shall start from the respective date(s) of successful commissioning by contractor and acceptance by ERNET India of each milestone.
- 2) Obligations of the contractor under the warranty clause shall remain valid for all the sites installed, accepted and paid-for; even though the contract is terminated for any reason whatsoever.
- 3) OEM Warranty certificates must be submitted by Contractor at the time of delivery of Equipment. For the intervening period between Date(s) of Delivery and Date(s) of acceptance, the Contractor shall get the warranty extended from OEM and shall submit necessary document proof in this regard at the time of submission of invoice(s).

- 4) Warranty should reflect in the support website of the OEM if such option is provided by the respective OEMs
- 5) The equipment to be ordered through the Contract/P.O are meant to be deployed across various location across the country. In case any of the installed/ non-installed equipment(s) are shifted from one location to another then the contractor shall be responsible to provide warranty, support, maintenance and RMA (Return Merchandise Authorization) at such locations also.
- 6) **Retention Policy:** Since the equipment(s) to be deployed in security projects; therefore data privacy shall be ensured through Storage Retention Policy i.e. ERNET India/CERT-In shall retain the faulty storage disks/media/memory in case of any replacement during the maintenance. In case of replacement of any device/equipment, ERNET India/CERT-IN shall retain all the storage disks (faulty or otherwise). No additional cost will be paid for any retained storage disks. Bidder has to submit faulty storage media to in-charge of DC and DR as per the mutually defined process.
- 7) In case of any rectification of a defect or replacement of any defective Equipment during the warranty period, the warranty for the rectified/ replaced Equipment shall remain till the original warranty period and same should reflect on OEM's website with revise equipment details, if such facility available with OEM.
- 8) All ongoing software upgrades, patches for all major and minor releases should be provided during the warranty period.
- 9) OEM support should be provided on all days and at all hours.
- 10) All types of support (hardware/software trouble shooting, maintenance etc.) at Central (DC/DR) & remote locations will be provided by the contractor.
- 11) The Contractor shall arrange for free Onsite comprehensive maintenance for a period of warranty from the date/dates of acceptance of the project milestone wise with regard to rectification/removal of defects if any observed during this period. If the Contractor does not arrange to rectify the defects observed during the maintenance period within a reasonable time (10 days). the ERNET/End user shall be at liberty to get such defects rectified at the cost and risk of the Contractor in addition to levying of penalties.

12) SLA during warranty period and penalties thereof:

- i. During Operation & Maintenance (O&M), Service levels defined under Section VIII will be applicable.
- ii. After completion of O&M of 1 year (during the warranty period), Bidder will deploy two resident engineer (RE); One for Networking & One for System/Server; in each shift (total 3 shifts per day 8 hours each shift) at each Data Center (DC & DR) and restore the Equipment & services within 24 hours (i.e the permissible limit) of the failure. Resident Engineer must be OEM certified for networking & Systems with at least 3 years of relevant experience and must possess BE/B.Tech/MCA degree. Document proof shall be submitted at the time of deployment of such resident engineer. Further, it is clarified that after completion of O&M of 1 year (during the warranty period), 6 resident engineers

needs to be deployed at DC and 6 resident engineers needs to be deployed at DR (2 in each shift and total there will be 3 shifts of 8 hours each).

- iii. In the absence of resident engineers at DC and DR, SLA Penalty of Rs. 1000 per day of absence per RE will be imposed. In case of absence of both the resident engineers at any of the locations (DC and DR) in any of the shift, a SLA penalty of Rs. 5,000 per instance will be imposed.
- iv. At Data Center (DC & DR) and remote Sites, for faults in any of the equipment , SLA Penalty @ 0.25 % of equipment cost per day or part thereof will be deducted beyond 24 hours from the reporting time of fault. In case fault persist for more than 2 days from the reporting time of fault, then Penalty @ 0.5 % of equipment cost per day will be deducted. SLA Penalty of Rs. 2,000/- per day will be charged for equipment(s) (active and passive components) whose price could not be derived (e.g Intelligent cables) from the price bid.
- v. If the contractor, having been notified, fails to rectify/ replace the defect(s) within 10 days, it shall amount to breach of Contract for default, and the ERNET India may avail any or all remedial action(s) mentioned under termination clause for default.
- vi. No penalty will be imposed for downtime asked by the bidder for patch upgradation etc. However, any of these activity shall be done only in off peak hour and after taking due permission from CERT-In.
- vii. Penalties will be deducted from due payment/performance securities.
- viii. The overall Penalties for non-adherence with the SLA of warranty support (during 2nd & 3rd year of warranty period) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment (CAPEX). In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2.

7 Inspection and Quality Assurance

7.1 Tests and Inspections

ERNET India or its representative shall have the right to inspect or to test the Equipment(s) to confirm their conformity to the ordered specifications. The contractor shall provide all reasonable facilities and assistance to the inspecting authority at no charge to ERNET India. In case any inspected or tested equipment fail to conform to the specifications, ERNET India may reject them and contractor shall replace the rejected equipment with the equipment in conformity with the specification required free of cost to ERNET India.

7.2 Consequence of Rejection

Upon the Equipment being rejected by the ERNET India, the ERNET India shall be at liberty to demand that such equipment(s) shall be removed and replaced with a brand new equipment by the contractor at his cost subject as hereinafter stipulated, within 15 days from the date of intimation of such rejection. The decision of the ERNET India for rejection shall be final in all respects. The Contractor shall bear all cost of such replacement, including taxes and freight, if any, on replacing and replacing Equipment without being entitled to any extra payment on that or any other account. ERNET India/CERT-In will not return the Hard Disk from used systems.

Replaced equipment shall have same or higher specifications. Contractor shall provide the replacement within a maximum of 30 days, if contractor fails to do so, then it will be treated as breach of contract as per clause 12.1 and accordingly remedial action may be initiated.

7.3 ERNET India's right of Rejection of Inspected Equipment

- 1) Equipment accepted by the ERNET India after inspection in terms of the contract shall in no way dilute the ERNET India's right to reject the same later if found deficient concerning 'Technical Specifications'.
- 2) Notwithstanding any approval which the ERNET India may have given in respect of the Equipment or any materials or other particulars or the work or workmanship involved in the performance of the contract and notwithstanding delivery of the Equipment, it shall be lawful for ERNET India, to inspect, test and, if necessary, reject the Equipment or any part, portion or consignment thereof, after the Equipment's arrival at the final destination within a reasonable time after actual delivery thereof at the delivery locations mentioned in the contract, if such Equipment or part, portion or consignment thereof is not in all respects in conformity with the terms and conditions of the contract whether on account of any loss, deterioration or damage before despatch or delivery or during transit or otherwise howsoever.

8 Transfer of Assets and Insurance

8.1 Transfer of Assets

The ownership of the supplied Equipment along with its warranty and all other associated rights shall be transferred within 90 days to CERT-In, ; after successful Commissioning and Acceptance of each milestone by ERNET India. All the risks, responsibilities, liabilities thereof in respect of all equipment shall remain with contractor till acceptance of each milestone. All licenses are to be provided in the name of **Indian Computer Emergency Response Team, Ministry of Electronics and Information Technology Government of India**. Contact details including email id of Cert-In will be provided to L-1 bidder. Contractor shall provide following documents during handover of assets as per milestones:

- 1) Invoices with serial no of devices
- 2) Bill of Material
- 3) OEM Warranty certificates
- 4) Duly received Delivery challan at all locations
- 5) Software license detail, if any
- 6) Final Acceptance report
- 7) Any other document specified by ERNET India

Note: Contractor may provide signed/ digitally signed copies of these documents by the authorised signatory of Contractor/OEM.

8.2 Insurance

The Bidders shall also arrange to get equipment insured to cover loss/damage due to theft, burglary, fire, or any natural disaster for the period till 30 days after successful acceptance

as per respective milestones as defined in terms of delivery in this tender document. Bidder shall be required to extend the insurance period in case, there is delay in commissioning & acceptance of project. The insurance shall not be for an amount less than 100 percent of the value of the equipment(s) as mentioned in the contract. Bidder may include cost of insurance in the unit price of equipment(s) quoted in the price bid.

9 Terms of Delivery and delays

9.1 Effective Date of Contract

The effective date of the contract shall be the date on which it has been issued by issued by GeM Portal. The dates of deliveries shall be counted from the date of contract.

9.2 Place (destination/Location) of Delivery

The city of sites (remote/DC/DR) where the Equipment are to be delivered have been stipulated in the Section IV – Bill of Material.

9.3 Terms of Delivery, Installation, testing, commissioning & Acceptance

1. All Equipment & Services shall be offered at site including logistics, transportation, loading/unloading, installation, testing & commissioning. Cost of the same may be included in offer price. All aspects of safe delivery shall be the sole responsibility of the bidder.
2. Any changes in end user locations shall also be confirmed at the time of release of Contract. Contractor should obtain list of end user locations from ERNET India at the time of issuance of Contract and adhere to the same. ERNET India reserve the right to change the location before delivery of Equipment(s) to designated locations without paying any additional cost for the same. However, any relocation of equipment(s) in the same city shall not be treated as change of location before equipment(s) installation. No Equipment shall be deliverable to the ERNET India/CERT-In on Sundays and public holidays or outside designated working hours without the written permission of ERNET India/CERT-In.
3. The contractor shall deliver the consignment at the location(s) as detailed in the Bid/contract, the quantities of the Equipment detailed therein, and the Equipment shall be delivered not later than the dates stipulated in the tender/contract. The delivery shall not be complete unless the Equipment are inspected and accepted by the ERNET India/CERT-In as provided in the contract.
4. In case the Contractor fails to despatch the Equipment before the expiry of the delivery period then bidder must apply to ERNET India in writing to extend the delivery period and only if approved by the ERNET India then only dispatch the balance quantity in specified delivery time limit. If the bidder despatches the Equipment without obtaining an extension, it would be doing so at its own risk, and no claim for payment for such supply and/ or any other expense related to such supply shall lie against ERNET India.
5. Location of sites which are to be covered in the respective milestone as defined in timeline for delivery table (below) will be provided by ERNET India in consultation with CERT-In to successful bidder.

6. Timeline for Delivery, Installation, testing, commissioning & Acceptance:

Sl. No.	Activity	Revised Timeline (Milestone)	Project Milestones
1	Date of issue of contract. This is being referred as 'T' in the timeline column of this table.	T	Start of Milestone-1
2	Site Survey of Data Centre(DC) & 50 remote sites. Delivery, Installation, Testing & Commissioning of Complete Hardware at DC [except EMS and DCIM equipments/solution] including the Delivery, Installation, Testing & Commissioning of Complete Hardware at 50 remote sites & their integration with DC as per SoW. Offering of this infrastructure under Milestone-1 for Acceptance Testing (AT) to ERNET India as per Acceptance Testing Plan (ATP).	T+ 30 Weeks	
3	Acceptance by ERNET India for Complete Milestone-1 and issuance of acceptance certificate subject to completion of complete work as per tender.	T+ 34 Weeks	Completion of Milestone-1
4	Delivery, Installation, Testing & Commissioning of EMS & DCIM Solution(H/w and S/w) for DC & their integration with DC, existing Phase-1 Hardware and remote sites of previous milestone(s). Offering of this infrastructure under Milestone-2 for AT to ERNET India as per ATP .	T+ 32 Weeks	Start of Milestone-2
5	Acceptance by ERNET India for Complete Milestone-2 and issuance of acceptance certificate subject to completion of complete work as per tender.	T+ 36 Weeks	Completion of Milestone-2
6	Site Survey, Delivery, Installation, Testing & Commissioning of Complete Hardware at another 50 Remote Sites and their integration with DC, EMS solution. Offering of this infrastructure under Milestone-3 for AT to ERNET India as per ATP.	T+ 32 Weeks	Start of Milestone-3
7	Acceptance by ERNET India for Complete Milestone-3 and issuance of acceptance certificate subject to completion of complete work as per	T+ 34 Weeks	Completion of Milestone-3

	tender.		
8	Site Survey , Delivery, Installation, Testing & Commissioning of Complete Hardware at another 50 Remote Sites and their integration with DC, EMS Solution. Offering of this infrastructure under Milestone-4 for AT to ERNET India as per ATP.	T+ 32 Weeks	Start of Milestone-4
9	Acceptance by ERNET India for Complete Milestone-4 and issuance of acceptance certificate subject to completion of complete work as per tender.	T+ 34 Weeks	Completion of Milestone-4
10	Site Survey , Delivery, Installation, Testing & Commissioning of Complete Hardware at another 50 Remote Sites and their integration with DC's EMS Solution, including Offering of this infrastructure under Milestone-5 for AT to ERNET India as per ATP	T+ 34 Weeks	Start of Milestone-5
11	Acceptance by ERNET India of Complete Milestone-5 and issuance of acceptance certificate subject to completion of complete work as per tender.	T+ 36 Weeks	Completion of Milestone-5
12	Site Survey,Delivery, Installation, Testing & Commissioning of Complete Hardware at remaining Remote Sites and their integration with DC's EMS Solution, including Offering of this infrastructure under Milestone-6 for AT to ERNET India as per ATP	T+ 34 Weeks	Start of Milestone-6
13	Acceptance by ERNET India of Complete Milestone-6 and issuance of acceptance certificate subject to completion of complete work as per tender.	T+ 36 Weeks	Completion of Milestone-6
14	Site Survey of Data Recovery Centre (DR), Delivery, Installation, Testing & Commissioning of Complete Hardware at DR [except EMS and DCIM equipments/solution] and its integration with DC & also integration of accepted remote sites(which were connected with DC over IPSEC tunnels) with DR Infrastructure over MPLS links as per SoW. Offering of this infrastructure under Milestone-7 for AT to ERNET India as per ATP.	T+ 36 Weeks	Start of Milestone-7
15	Acceptance by ERNET India of Complete Milestone-	T+ 40 Weeks	Completion

	7 and issuance of acceptance certificate subject to completion of complete work as per tender.		of Milestone-7
16	Delivery, Installation, Testing & Commissioning of EMS & DCIM Solution (H/w and S/w) at DR and its integration with DC, Phase-1 Hardware and remote sites of other previous milestones . Offering of this infrastructure under Milestone-8 for AT to ERNET India as per ATP .	T+ 38 Weeks	Start of Milestone-8
17	Acceptance by ERNET India of Complete Milestone-8 and issuance of acceptance certificate subject to completion of complete work as per tender.	T+ 40 Weeks	Completion of Milestone-8

Note: “EMS & DCIM Solution” refers to Data Center Infrastructure Management (DCIM), RF Id Based Physical Asset Tracking & Heat Humidity Sensor Solution , EMS Solution with all its modules along with IT helpdesk / service desk and IPAM/Switch Port Management in High Availability mode.

Completion of Milestone-1 is mandatory before other milestones, without which, other milestones won't be treated as completed. Other milestones may be done in any sequence. However, ERNET India reserves the right to change the delivery of equipment and sequence of milestones as per project requirement.

Timeline for Operation & Maintenance (O&M) after acceptance of individual milestones.

Sl. No	Activity	Expected time to begin O&M (Milestone)	Completion of O&M
1	O&M of Milestone 1	Acceptance of Milestone 1	One year from the acceptance date of respective milestone(s).
2	O&M of Milestone 3	Acceptance of Milestone 3	
3	O&M of Milestone 4	Acceptance of Milestone 4	
4	O&M of Milestone 5	Acceptance of Milestone 5	
5	O&M of Milestone 6	Acceptance of Milestone 6	
6	O&M of Milestone 7	Acceptance of Milestone 7	

Note :

1. O&M of Milestone 2 & 8 will begin upon the successful acceptance of respective milestone and end date of O&M of these two milestones will end with O&M completion date of Milestone- 1 and Milestone- 7 respectively.
2. On request of end user, to align the timelines of completion of all the milestones, O&M period of DC and remote sites may be extended till the completion of O &M of DR and payment for the same will be made on prorata basis (for the complete quarter or part

thereof after completion of the quarter) for the extended period as quoted in Part C for one year.

9.4 Delay in the contractor's performance

If the contractor fails to deliver the Equipment(s) or any instalment thereof or delays in provision of Services (e.g. delivery, installation, commissioning, training, O&M etc.) within the period fixed for such delivery in the contract or as extended or at any time repudiates the contract before the expiry of such period, the ERNET India may without prejudice to Contractor's other rights:

- 1) recover from the contractor liquidated damages as per clause 9.5(2) below, or
- 2) treat the delay as a breach of contract as per clause 12.1 below and avail all the remedies therein.

9.5 Extension of Delivery Period and Liquidated Damages:

ERNET India may, on the request of the bidder or otherwise, extend the delivery date suitably subject to the following conditions:

- 1) The original Delivery Period may be re-scheduled by the ERNET India without any Liquidated damages if such reschedule is warranted due to Force Majeure conditions mentioned below and also on the ground/reasons of delay attributable to the ERNET India. In all other cases, if any extension is given then same shall also attract LD as given in clause 9.5.2 below.
- 2) **Liquidated Damages (LD):** If the Contractor fails to meet the prescribed timelines for respective milestones due to any reason whatsoever then in such a case ERNET India would be entitled to impose the Liquidated Damages for the delay @ 0.5 % of the Contract value of the respective milestone per week or part of the week of delayed period. Overall Liquidated Damages shall be restricted to 10% of the total contract value. While calculating LD; GST will be excluded from the value on which LD is calculated; thereafter GST will be charged on the LD value as per S.No. 4 clause 5.3 of Section II of this document. . In case, delay beyond 20 weeks, ERNET India may initiate termination for default and take remedial action(s) accordingly as per GCC Clause 12.1.
- 3) In case the Contractor completes the respective milestone(s) within the overall timelines specified for completion of that milestone then no LD will be levied for any intermediary delay in completion of any of the stages of the respective milestones.
- 4) ERNET India will serve a notice duly accompanied by a preliminary calculation sheet to the contractor against whom levy of LD is proposed. In case the contractor is not satisfied/ agrees with :
 - (i) the reason/grounds for which leaving of LD is proposed and
 - or
 - (ii) method of calculation of amount of LD.

then Contractor may submit a written representation to ERNET India within the stipulated timeline (as indicated in the notice i.e. 15 days) clearly mentioning his

claims, ground of such claims etc. along with all the documents (self-certified) supporting his claims. The decision of DG, ERNET India shall be final and binding in this matter.

- 5) Waiver from LD may be considered only if the contractor submits a written representation to ERNET India within the stipulated time (as indicated in the notice i.e. 15 days) on receipt of such notice of imposition of LD issued by ERNET India. Decision of ERNET India in the matter shall be final and binding.
- 6) It is clarified that period, for which delay is solely attributable to ERNET India, will be excluded from LD calculation.

9.6 Force Majeure:

- 1) On the occurrence of any unforeseen event, beyond the control of either Party, directly interfering with the delivery of Equipment(s) and Services arising during the currency of the contract, such as war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, pandemic, quarantine restrictions, strikes, lockouts, or acts of God, or any other defined by government, the affected Party shall, within a week from the commencement thereof, notify the same in writing to the other Party with reasonable evidence thereof. Unless otherwise directed by ERNET India in writing, the contractor shall continue to perform its obligations under the contract as far as reasonably practicable and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. If the force majeure condition(s) mentioned above be in force for 90 days or more at any time, then in such a case either party shall have the option to terminate the contract on expiry of 90 days of commencement of such force majeure by giving 14 days' notice to the other party in writing. In case of such termination, no damages shall be claimed by either party against the other, save and except those which had occurred under any other clause of this contract before such termination.
- 2) Notwithstanding the remedial provisions contained in GCC-clause 9.6 (2) or 12.1.1, none of the Party shall seek any such remedies or damages for the delay and/ or failure of the other Party in fulfilling its obligations under the contract if it is the result of an event of Force Majeure.

10 Prices and Payments Terms:

1. Procuring Entity is ERNET India, Delhi and the invoicing is should be in the name of ERNET India.
2. Payments to Contractor shall be made through EFT only. The Contractor shall provide necessary information/documents for receipt of payment through EFT.
3. Any payment shall be subject to submission of performance security in line with the requirements specified under the Performance Security Clause. Payments shall only be made in Indian Rupees.

4. The contractor shall submit its claim for payment in writing along with relevant supporting documents, as stipulated in Contract and in the manner as also specified herein.
5. The documents which the contractor is to furnish while claiming payment after are:
 - a. Original Invoice (GST Compliant format) with serial no of each item.
 - b. Delivery challan duly received (sign & Stamped from concerned officer) for all locations
 - c. Licenses (software & Hardware)
 - d. Warranty document from OEM
 - e. Certificate of Insurance (valid till the time of commissioning & acceptance period) as detailed in tender.
 - f. Successful Commissioning and Acceptance report also to be submitted for claiming the payment after commissioning.
 - g. Attendance Sheet of Manpower duly signed & Stamped by the Contractor.
 - h. Any other document specified by ERNET India during the course of project.

6. The payment terms are:

- a. Under this project, there are two types of Payments. One is CAPEX Payment i.e. price of equipment(s) and other is payment pertaining to OPEX i.e. Operation & Maintenance (O&M) services.
- b. In respect of DC and DR equipment (s), 50% of the total value of equipment(s) delivered at DC and similarly 50% of the total value of equipment(s) delivered at DR shall be released on 100% of delivery of all equipment(s) in good condition based on the respective milestone(s) and after successful Rack mounted, Power on Self-Test (PoST) by the Contractor.
- c. Further, ERNET India would consider releasing below additional payment if contractor opts for the same and submits written request in this regard:
 - i. Additional 15% payment (over & above the 50% payment specified in clause B. above) towards value of supplied equipment(s) at DC and/or DR respectively subject to the condition that:
 1. All the equipment(s) required to complete the Milestone-1 have been supplied at DC for becoming eligible to claim the payment of additional 15% for DC. Similarly, all the equipment(s) required to complete the Milestone- 7 have been supplied at DR for becoming eligible to claim the payment of additional 15% for DR.
 2. Two separate Bank Guarantees (BGs) equivalent to 15% of the value of supplied equipment(s) at DC and DR; valid for a minimum period of 6 months (with a claim period of additional 3 months) is submitted. BG must be extendable further as per communication of the final date of acceptance of respective milestone (Milestone-1 for DC and Milestone- 7 for DR) by ERNET India.
 3. ERNET India will consider releasing the BGs after successful acceptance of Milestone-1 and Milestone-7 respectively.
 4. Bank Guarantee formats to be signed by the contractor in this respect will be given to contractor at the time of exercising this option.

5. BG would be taken to secure the payment of additional 15% released to the contractor and the same would be liable to be invoked in case of defaults and breach of contract as stipulated at Section III: General Conditions of Contract(GCC) Clause 12.1.

Note: For removal of doubts it is clarified that the contractor would have the option to claim an additional 15% payment (as specified above) in respect of DC or DR or both and accordingly would need to submit separate BGs for release of respective additional payment. Based on the fact that whether additional payment is claimed or not, the balance payment of 20% or 35% (as the case may be) will be released as per clause d and e below.

- d. In respect of equipment (s) at DC and DR, in case contractor exercises the option of 'additional 15% payment' , the additional 20% of the total value of items will be made after successful installation, integration, commissioning and acceptance as per the respective milestone(s).
- e. In case, contractor does not exercise the option to claim 'additional 15% payment' as mentioned above at point C. then in respect of equipment (s) at DC and DR, additional 35% of the total value of items will be made after successful installation, integration, commissioning and acceptance as per the respective milestone(s).
- f. In respect of equipment at remote sites, 85% of the total value of items will be made after successful delivery, installation, integration, commissioning and acceptance the respective milestone(s).
- g. In respect of EMS and DCIM solution (i.e. Hardware and Software of Milestone-2 and Milestone-8),
 - i. 50% of the total value of solution will be made after delivery at DC (for Milestone-2) and at DR(for Milestone-8) respectively.
 - ii. 35% of the total value of solution will be made after successful installation, integration, commissioning and acceptance at DC(for Milestone-2) and at DR(for Milestone-8) respectively.
- h. Thereafter, based on successful performance during warranty period, balance 15% value of the respective milestone shall be released in twelve (12) equal instalments on a quarterly basis after completion of every quarter. It would be duty of contractor to get the satisfactory performance certificate from CERT-In or (any other 3rd party to whom equipment's warranty has been transferred on the basis of instructions from ERNET India) along with necessary documents. ERNET India may give an option to contractor to claim Balance 15% payment against submission of Bank Guarantee. If this option is given by ERNET India and the same is accepted by Contractor, then the contractor would be having an option to submit Bank Guarantee (BG) for: -
 - i. 15% value, with the validity till completion of warranty period of last milestone + Three (3) months of claim period, or
 - ii. Three (3) Bank Guarantees of 5% each (as reduced by the payment (s) already made w.r.t warranty and maintenance support) valid for one year, Two year & Three years from the date of last milestone + 3 months of claim period.
 - iii. Bank Guarantee formats to be signed by the contractor in this respect will be given to contractor at the time of exercising this option.

- iv. BG would be taken to secure the payment of balance 15% (over & above 85% payment) released to the contractor and the same would be liable to be invoked in case of defaults and breach of contract as stipulated at Section III: General Conditions of Contract(GCC) Clause 12.1.
- i. O&M Charges (OPEX Charges) during Operation & Maintenance for Data Centres (DC & DR) and Remote Sites will be released on quarterly basis after completion of each quarter from the date of acceptance of respective milestone.
- j. O&M Charges for remote sites will start from the completion of respective milestone and will be paid proportionately based on O&M price derived for each site from price bid.
- k. ERNET India will deduct LD and/or SLA penalty and/or other recoveries (if any) before releasing any payments. In case ERNET India allows the option to submit the BG for balance 15%, SLA penalty and/or other recoveries (if any) shall be required to be paid by the contractor within 30 days from the date of intimation sent by ERNET India in this regard, else same will be recovered by invoking the submitted BGs.
- l. If anytime, ERNET India invokes the submitted BG as per clause 10 (6) (h). above (B.G, Insurance Bonds FD, etc.) then amount remaining balance after recovery of dues will be kept by ERNET India and balance will be refunded after completion of validity period of the BG that has been invoked.
- m. At its sole discretion; ERNET India may agree to accept partial deliveries; to meet the urgent requirements of the project. Such requirements may arise based on requirements of end-user and also due to exceptional circumstances faced by the contractor.

In case of request made by the contractor; such an acceptance shall be on a timely written request made by the contractor in this regard; explaining the circumstances and enclosing the relevant documents to substantiate its submission. If request of the contractor is accepted; then ERNET India will convey in writing the terms & conditions (including payment, security, LD, penalty etc.) subject to which it has accepted the request. Delivery schedule and payment terms etc. may also accordingly be modified, if required.

If contractor doesn't agree to the terms & conditions of acceptance offered by ERNET India then it may give its refusal in writing within 5 days; and in such a case acceptance issued by ERNET India shall be treated as Null . It is clarified that it is not binding on ERNET India to entertain or evaluate such a request and no claim can be made by the contractor (including for exclusion of period elapsed from the date of making of request by contractor till acceptance/non-acceptance/conditional acceptance by ERNET India) in this regard. Payment of Delivered quantities if it exceeds the quantities mentioned shall be restricted to quantities mentioned in the contract.

11 Arbitration

- 1) In case any dispute or difference arises out of or in connection with or the carrying out of works (whether during the progress of the works or after their completion & whether before or after the termination, abandonments or breach of contract) except as any of the accepted matters, provided hereunder, the parties hereto, shall first endeavour to settle such disputes of differences amicably.

- 2) If both the parties fail to reach such amicable settlement, then either party (The Purchaser or Contractor) may (within 20 days of such failure) give a written notice to the other party requiring that all matter in dispute or difference be arbitrated upon. Such written notice shall specify the matters which are in difference or differences of which such written notice has been given and no other shall be reoffered to the arbitration of a single arbitrator, to be appointed by both the parties or in case of disagreement as to the appointment of a single arbitrator, to that of two arbitrators, one to be appointed by each party or in case of said arbitrators not agreeing then, to the umpire to be appointed by the arbitrators in writing before entering upon the references. Provisions of Indian Arbitration & Conciliations Act, 1996 or any statutory modification or re-enactment thereof and rules framed there under from time to time shall apply to such arbitration.
- 3) Venue of arbitration shall be New Delhi.
- 4) The arbitrators or arbitrators appointed under this Article shall have the power to extend the time to make the award with the consent of parties.
- 5) Pending reference to arbitration, the parties shall make all endeavors to complete the work in all respect. The disputes, if any, will finally be settled in the arbitration.
- 6) Upon every or any such references to the arbitration, as provided herein the cost of and incidental to the reference and Award respectively shall at the discretion of the arbitrator, or the umpire, as case may be.
- 7) The award of arbitrator or arbitrators, as the case may be, shall be final and binding on the parties. It is agreed that the contractor shall not delay the carrying out of the works by reason of any such matter, question or dispute being referred to arbitration, but shall proceed with the works with all due diligence. The Purchaser and the contractor hereby also agree that arbitration under this clause shall be the condition precedent to any right of action under the contract except for as provided for in the Tender.

Note: In case if Bidder is PSE (Public Sector Enterprise) the Dispute resolution mechanism will be as follows:

ERNET India and the contractor shall be resolved amicably by mutual consultations. If such resolution is not possible, then the unresolved dispute or difference shall be resolved by using the Administrative Mechanism for Resolution of Dispute (AMRD) in line with communication No. 332619/338367/LS/2019 dated 28.02.2020 or as amended (if any) issued by the Department of Legal Affairs, Ministry of Law & Justice, Government of India.

12 Defaults, Breaches, Termination, and closure of Contract

12.1 Termination due to Breach, Default, and Insolvency

12.1.1 Defaults and Breach of Contract

In case the contractor undergoes insolvency or receivership; neglects or defaults, or expresses inability or disinclination to honour his obligations relating to the performance of the contract or ethical standards or any other obligation that substantively affects the ERNET India's rights and benefits under the contract, it shall be treated as a breach of Contract. Such defaults could include inter-alia:

- 1) **Default in Performance and Obligations:** if the contractor fails to deliver any or all of the Equipment(s) and services or fails to perform any other contractual obligations (including obligation to maintain eligibility and Qualifications based on which contract was awarded) within the period stipulated in the contract or within any extension thereof granted by the ERNET India.
- 2) **Insolvency:** If the contractor shall at any time, be adjudged insolvent or shall have a receiving order or order for the administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or enter into any assignment or composition with his creditors or suspend payment, or
- 3) **Liquidation:** if the contractor is a company being wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the Debenture-holders is appointed, or circumstances shall have arisen which entitle the Court or Debenture-holders to appoint a Receiver, Liquidator or Manager.

12.1.2 Notice for Default:

As soon as a breach of contract is noticed, 'Notice of Default' shall be issued to the contractor, giving two weeks' time to resolve the issues mentioned in the notice. Despite serving NFD, ERNET India would be having right to invoke contractual remedies to safeguard its interest.

12.1.3 Terminations for Default

- 1) **Notice for Termination for Default:** In the event of unsatisfactory resolution of 'Notice of Default' within two weeks of its issue as per sub-clause above, the ERNET India, if so decided, shall by written Notice of Termination for Default sent to the contractor, terminate the contract in whole or in part, without compensation to the contractor.
- 2) Such termination shall not prejudice or affect the rights and remedies, including under sub-clause below, which have accrued and/ or shall accrue to the ERNET India after that.
- 3) Unless otherwise instructed by the ERNET India, the contractor shall continue to perform the contract to the extent not terminated.
- 4) All warranty obligations, if any, shall continue to survive despite the termination.

12.1.4 Contractual Remedies for Breaches/Defaults or Termination for Default

If there is an unsatisfactory resolution of the issues raised in the 'Notice of Default' within the period specified in the notice, then ERNET India may take any one; or more of the following contractual remedies.

- 1) Temporary withhold payments due to the contractor till recoveries due to invocation of other contractual remedies are complete.
- 2) Recover liquidated damages for delays.

- 3) Encash and/ or Forfeit performance or other contractual securities.
- 4) Debar the contractor from participation in future procurements as follows:
- 5) ERNET India may debar the contractor or any of its successors from participating in any Tender Process undertaken by it for a period not exceeding two years commencing from the date of debarment. Terminate contract for default, fully or partially including its right for Risk-and-Cost Procurement as per following sub-clause.
- 6) **Risk and Cost Procurement:** In addition to termination for default, the ERNET India shall be entitled, and it shall be lawful on its part, to procure Equipment and services similar to those terminated, with such terms and conditions and in such manner as it deems fit at the "Risk and Cost" of the contractor. Such 'Risk and Cost Procurement' will be contracted within nine months from the breach of Contract. The Contractor shall be liable for any loss which the ERNET India may sustain on that account provided the procurement, or, if there is an agreement to procure, such agreement is made. The Contractor shall not be entitled to any gain on such procurement, and the manner and method of such procurement shall be in the entire discretion of the ERNET India. It shall not be necessary for the ERNET India to notify the contractor of such procurement. It shall, however, be at the discretion of the ERNET India to collect or not the security deposit from the firm/ firms on whom the contract is placed at the risk and cost of the defaulted firm.

Note: Regarding the Equipment which are not readily available in the market and where procurement difficulties are experienced, the period for making risk procurement shall be twelve months instead of nine months provided above.
- 7) Initiate proceedings in a court of law for the transgression of the law, tort, and loss, not addressable by the above means.

12.1.5 Limitation of Liability

Except in cases of criminal negligence or wilful misconduct, the aggregate liability of the contractor to the ERNET India, whether under the contract, in tort or otherwise, shall not exceed the total Contract value, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the contractor to indemnify the ERNET India concerning IPR infringement.

12.2 Termination for Default/ Convenience of ERNET India

12.2.1 Notice for Determination of Contract

- 1) The ERNET India reserves the right to terminate the contract, in whole or in part for its (the ERNET India's) convenience, by serving written 'Notice for Determination of Contract' on the contractor **by giving sixty (60) days prior notice** during the currency of the contract. The notice shall specify that the termination is for the convenience of the ERNET India of the contract. The notice shall also indicate inter-alia, the extent to which the contractor's performance under the contract is terminated, and the date with effect from which such termination shall become effective.
- 2) Such termination shall not prejudice or affect the rights and remedies accrued and/ or shall accrue after that to the Parties.
- 3) Unless otherwise instructed by the ERNET India, the contractor shall continue to perform the contract to the extent not terminated.

- 4) All warranty obligations, shall continue to survive despite the termination.

12.3 Closure of Contract

12.3.1 No Claim Certificate and Release of Contract Securities

After mutual reconciliations of outstanding payments and assets on either side, the contractor shall submit a 'No-claim certificate' to the ERNET India requesting the release of its contractual securities, if any. The ERNET India shall release the contractual securities without any interest if no outstanding obligation, asset, or payments are due from the contractor. The contractor shall not be entitled to make any claim whatsoever against the ERNET India under or arising out of this Contract, nor shall the ERNET India entertain or consider any such claim, if made by the contractor, after he shall have signed a "No Claim" Certificate in favour of the ERNET India. The Contractor shall be debarred from disputing the correctness of the items covered by the "No Claim" Certificate or demanding a clearance to arbitration in respect thereof.

12.3.2 Closure of Contract

The contract shall stand closed upon

- 1) Successful performance of all obligations by both parties, including completion of warranty obligations and final payment.
- 2) termination and settlements after that, if any, as per clause 12.1 or 12.2 above.

Section IV: Bill of Material

Note for Bidders: Regarding this Schedule, Bidders must fill Form 2: 'Bill of Material - Compliance' with their Technical bid.

PART-A							
Sl. No.	ITEM	Equipment Quantity at DC	Equipment Quantity at DR	Equipment Quantity at Remote	Equipment Quantity at New Delhi	Total Quantity	Unit of Measurement
1	Server Category-1	115	50	0	0	165	no.
2A	Server Category-2 with 60 HDD in Each Server Or Server Category-2 with 84 HDD in Each DAS	300	100	0	0	400	no.
2B		214	71	0	0	285	no.
3	Server Category-3	20	10	0	0	30	no.
4	Server Category-4	20	10	0	0	30	no.
5	Server Category-5	10	5	0	0	15	no.
6	Server Category-6	0	0	200	0	200	no.
7	Server Category-7	0	0	6	0	6	no.
8	Server Category-9	0	0	20	0	20	no.
9	Server Category-10	0	0	16	0	16	no.
10	Server Category-11	6	6	0	0	12	no.
11	Server Category-13	6	2	0	0	8	no.
12	Server Category-14	0	2	0	0	2	no.
13	Server Category-16	0	2	0	0	2	no.
14	DR Spine Switch	0	2	0	0	2	no.
15	DC Leaf Switch	140	0	0	0	140	no.
16	DR Leaf Switch	0	100	0	0	100	no.
17	DR OOB Core Switch	0	2	0	0	2	no.
18	DC OOB Access Switch	80	0	0	0	80	no.
19	DR OOB Access Switch	0	60	0	0	60	no.
20	DC OOB Core Switch	2	0	0	0	2	no.
21	DR CE Router / Internal WAN Router	0	2	0	0	2	no.
22	DR Border Leaf Switch	0	2	0	0	2	no.
23	DR Internet Router	0	2	0	0	2	no.
24	DR Interconnect Switch - Type 1	0	2	0	0	2	no.
25	DR Interconnect Switch - Type 2	0	2	0	0	2	no.
26	DR WAN Switch	0	2	0	0	2	no.
27	SFPTransceiver-10GBase-SR (For Networking	3900	3000	0	0	6900	no.

	Equipment) *						
28	SFP Transceiver -10GBase-LR (For Networking Equipment)*	60	50	0	0	110	no.
29	QSFP+28 Transceiver-100 GBase-SR4 (For Networking Equipment)*	600	550	0	0	1150	no.
30	QSFP+28 Transceiver-100GBase-LR4 (For Networking Equipment)*	5	5	0	0	10	no.
31	Remote Router/ Firewall – 2Gbps (In Remote Sites)	0	0	232	8	240	no.
32	Internet Firewall with IPS	0	2	0	0	2	no.
33	DR Internal Firewall	0	2	0	0	2	no.
34	DR Solution/Application Firewall	0	2	0	0	2	no.
35	AAA Appliance Server	0	2	0	0	2	no.
36	Load balancer	0	2	0	0	2	no.
37	Privileged Access Manager (in HA Mode)	2	0	0	0	2	no.
38	IPS/IDS	2	2	0	0	4	no.
39	SSL VPN Gateway	2	2	0	0	4	no.
40	Active Directory Solution	2	2	0	0	4	no.
41	Console management server	2	2	0	0	4	no.
42	KVM Console	40	20	0	1	61	no.
43	Portable KVM console adapter	5	5	0	5	15	no.
44	Monitoring and management tool for servers	1	1	0	0	2	no.
45	Fireproof Vault (200litre)	1	1	0	2	4	no.
46	Degausser	2	1	0	2	5	no.
47	Data Diode *	0	0	5	0	5	no.
48	Intelligent Cabling (includes all required accessories briefed in specs for 70 Racks in DC and The complete cabling infrastructure including interrack, cable length etc. will be the responsibility of bidder).	1	0	0	0	1	lot
49	Intelligent AIM system Monitor at Rack level (Networking and Server Racks) For monitoring of 70 Racks in DC.	1	0	0	0	1	lot
50	Intelligent AIM system Software for 10k or 15k Ports in DC (refer specs for details)	1	0	0	0	1	no.

51	Intelligent Cabling (includes all required accessories briefed in specs for 50 Racks in DR and the complete cabling infrastructure including interrack , cable length etc. will be the responsibility of bidder) – Specifications similar to s.no. 46	0	1	0	0	1	lot
52	Intelligent AIM System Monitor at Rack level (Networking and Server Racks) For monitoring of 50 Racks in DR . Specifications similar to s.no. 47	0	1	0	0	1	lot
53	Intelligent AIM system Software for 12k Ports in DR- Specifications similar to s.no. 48	0	1	0	0	1	no.
54	Smart Rack *	0	0	5	0	5	no.
55	Non Smart Rack with Redundant IPDU*	0	0	5	0	5	no.
56	65 Inch LED Display	1	1	0	0	2	no.
57	Heavy Duty Workstation	25	10	0	0	35	no.
58	Heavy Duty Mobile Workstation Laptop	10	10	0	10	30	no.
59	Heavy Duty Color Printer	1	1	0	2	4	no.
60	10G SFP SR of appropriate OEM server(s)	50	50			100	no.
61	10G SFP LR of appropriate OEM server(s)	20	20			40	no.
62	5% patch cords\$ (DC,DR & Remote)	5%	5%	5%		1	lot
63	Layer-3 Access Switch (48 Ports)	10	10	0	0	20	no.
64	Miscellaneous (Optical meter-5 qty., ethernet cable tester-5 qty., cramping tool-10 qty., console cable with USB to serial converter- 30qty, monitor trolley- 4 qty., USB 3.0 to ethernet converter-10 qty., Media Converter (Fiber to Copper 1G) 20 qty, Visual Fault Locator for Patch Cords 2 qty, Cat 6 Cable (Bundle) 06 qty)	1	1	0	0	2	lot
65	Any other Item						

* Items may increase or decrease as per site requirement assessed by Bidder.

\$ 5% refers to 5% of each type of patch cord supplied in the solution e.g. if 1000 number of 1m & 300 number of 3m patch cords are supplied in total with the solution, then 50 number of 1m and 15 number of 3 m patch cords are required to be supplied as a part of item number 62. The 5% patch cords of remote locations are required to be supplied at DC.

PART B					
S/N	Item	DC	DR	Total Qty	Unit of Measurement
1	Data Center Infrastructure Management (DCIM),				
	RF Id Based Physical Asset Tracking & Heat Humidity Sensor Solution				
1.a	Supply, Installation , Commissioning & Testing (SITC) of following:	1(in HA at DC & DR)	1(in HA at DC & DR)	2 (each instance to have local HA mode with hardware redundancy as per specs)	set
	i) DCIM,				
	ii) RF based Physical Asset Tracking Solution and				
	iii) Heat-Humidity Sensor Solution				
	with respective hardware (servers) in a High Availability mode & overall integration as per scope of work & technical specs.				
	Perpetual Licenses for above solutions for the below stated hardware:				
	Number of Racks at DC = 100				
	Number of Racks at DR = 50				
	Total IT active devices at DC = 1450 , Total IT active devices at DR = 350				

	* Note: SI must refer to scope of work & technical specs & accordingly provide one instance of solution at DR .				
1.b	RF Id based Physical Asset Tracking Tags with one on each IT Element (Network/servers) at DC & DR as per scope of work & technical specs.	1450	350	1800	nos.
1.c	RF Id Rack Identifiers as a part of Physical RF Id based Asset Tracking Solution at DC & DR .	100	50	150	nos.
1.d	RF Id Based Heat and Humidity Sensors for Racks at DC & DR as per scope of work & technical specs. Note: should include sensors tags for Phase-1 equipment(s) at DC as well.	300	150	450	nos.
1.e	1. Communication Gateways for Communication on RF with Asset and Heat-Humidity tags & on ethernet/WiFi with respective Software Solution at DC and DR (Based on number of Asset and Heat- Humidity sensors provided.)#	1 Set	1 Set	2	set
	2. Compatible Handheld scanner to read barcode / QR codes at DC & DR				
	3. Barcode Printer / QR codes with consumables(3Yrs Duration) at DC & DR				
2	EMS Solution (SITC of EMS (fault, performance , configuration , change , event ,traffic, asset, SLA management, IT helpdesk / service desk and IPAM functionality along with respective hardware (servers)) in High Availability mode & including the overall integration as per scope of work & technical specs.)	1(in HA at DC & DR)	1(in HA at DC & DR)	2 (each instance to have local HA mode with hardware redundancy as per specs)	set
	* Note: SI must refer to scope of work & technical specs & accordingly provide one instance of solution at DR .				

	Note : Solution must maintain historical data for 1 year, has an integrated syslog to acts as a sysLog aggregator.				
	For details refer tech specs and Scope of work.				
	Total IT Elements = 2800 , For 50 Concurrent Users				
	For monitoring of MPLS Link of 250 locations				
3	Additional EMS License Price for 50 IT devices			1	lot
4	Additional IT Helpdesk/EMS License for 5 concurrent users			1	lot
5	Additional DCIM User License price for 5 concurrent users.			1	lot
6	Additional DCIM License price for 5 Racks			1	lot

Part C	
S/N	Item
	Operation and Maintenance for DC, DR and Remote Sites
1	Operation and Maintenance (O&M) of DC along with deployment of 21 Technical Manpower at DC
2	Operation and Maintenance of DR along with deployment of 14 Technical Manpower at DR
3	Operation and Maintenance of 247 Remote Sites (O&M of 247 Remote sites in this tender includes 232 sites to be commissioined via this tender & 15 sites whose hardware is procured via CDAC bid i.e Phase I Stage 1)
4	Deployment of 2 Technical Manpower for Technical Support at Delhi

List of Cities amongst which Hardware needs to be delivered:

S/N	Sites	City		S/N	Sites	City
1	DC	Bangalore		23	Remote	Bangalore
2	DR	Mohali		24	Remote	Bhopal
3	Remote	Kollam		25	Remote	Bhubneshwar
4	Remote	New Delhi		26	Remote	Chandigarh
5	Remote	Mumbai		27	Remote	Chennai
6	Remote	Chennai		28	Remote	Noida
7	Remote	Bangalore		29	Remote	Hyderabad
8	Remote	Chennai		30	Remote	Jammu
9	Remote	Chennai		31	Remote	Lucknow
10	Remote	Ernakulam		32	Remote	Shillong
11	Remote	Kolkata		33	Remote	Srinagar
12	Remote	Mumbai		34	Remote	Jaipur
13	Remote	Mumbai		35	Remote	Kolkata-2
14	Remote	New Delhi		36	Remote	Noida
15	Remote	New Delhi		37	Remote	Chennai
16	Remote	Chennai		38	Remote	Mumbai
17	Remote	Mumbai		39	Remote	Varanasi
18	Remote	Chennai		40	Remote	Bangalore
19	Remote	Mumbai		41	Remote	Hyderabad
20	Remote	Agartala		42	Remote	Bhopal
21	Remote	Chandigarh		43	Remote	Kolkata
22	Remote	Pune		44	Remote	Lucknow

S/N	Sites	City		S/N	Sites	City
45	Remote	Ranchi		71	Remote	Bangalore
46	Remote	Pune		72	Remote	Bangalore
47	Remote	Jaipur		73	Remote	Bangalore
48	Remote	Mohali		74	Remote	Bangalore
49	Remote	Patna		75	Remote	Bangalore
50	Remote	Chennai		76	Remote	Bangalore
51	Remote	Cuddalore		77	Remote	Bangalore
52	Remote	Kohima		78	Remote	Bangalore
53	Remote	Kolkata		79	Remote	Bangalore
54	Remote	Kolkata		80	Remote	Bangalore
55	Remote	Lucknow		81	Remote	Bangalore
56	Remote	Mumbai		82	Remote	Bangalore
57	Remote	Mumbai		83	Remote	Bhopal
58	Remote	Navi Mumbai		84	Remote	Bhubaneswar
59	Remote	Pune		85	Remote	Bhubaneswar
60	Remote	Agartala		86	Remote	Chandigarh
61	Remote	Ahemdabad		87	Remote	Chennai
62	Remote	Aligarh		88	Remote	Chennai
63	Remote	Allahabad		89	Remote	Chennai
64	Remote	Bangalore		90	Remote	Chennai
65	Remote	Bangalore		91	Remote	Chennai
66	Remote	Bangalore		92	Remote	Chennai
67	Remote	Bangalore		93	Remote	Chennai
68	Remote	Bangalore		94	Remote	Chennai
69	Remote	Bangalore		95	Remote	Chennai
70	Remote	Bangalore		96	Remote	Chennai

S/N	Sites	City		S/N	Sites	City
97	Remote	Cochin		123	Remote	Hyderabad
98	Remote	Dehradun		124	Remote	Hyderabad
99	Remote	Dibrugarh		125	Remote	Imphal
100	Remote	Ernakulam		126	Remote	Imphal
101	Remote	Faridabad		127	Remote	Indore
102	Remote	Gandhinagar		128	Remote	Jaipur
103	Remote	Gangtok		129	Remote	Jaipur
104	Remote	Gurugram		130	Remote	Jaipur
105	Remote	Gurugram		131	Remote	JAMMU
106	Remote	Gurugram		132	Remote	Jamshedpur
107	Remote	Gurugram		133	Remote	Kazhakkootam
108	Remote	Gurugram		134	Remote	KOLKATA
109	Remote	Gurugram		135	Remote	Kolkata
110	Remote	Gurugram		136	Remote	Kolkata
111	Remote	Guwahati		137	Remote	Kolkata
112	Remote	Guwahati		138	Remote	Kolkata
113	Remote	Hosur		139	Remote	Purba Medinipur
114	Remote	Hyderabad		140	Remote	Kolkata
115	Remote	Hyderabad		141	Remote	Kolkata
116	Remote	Hyderabad		142	Remote	KORAPUT
117	Remote	Hyderabad		143	Remote	Lucknow
118	Remote	Hyderabad		144	Remote	Lucknow
119	Remote	Hyderabad		145	Remote	Mohali
120	Remote	Hyderabad		146	Remote	Mumbai
121	Remote	Hyderabad		147	Remote	Mumbai
122	Remote	Hyderabad		148	Remote	Mumbai

S/N	Sites	City		S/N	Sites	City
149	Remote	Mumbai		175	Remote	Vadodara
150	Remote	Mumbai		176	Remote	Mussoorie
151	Remote	Mumbai		177	Remote	Nagpur
152	Remote	Mumbai		178	Remote	Navi Mumbai
153	Remote	Mumbai		179	Remote	Navi Mumbai
154	Remote	Mumbai		180	Remote	Navi Mumbai
155	Remote	Mumbai		181	Remote	Navi Mumbai
156	Remote	Mumbai		182	Remote	Navi Mumbai
157	Remote	Mumbai		183	Remote	Navi Mumbai
158	Remote	Mumbai		184	Remote	Navi Mumbai
159	Remote	Mumbai		185	Remote	Navi Mumbai
160	Remote	Mumbai		186	Remote	Navi Mumbai
161	Remote	Mumbai		187	Remote	New Delhi
162	Remote	Mumbai		188	Remote	New Delhi
163	Remote	Mumbai		189	Remote	New Delhi
164	Remote	Mumbai		190	Remote	New Delhi
165	Remote	Mumbai		191	Remote	New Delhi
166	Remote	Mumbai		192	Remote	New Delhi
167	Remote	Mumbai		193	Remote	New Delhi
168	Remote	Mumbai		194	Remote	New Delhi
169	Remote	Mumbai		195	Remote	New Delhi
170	Remote	Mumbai		196	Remote	New Delhi
171	Remote	Mumbai		197	Remote	New Delhi
172	Remote	Mumbai		198	Remote	New Delhi
173	Remote	Mumbai		199	Remote	New Delhi
174	Remote	Mumbai		200	Remote	New Delhi

S/N	Sites	City		S/N	Sites	City
201	Remote	New Delhi		227	Remote	Pune
202	Remote	New Delhi		228	Remote	Pune
203	Remote	New Delhi		229	Remote	Pune
204	Remote	New Delhi		230	Remote	Pune
205	Remote	New Delhi		231	Remote	Pune
206	Remote	New Delhi		232	Remote	Pune
207	Remote	New Delhi		233	Remote	Raipur
208	Remote	New Delhi		234	Remote	Ranchi
209	Remote	New Delhi		235	Remote	Ranchi
210	Remote	New Delhi		236	Remote	Ranchi
211	Remote	New Delhi		237	Remote	Secunderabad
212	Remote	New Delhi		238	Remote	Shillong
213	Remote	New Delhi		239	Remote	Shillong
214	Remote	New Delhi		240	Remote	Shillong
215	Remote	New Delhi		241	Remote	Shimla
216	Remote	Nazira (Sivsagar)		242	Remote	Shimla
217	Remote	Noida		243	Remote	Tehri
218	Remote	Noida		244	Remote	Trivandrum
219	Remote	Noida		245	Remote	Tuticorin
220	Remote	Noida		246	Remote	Vasco-da-Gama
221	Remote	Noida		247	Remote	Visakhapatnam
222	Remote	Noida		248	Remote	Visakhapatnam
223	Remote	Noida		249	Remote	Visakhapatnam
224	Remote	Noida		250	Remote	Visakhapatnam
225	Remote	Panji				
226	Remote	Patna				

Section V: Technical Specifications

Technical Specification

1. Server (Category-1)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	Total 1 TB RAM, DDR4 2933+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity , Write Intensive, Read (1+ GB/s) Write(500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	12+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16		
Interface (NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		

HW Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 12 no:s of HDDs		
Power Supply	Redundant, maximum consumable 1200 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

2. Server (Category-2)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
	<u>2A (in case bidder quote server up to 5 U)</u>			
Physical dimension	<u>Up to 5U</u>			
Processor	2 Quantity (Dual Socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 18+ Cores (2.3+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 18+ cores (2.3+ GHz base frequency, Cache Size 128+ MB)			

Memory	Total 768 GB RAM, DDR4 2933+ MHz ECC REG DIMM (Buffered) (12 no:s x 64G OR 6 no:s x 128G)		
Boot Storage subsystem	<p>Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD</p> <p>Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD</p> <p>IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size</p>		
Storage	<p>Storage in up to 5U server : 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p>		
Interface (NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60 no:s of HDDs, where all available HDDs in the server should be configurable under a single virtual partition with RAID 5,6,50,60		
Power Supply	Redundant, maximum consumable 2100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		

	<u>2B OR (in case bidder quote server with single DAS)</u>		
Physical dimension	<u>Maximum up to 7U</u>		
Processor	2 Quantity (Dual Socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ Cores (2.1+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.1+ GHz base frequency, Cache Size 128+ MB)		
Memory	Total 1 TB RAM, DDR4 2933+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)		
Boot Storage subsystem	Boot Storage subsystem with Redundant HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	84 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) Note: Single DAS expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead. IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16		
Interface NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		

Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 84 no:s of HDDs		
Power Supply	Redundant, maximum consumable 3000 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

3. Server (Category-3)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	Memory: 16x 32GB or 8x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 512GB)		

Boot Storage subsystem	<p>Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD</p> <p>IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size</p>		
Storage	<p>4+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p>		
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 4+ no:s of HDDs		
Cache Drive Type	Enterprise NVMe drive for caching: Capacity: 3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power supply	Redundant, maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

4. Server (Category-4)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable			
Processor	One quantity Intel Xeon scalable series 2nd/3rd Gen or Latest Generation , 12+ core processor (2.9+ GHz base frequency, Cache Size(for 2nd Gen 24.75+ MB / for 3rd Gen 18 + MB) OR AMD EPYC 2nd/3rd Gen or Latest Generation EPYC , 12 core processor (2.9+ GHz base frequency, Cache Size 64 MB)			
Memory	8 no:s x 16GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 128GB)			
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size			
Storage	2 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16			
Interface (NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)			
Baseboard	* Baseboard management console with dedicated RJ45 interface , (IPMI)			

management			
HW Raid controller	* HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 2+ no:s of HDDs		
Cache Drive Type	* Enterprise NVMe drive for caching: Capacity: 3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power supply	Redundant, maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

5. Server (Category-5)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		

Processor	2 Quantity (Dual socket) x Intel Xeon scalable series 8 + core processor 2nd/3rd Gen or Latest Generation (3.1+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ For 3rd Gen 18 + MB)) OR 2 Quantity (Dual socket) x AMD EPYC 7252 or above 2nd/3rd Gen or Latest Generation EPYC, 8 core processor (3.1+ GHz base frequency, Cache Size 64+ MB)		
Memory	2 no:s x 16GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 32GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	2 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16		
Interface (NIC)	4x 1G, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers) , 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 2+ no:s of HDDs		
Power Supply	Redundant, maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		

	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

6. Server (Category-6)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	One Quantity Intel Xeon 8 core 2nd/3rd Gen or Latest Generation processor (2.7+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ for 3rd Gen 18 +MB)) OR 1 Quantity x AMD EPYC 2nd/3rd Gen or Latest Generation, 8 core processor (2.7+ GHz base frequency, Cache Size 32 MB)		
Memory	2 no:s x 8GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 16 GB)		
Boot Storage Sub System	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	2 x 8+ TB Enterprise Drives (Each HDD spec: SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16		

Interface (NIC)	2x 1G, copper + 2 x10 G Fiber SFP (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	RAID Support : System BIOS should support for RAID 0,1 (Software RAID or HW raid)		
Power Supply	Redundant, Maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
Feature Support	All the features mentioned above should be available from day one		

7. Server (Category-7)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum upto 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 18+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation Gen EPYC, 18+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	8 no:s x 32GB OR 4 no:s x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 256GB)		

Boot Storage subsystem	<p>Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD</p> <p>IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size</p>		
Storage	<p>16 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p>Note: Single DAS (upto 5U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.</p>		
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers),		
Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 16+ no:s of HDDs		
Power Supply	Redundant ,Maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		

	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

8. Server (Category-9)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	16 no:s x 32GB OR 8 no:s x 64GB DDR4 2933+MHz ECC REG DIMM (Buffered) (Total 512GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	* 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) Note: Single DAS (upto 5U)expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion		

	connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead. IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16		
Interface (NIC)	4x 1G Copper, 4x10G Fiber SFP+ (connectivity support for copper/fiber transceivers)		
Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60+ no:s of HDDs		
Power Supply	Redundant, Maximum consumable 2100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

9. Server (Category-10)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
Physical dimension	Up to 2U Rack Mountable			
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)			
Memory	32 no:s x 32GB or 16 no:s x 64GB or 8 no:s x 128GB DDR4 2933+MHz ECC REG DIMM (Buffered) (Total 1TB)			
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD /M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size			

Storage	<p>Storage in Server: 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p>Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead.</p>		
Interface (NIC)	NIC: 4x 1G Copper, 4x10G Fiber SFP+ (connectivity support for copper/fiber transceivers)		
Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60+ no:s of HDDs		
Power supply	Redundant, Maximum consumable 2100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

10. Server (Category-11)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable			
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation Epyc , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)			
Memory	8x 32GB OR 4x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 256GB)			
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size			
Storage	Storage: 8 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16			
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers)			
Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)			

Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 8+ no:s of HDDs		
Cache Drive Type	Enterprise NVMe drive for caching: Capacity: 3.2 TB, PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s, Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS, Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power Supply	Redundant, Maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
	10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Feature Support	All the features mentioned above should be available from day one		

11. Server (Category-13)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable			
Processor	Processor: 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)			
Memory	8x 64GB OR 4x128GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 512GB)			
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size			
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make), 2 no:s x dual 100G QSFP28 , PCIe 4.0 (NIC: Dual port 100G. Mellanox MCX516A-CDAT ConnectX-5 Ex / Intel E810-2CQDA2)			
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)			
Power Supply	Redundant, Maximum consumable 1200 W			
Accessories	Rails kit for rack mounting , power cables and server tag .			
General Features	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu			

for Server	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

12. Server (Category-14)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	1U/2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	8x 32GB OR 4x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 256GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		

Storage	4 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16		
Interface (NIC)	NIC: 4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers) , 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 2+ no:s of HDDs		
Cache Drive	* Enterprise NVMe drive for caching: Capacity:3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power Supply	* Redundant , Maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Servers	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

13. Server (Category-16)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 4U (6U DAS allowed) Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation , 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	16x 32GB or 8x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 512GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	12+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.		

Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers) , 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
GPU Card	2 x NVIDIA-A100 GPU cards with CUDA support		
Baseboard management	Offline Management: Baseboard management console = 1		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 12+ no:s of HDDs		
Cache Drive	Enterprise NVMe drive for caching: Capacity: 3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power Supply	Redundant , Maximum consumable 2100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

Note: + considered as or Higher, mentioned wherever in specifications of servers from S.N. 1 to 13

Management & Security Features for all the server mentioned from S.N. 1 to 13

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Management Features-1	Remoter power On/ Shutdown of server, Remote Management of Server over LAN & WAN with SSL encryption through gigabit management port,, Should have virtual Media support with all required licenses,, Remote KVM, Server Health Logging, Out of Band Management, Real-time Health logging and telemetry streaming, power management, storage management including raid configuration, virtual media access ,Secure component verification and alerting ,Secure management with configuration of https, LDAP/radius, NTP for time sync, SNMP,API based management support, along with support of Redfish, IPMI etc., HTML 5 based virtual console, Remote Firmware, bios, driver update, Dedicate Ethernet port, and OOB baseboard management controller , browser-based and command-line interface for managing and monitoring the server hardware. Support for managing pass phrase and key encryption. Support for managing pass phrase and key encryption key for the self-encrypting drive(SED). Support for secure Instant arrays of SEDs. All Hardware and Licenses for management features to be provided by bidder without additional cost.		
Security Features-1	Secure Boot (Firmware and Bios Level Security), , Hardware root of trust/Dual Root of Trust, Server should provide policy based security, Server should provide server intrusion detection,, "Malicious Code Free design" (to be certified by OEM).		

Security Features-2	Provision for Cryptographic firmware updates, Secure /Automatic BIOS recovery, Network Card secure firmware boot, in case of any security breach system should provide the lock down feature. Support for TPM 2.0		
General Note	Bidder shall supply required quantity of fiber patch chords (Single mode/ Multimode), patch chord as per site requirements. All accessories for successful installation in rack should be supplied by Bidder. Supplied equipment must be mountable on 19-inch rack. The device should have front to back airflow with efficient cooling mechanism. All the features mentioned above should be available from day one		

Networking Specifications of DC and DR

It may be noted that all the OEMs of Networking Devices should provide their respective Intent-Based Networking Software License.

14. DR Spine Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based		
No. of Interface Slots	8 or higher		
No. of MPU/SUP/RE/ Fabric Slots	2 or higher		
No. of Routing engines/ Supervisor Modules	2 or higher		
No. of FAN Tray	2 or higher		
Support for 100G QSFP28 Port	Yes		
Number of 100G QSFP28 Port	120 or higher (expandable up to 240 ports)		
Switching Capacity (Gbps)	48000 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL, 16K ACL Entries /extended ACL /terms/Traffic Policy ACL IP Prefixes ,GRE (Must Support 1000 or Higher GRE Tunnels & 1000 VXLAN Tunnels)		
c. Management Protocol	c. Role Based CLI,SNMPv1/v2/v3,Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		

d. QoS	d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP,8GB Buffer/equivalent per line card, 802.1Qbb,8 queues/port, WRR		
Management solution	Datacentre Fabric Management solution that supports unified management to fabric including spine and leaf switches with Zero Touch provisioning of all DC Fabric Nodes.		
	Fabric Management solutions should provide Advanced telemetry that can collect streaming telemetry data from switches and monitor and get alerts on data transfers across a fabric.		
	Management solution should support integrated and customizable visualizations for path analysis, heat maps and bandwidth visualization		
	Should support creation of Service Level Agreements in one central location and alert any time there is a deviation from defined properties.		
	Should have ability to check the compliance of devices and services across the entire fabric.		
	Hardware and software (Compute & Storage) required for Fabric Manager & Element Managers shall be provided from day 1		
Other Features	Should support 900K IPv4 Routes,900K IPv6 Routes,100K IPv4/v6 Multicast Routes.		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		
Redundant FAN	Redundant FAN for fully loaded chassis from day 1		
Feature Support	All the features mentioned above should be available from day one		

15. DC Leaf Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of SFP/ SFP+ Ports	Minimum 24 Nos		
Type of SFP Port	10G		
Support for 100GQ SFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	4 or higher		
Switching Capacity (Non-Blocking) (Gbps)	1280 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress&1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb,802.1Qaz,8q ueues/port, Remarking of bridged packets		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		
Redundant FAN	Redundant FAN for complete Chassis from day 1		
Feature Support	All the leaf switches (planned for DC & DR) should have license to integrate with Spine switch and Fabric Manager. All the features mentioned above should be available from day one		

16. DR Leaf Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of SFP/ SFP+ Ports	Minimum 24 Nos		
Type of SFP Port	10G		
Support for 100GQ SFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	4 or higher		
Switching Capacity (Non-Blocking) (Gbps)	1280 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress&1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb,802.1Qaz,8q ueues/port, Remarking of bridged packets		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		
Redundant FAN	Redundant FAN for complete Chassis from day 1		
Feature Support	All the leaf switches (planned for DC & DR) should have license to integrate with Spine switch and Fabric Manager. All the features mentioned above should be available from day one		

17. DR OOB Core Switch

Description	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of 10G SFP/SFP+ Ports	Minimum 48 Nos		
Type of SFP Port	10G		
Support for 100GQSFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	6 or higher		
Switching Capacity (Non-Blocking) (Gbps)	2160 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress & 1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Openstack,Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d.QoS	d. WRED,SPQ, SDWRR / WRR, 32MB Buffer,802.1Qbb, 802.1Qaz, 8queues /port, Remarking of bridged packets		
Stacking	Should be supplied on day 1 with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded from day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

18. DC OOB Access Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Number of 1000Base-T Ports	48 or higher		
Number of 10G SFP+ Port(Uplink)	4 or higher		
Number of 40GQSFP+ Port (Uplink)	2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers		
Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps)	336 or higher		
Number of VLAN Supported	512		
Layer2 Protocols	802.1QVLAN,LAG,LACP,STP,MSTP,RSTP,IEEE802.3x,VLAN		
Basic Layer-3 Protocol from day1	Static Routing, PBR		
Advance Layer-3Protocol support	OSPFv2,OSPFv3		
Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP		

Security Feature	RA Guard or equivalent, DHCP Snooping, Dynamic ARP Inspection(or similar security feature which validates ARP packets and prevents attacks such as MITM/(Control Plane Policing (CoPP), ARP cache poisoning or Similar		
Management Protocol	GUI/Web,CLI,Telnet,TFTP,SNMPv1,SNMPv2/V2C,SNMPv3,NTP, RMON,SSHv2, IP Based Management		
QoS	802.1p,SP,Queues per port, WRED /WTD, Sflow/Netflow, Shaping, Policing/Rate Limiting, Strict Priority Queueing or Low Latency Queueing		
Stacking	Should be supplied on day1with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

19. DR OOB Access Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Number of 1000Base-T Ports	48 or higher		
Number of 10G SFP+ Port(Uplink)	4 or higher		
Number of 40GQSFP+ Port (Uplink)	2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers		
Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps)	336 or higher		
Number of VLAN Supported	512		
Layer2 Protocols	802.1QVLAN,LAG,LACP,STP,MSTP,RSTP,IEEE802.3x,VLAN		
Basic Layer-3 Protocol from day1	Static Routing, PBR		
Advance Layer-3Protocol support	OSPFv2,OSPFv3		
Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP		
Security Feature	RA Guard or equivalent, DHCP Snooping, Dynamic ARP Inspection(or similar security feature which validates ARP packets and prevents attacks such as MITM/(Control Plane		

	Policing (CoPP), ARP cache poisoning or Similar		
Management Protocol	GUI/Web,CLI,Telnet,TFTP,SNMPv1,SNMPv2/V2C,SNMPv3,NTP, RMON,SSHv2, IP Based Management		
QoS	802.1p,SP,Queues per port, WRED /WTD, Sflow/Netflow, Shaping, Policing/Rate Limiting, Strict Priority Queueing or Low Latency Queueing		
Stacking	Should be supplied on day1with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

20. DC OOB Core Switch

Description	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of 10G SFP/SFP+ Ports	Minimum 96 Nos		
Type of SFP Port	10G		
Support for 100GQSFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	6 or higher		
Switching Capacity (Non-Blocking) (Gbps)	3120 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress & 1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Openstack,Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d.QoS	d. WRED,SPQ, SDWRR / WRR, 32MB Buffer,802.1Qbb, 802.1Qaz, 8queues /port, Remarking of bridged packets		
Stacking	Should be supplied on day 1 with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded from day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

21. DR CE Router/ Internal WAN Router

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Router	WAN		
Routing Engine	The Router should be populated with redundant Routing Card/Engines and/or should have multi processors		
Aggregated Throughput (Gbps)	2400 Or higher		
Port population	Should be supplied with 12 numbers of 100G QSFP28 ports with non-blocking architecture and wire-speed from day 1		
Number of Routes	Should support 1M IPv4, 450K IPv6 Routes		
Routing Protocols from day-1	OSPF ,BGP MPLS, EVPN-MPLS, Segment Routing, Multicasting-MVPN, MOFRR,RSVP-TE, LDP, BGP-LU-SR-TE		
Network Management Protocols	Role based cli, config rollback, python scripts, rest API, netconf, xml, schema, secure boot/signed image verification, secure copy		
IPsec Throughput (Mbps)	Any applicable numeric value		
Security Protocol	radius,802.1x,tacacs,stateless ACL ,dynamic ACL ,rule propagation via BGP, control plane dos,		

QoS	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS for Traffic Management, inspections.		
IPv6 Ready	IPv6:OSPF v3 and static routers ipv6 Routing IPv6 Multicast IPv6 QoS, IPv6 VPN over MPLS		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

22. DR Border Leaf Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type Of Core Switch	Chassis Based, Non-Chassis Based		
Support for 100G QSFP+ Port	Yes		
No. of Ports	Should have minimum 24Nos of 100G QSFP28 Ports		
Switching Capacity (Gbps)	4800 Or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		

b. Security Feature	b. Port, VLAN, ACL, Routed ACL		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3, Openstack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED, SPQ, SDWRR/WRR, 32MB Buffer, 802.1Qbb / 802.1Qaz, 8 queues / port, Remarking of bridged packets		
Other features	Switch should support all functions required to operate as a Border Leaf Switch providing DC Gateway, Service Chaining and Data centre Interconnect (DCI) using EVPN type-5 routes. Should support 850K IPv4 Routes, 450K IPv6 Routes, 64K Multicast Route		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	Switches should have license to integrate with Spine switch and Fabric Manager. All the features mentioned above should be available from day one		

23. DR Internet Router

Description	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Router	WAN		
No. of 10G SFP+ ports (Fiber /Copper)	8 Or higher		

Port population	Should be supplied on day 1 with 4 x 1000Base-LX Single Mode SFP transceivers, 4 x 10/100/1000Base-T Interface Ports and 4 x 10G Base SR Transceivers. Should be scalable to support additional 4 X 40G		
Switching Capacity (Non-Blocking) (Gbps)	256 or higher		
Number of Routes	Should support 1M IPv4, 450K IPv6 Routes		
Routing Protocols	OSPF, BGP, MPLS, EVPN-MPLS ,Segment Routing, Multicasting MVPN, MOFRR, RSVP-TE ,LDP, BGP-LU, SR-TE		
Network Management Protocols	Role based CLI, Config rollback, python scripts, rest API , Netconf, xml schema, secure boot/signed image verification, secure copy		
Security Protocol	secure boot/signed image verification, secure copy		
QOS	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS for Traffic Management, inspections.		
IPv6 Ready	IPv6:OSPFv3 and static routers IPv6 RoutingIPv6 Multicast IPv6QoS IPv6 VPN over MPLS		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

24. DR Interconnect Switch - Type 1

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based, Non-Chassis Based		
Support for 100G QSFP+ Port	Yes		
No. of Ports	Should have minimum 8 Nos of 10G and 12 Nos of 100G QSFP28 Ports		
Switching Capacity (Gbps)	2560 Or higher		
a. Layer 2 Protocols	a. VLAN, LAG, LACP, STP, MSTP, RSTP, IEEE 802.3x		
b. Basic & Advance Layer-3 Protocol	b. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed), OSPFv2, OSPFv3,PBR, BGP, BGP4 , IS-IS, PIM-SSM		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3, Open stack, Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ,SDWRR/ WRR, 32MB Buffer, 802.1Qbb, 8queues /port, Remarking of bridged packet		

Security Feature	VLAN & Routed ACL,1500 Ingress &1500 Egress ACL Entries, 802.1x , RADIUS/TACACS, Port Security / equivalent ,BPDU Guard, IGMP snooping		
Stacking	Should be supplied on day1with stacking/Inter-connect cable of 5 meter length		
Other features	Switch should support all functions required to operate as an interconnect switch connecting various devices including firewall and routers with an on-blocking fabric		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

25. DR Interconnect Switch - Type 2

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based, Non-Chassis Based		
Support for 10 SFP & 100G QSFP+ Port	Yes		
No. of Ports	Should have minimum 16Nos of 10G and 8 Nos 100G QSFP28 Ports		
Switching	1920 Or higher		

Capacity(Gbps)			
a. Layer 2 Protocols	a. 802.1Q VLAN, LAG, LACP, STP, MSTP, RSTP, VxLAN, IEEE 802.3x,VLAN		
b. Basic & Advance Layer-3 Protocol	b. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed), Static routing, RIPv1/RIPv2, BGP, OSPFv2, OSPFv3, PBR		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Openstack,Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ, SDWRR/ WRR,32MB Buffer, 802.1Qbb ,802.1Qaz, 8queues /port, Remarking of bridged packets		
Security Feature	VLAN & Routed ACL,1500 Ingress & 1500 Egress ACL Entries, 802.1x , RADIUS/TACACS, Port Security or equivalent ,BPDU Guard, IGMP snooping		
Stacking	Should be supplied on day1with stacking /Inter-connect cable of 5 meter length		
Other features	Switch should support all functions required to operate as an interconnect switch connecting various devices including firewall and routers with an on-blocking fabric		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

26. DR WAN Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based, Non-Chassis Based		
No. of FAN Tray	2 Or higher		
Support for 100G QSFP+ Port	Yes		
No. of Slots	Should be populated with 4x1GBase-LX, 4x1000 Base-T, 4x10G Base-LR and 4 x 10GBase-SR transceivers. Also should have minimum 12 Nos of 100G QSFP28 Ports and populated with 8 x 100G Transceivers (LR/SR will be decided as per TSP MUX)		
Switching Capacity (Gbps)	2568 Or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL, 1500 Ingress & 1 500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3, Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED, SPQ, SDWRR/ WRR, 32MB Buffer, 802.1Qbb, 802.1Qaz, 8 queues /port, Remarking of bridged packets		
Other features	Switch should support all functions required to operate as a WAN Switch acting as interface between Service Provider Links and WAN Router		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		

Redundant FAN	Redundant FAN for fully loaded chassis from day 1		
Feature Support	All the features mentioned above should be available from day one		

27. SFPTransceiver-10GBase-SR (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-SRTransceivers		
SFP Mode	Multi		
Compatibility with OEMs Products	All		
Fibre Cable Type	MMF		
Maximum Data Rate	10 Gbps		

28. SFP Transceiver -10GBase-LR (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-LR Transceivers		
SFP Mode	Single		
Compatibility with OEMs Products	All		
Fibre Cable Type	SMF		

Maximum Data Rate	10 Gbps		
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29. QSFP+28 Transceiver-100 GBase-SR4 (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	QSFP 28 - 100GBase-SRTransceivers		
SFP Mode	Multi		
Compatibility with OEMs Products	All		
Fibre Cable Type	MMF		
Maximum Data Rate	100 Gbps		

30. QSFP+28 Transceiver-100GBase-LR4 (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	QSFP 28 -100 GBase-LR4 Transceivers		
SFP Mode	Single		
Compatibility with OEMs Products	All		
Fibre Cable Type	SMF		
Maximum Data Rate	100Gbps		

31. Remote Router/ Firewall – 2Gbps (In Remote Sites) Option I

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Router	WAN		
Port population	Should be supplied on day 1 with 12 x Gigabit Ethernet (10/100/1000 Base T) ports, 2 X 1000Base-LX Single Mode SFP transceivers and 2x 10G Base SR Transceivers . All mentioned SFP should be populated from day one (1).		
RoutingProtocols from day-1	ospf,bgp,mpls,rsvp,ldp,l3vpn,l2vpn,mpls-te		
Network Management Protocols	Role based CLI, Web-UI, Config roll back, Python Scripts, Rest-API, ZTP, TWAMP		
IPsec Throughput	2Gbps (Packet size:1400bytes)		
IPsec Encryption	site-to-site, hub and spoke, advpn/static vpn or equivalent, aes-gcm, sha- 384 or hmac-sha-256 IPSEC encryption		
Security Protocol	Stateful firewall, distributed dos, ipv6, nat, 802.1x		
QOS:	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS/8 queues per port for Traffic Management, inspections, QoS classification with TCP Application traffic.		
IPv6Ready	IPv6:OSPFv3 and static router ipv6 Routing IPv6 Multicast IPv6 QoS IPv6 VPN over MPLS/ GRE		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant/Multiple FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

Or

Remote Router/ Firewall – 2Gbps (In Remote Sites) (with Router and Firewall Separately) - Option II

31. Remote Router/ Firewall – 2Gbps (In Remote Sites) - Option II			
Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Remote Router (In Remote Sites)			
Type of Router	WAN		
Router Port population	Should be supplied on day 1 with 12 x Gigabit Ethernet (10/100/1000 Base T) ports, 2 X 1000Base-LX Single Mode SFP transceivers and 2 x 10G Base SR Transceivers. All mentioned SFP should be populated from day one (1).		
Routing Protocol sfromday-1	ospf,bgp,mpls,rsvp,ldp,l3vpn,l2vpn,mpls-te		
Network Management Protocols	Role based CLI, Web-UI, Config roll back, Python Scripts, Rest-API, ZTP, TWAMP		
QoS:	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS/8 queues per port for Traffic Management, inspections, QoS classification with TCP Application traffic.		
IPv6Ready	<u>IPv6:OSPFv3and static router ipv6 Routing IPv6 Multicast IPv6 QoS IPv6 VPN over MPLS/ GRE</u>		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		

Redundant FAN	Redundant/Multiple FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		
Remote Firewall (In Remote Sites)			
IPsec Throughput	2 Gbps		
IPsec Encryption	site-to-site, hub and spoke, advpn/static vpn or equivalent, aes-gcm, sha- 384 or hmac-sha-256, IPSEC encryption		
Security Protocol	Stateful firewall, distributed dos, ipv6 , nat, 802.1x		
Firewall Throughput	2 Gbps Gbps or higher		
Firewall Port population	Should be supplied on day 1 with 4 x Gigabit Ethernet ports, 2 X SFP+ port (10G) with transceivers		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant/Multiple FAN fully loaded from day 1		

Note:

Bidder may offer Router & Firewall from same OEM as separate device subject to meeting the mentioned specification and solution requirement as mentioned in the clause.

32. Internet Firewall with IPS

S. No.	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Hardware Architecture		

1.1	The appliance-based security platform should be capable of providing firewall, application visibility, and IPS functionality in a single appliance		
1.2	Firewall appliance should be supplied with at least 8 x 1GE RJ-45 interfaces and 8 x 10G SFP+ SR interfaces slot, 4x 100GE QSFP28/40GE QSFP slot. (8x10G SFP+ SR and 4x100G QSFP28 SR transceiver included from day one)		
1.3	The appliance hardware should be a multicore CPU architecture with a hardened 64-bit operating system		
1.4	Firewall / IPsec should be CC/NDPP/ICSA Lab/SE Lab certified		
1.5	All the features asked should support from day one and should be from same OEM. Any open source and third party solution is not accepted		
2	Performance & Scalability		
2.1	Firewall should support at least 100 Gbps of throughput on 64 byte packets or NGFW throughput of atleast 60Gbps on 64 KB HTTP/appmix . The firewall performance should not degrade while IPv6 is enabled in future		
2.2	Should support at least 15 Gbps of Mix / production performance with firewall, IPS, AVC & Anti-malware combined		
2.3	Firewall should support at least 20 Million or higher Layer 4 concurrent sessions , scalable to 30 Million or higher Layer 4 sessions and/or at least 7.0 million or higher layer 7 concurrent sessions		
2.4	Firewall should support at least 1 Million sessions per second or higher, scalable to 2 Million layer 4 new sessions per second or higher and/or at least 3,00,000 new Layer 7 sessions per second or higher		
2.5	Firewall should support at least 1000 VLANs		
2.6	Firewall should support at least 50 Gbps of IPSEC VPN throughput and/or at least 40Gbps of IPSEC VPN throughput considering 64 KB HTTP transaction size		
3	Firewall Features		
3.1	Firewall should provide application detection for DNS, FTP, HTTP, SMTP,ESMTP, LDAP, MGCP, RTSP, SIP, SCCP, SQLNET, TFTP, H.323, SNMP		
3.2	Firewall should support creating access rules with IPv4 & IPv6 objects simultaneously		

3.3	Firewall should support operating in routed & transparent mode. Both modes can also be available concurrently using Virtual Contexts. Minimum 10 virtual firewall license to be provided from day 1		
3.4	Should support Static, RIP, OSPF, OSPFv3 and BGP		
3.5	Firewall should support manual NAT and Auto-NAT, static nat, dynamic nat, dynamic pa		
3.6	Firewall should support Nat66 (IPv6-to-IPv6), Nat 64 (IPv6-to-IPv4) or Nat46 (IPv4- to-IPv6) functionality		
3.7	Firewall solution should support DNS64 & DHCPv6		
3.8	Firewall should support Multicast protocols like IGMP, PIM, etc.		
3.9	Should support security policies based on group names in source or destination fields or both		
3.10	Should support capability to limit bandwidth on basis of apps/groups, Networks / Geo, Ports, etc.		
4	High-Availability Features		
4.1	Firewall should support Active/Standby and Active/Active failover		
4.2	Firewall should support ether channel or equivalent functionality for the failover control and providing additional level of redundancy		
4.3	Firewall should support redundant interfaces to provide interface level redundancy before device failover		
4.4	Firewall should support 802.3ad Ether channel or equivalent functionality to increase the bandwidth for a segment.		
4.5	Firewall should have integrated redundant power supply / redundant hot swappable power supply		
5	Next Generation IPS		
5.1	Should have the capability to inspect SSL traffic. The SSL inspection throughput(IPS ,HTTPS etc.) should not be less than 12 Gbps		
5.2	Should be capable of tuning IDS/IPS sensors (e.g., selecting rules, configuring policies, updating policies, etc.) with minimal human intervention.		
5.3	Should be capable of automatically providing the appropriate inspections and protections for traffic sent over non-standard communications ports.		

5.4	Should be able to link Active Directory and/or LDAP usernames to IP addresses related to suspected security events.		
5.5	Should be capable of detecting and blocking IPv6 attacks.		
5.6	Should support more than 10,000 IPS and 3000 application layer and risk-based controls that can invoke tailored intrusion prevention system (IPS) threat detection policies to optimize security effectiveness.		
5.7	The Appliance OEM must have its own threat intelligence analysis center and should use the global footprint of security deployments for more comprehensive network protection.		
5.8	The detection engine should support capability of detecting and preventing a wide variety of threats (e.g., malware, network probes/reconnaissance, VoIP attacks, buffer overflows, P2P attacks, etc.).		
5.9	Should be able to identify attacks based on Geo-location and define policy to block on the basis of Geo-location		
5.10	The detection engine must incorporate multiple approaches for detecting threats, including at a minimum exploit-based signatures, vulnerability-based rules, protocol anomaly detection, and behavioural anomaly detection techniques.		
6	Antivirus		
6.1	Firewall should have integrated Antivirus solution if not please quote separate appliance		
6.2	The proposed system should be able to block, allow or monitor only using AV signatures and file blocking based on per firewall policy based or based on firewall authenticated user groups with configurable selection of the following services:		
6.3	a) HTTP, HTTPS		
6.4	b) SMTP, SMTPS		
6.5	c) POP3, POP3S		
6.6	d) IMAP, IMAPS		
6.7	e) FTP, FTPS		
6.8	The proposed system should be able to block or allow oversize file based on configurable thresholds for each protocol types and per firewall policy.		
8	Management		

8.1	The management must be accessible via a web-based interface and ideally with no need for additional client software`		
8.3	The management solution must provide a highly customizable dashboard.		
8.4	The management solution must be capable of role-based administration		
9	Reporting		
9.1	Following are the minimum technical requirements for the appliance/Virtual appliance used for log management:		
9.2	support 8 TB of storage for log storage		
9.3	The solution shall provide a unified dashboard to monitor the real-time events/ logs of all managed devices.		
9.4	The solution shall allow monitoring of activities such as the resources, applications, and services accessed in the network.		
9.5	The solution shall allow filtering of logs based on various parameters like user, source & destination IP address, source & destination ports, services etc.		
9.6	The solution shall allow generation of reports with following information : Application Traffic Intrusions and attacks observed Top Source and destinations Top Applications Traffic statistics.		
9.7	Should support multiple Report format like PDF, HTML, CSV or XML		
9.8	Should support Run reports on-demand or on a schedule with automated email notifications, uploads and an easy to manage calendar view.		

33. DR Internal Firewall

Description	Specification	Marked/ Highlighted Cross Reference of Specification with	Compliance
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		reference page no.	(Yes/No)
Type	NGFW Or higher		
Features	Layer 3-Layer 4,NAT, Next Generation Intrusion Prevention System (IPS)		
Traffic handled	TCP,UDP,HTTP/TCP,TCP/UDP		
Throughput (Real World/Prod Performance) (All Features enabled)(Gbps)	234 Gbps or higher		
Concurrent Session/Concurrent Connection	55 Million Layer 4 sessions or 25 Million Layer 7 sessions		
New session/Connection per second	Minimum 500K Layer 4 sessions or Minimum 200K Layer 7 sessions		
IPsec Throughput (Gbps)	150 Gbps (Packet size:1400Bytes) or Higher		
Port population	Should be supplied on day1 with 8x10GBase-SR Transceivers and 12 x100G Base-SR4 Transceivers		
Power Supplies	Dual Or higher		
Details of the Firewall Policies for the Firewall provided with the License	Application Visibility License, IPS License		
Tunnels	IPSEC VPN (Site to site), Hub and Spoke		
Internet Key Exchange	IKEv1, IKEv2		
Security mechanism	State full signatures, protocol anomaly detection		
NG IPS Signature supported	5000 or Higher		

Number of IPsec VPN Peers Supported (Site to Site)	10000 Or higher. Licenses to be included from day one		
Certification	Common Criteria/Indian Common Criteria Certification Scheme(IC3S)		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		
Redundant FAN	Redundant FAN for fully loaded chassis from day 1		
Feature Support	All the features asked should be available from day one and should be from same OEM. Any open source and third party solution is not accepted		

34. DR Solution/Application Firewall

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type	NG FW Or higher		
Features	Layer3-Layer4,NAT,ApplicationVisibility and Control(AVC),Next Generation Intrusion Prevention System (IPS)		
Traffic handled	TCP,UDP,HTTP/TCP		
Packet Size	1024 Bytes or 64KB HTTP/application-mix		
Throughput (Real World/Prod Performance) (All Features enabled)(Gbps)	Throughput (Real World/Prod Performance) (All Features enabled)(Gbps) : 60 Gbps on 64KB or 50 Gbps with 64KB HTTP		
IPsec Throughput	Minimum 50 Gbps on 64KB or 40 Gbps with 64KB HTTP		

Concurrent Session/Concurrent Connection	Minimum 40 Million Layer 4 sessions or minimum 20 Million Layer 7 sessions		
New session/Connection per second	Minimum 380K Layer 4 sessions or minimum 200K Layer 7 sessions		
Type of Interface Supported Multi-select	GE Copper, 10GSFP+, QSFP+40G, GESFF, QSFP28 100G		
Port Population	The Firewall should have minimum 12 X 10GSFP+, 4X40G /100G QSFP 28. All the ports shall be fully Populated with respective Transceivers		
Details of the Firewall Policies for the Firewall provided with the License	Application Visibility License, IPS License		
Tunnels	IPSEC VPN (Site to site), Hub and Spoke		
Internet Key Exchange	IKEv1, IKEv2		
Security mechanism	State-full signatures, protocol anomaly detection		
Number of IPsec VPN Peers	5000 Or higher. Licenses to be included from day one		
Supported (Site to Site)	Internal Redundant Power Supply for fully loaded chassis from day 1		
NG IPS Signature supported	5000 or higher		
Certification	Common Criteria/Indian Common Criteria Certification Scheme(IC3S)		

35. AAA (Authentication, authorization, and accounting) Appliance Server

S/N	AAA Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	The AAA solution should be available as a hardware based appliance		
2	The solution must have both Radius and TACACS+ server as a built-in capability and should not have dependency on external server for AAA.		
3	AAA license should be provided to support 5000 devices from day 1 for network device administration using RADIUS and TACACS+ and scalable up to 10000 devices		
4	Solution must be provided in High Availability mode to support Active-Passive deployment.		
5	The solution should be deployed in out-of-band mode. The AAA solution should be integrated with proposed EMS to support overall required functionality .		
6	The proposed solution must provide ND (Next Day) RMA support.		
7	The proposed solution / OEM must have Hindi and English speaking L0 / L1 / L2 / L3 technical support centres in India		
8	The OEM should have local in country RMA depo.		
9	The OEM must have their R&D center developing NAC software.		
10	AAA Server should provide authentication services to all the users connecting to the network and network infrastructure devices.		
11	AAA Server should support standard Radius for Authentication, Authorization and Accounting.		
12	AAA Solution should also support TACACS+ to simplify device administration and enhance security through flexible, granular control of access to network devices, auditing of commands executed on NEs.		
13	TACACS+ device administration should support: i. Role-based access control ii. Per Command level authorization with detailed logs for auditing iii. Logging of commands executed in each user session & its availability for audit purposes and Logs should be available as per user defined period a max upto 1 year.		

14	The solution should be able to create TACACS+ authorization policy for device administrator containing specific lists of commands a device admin can execute. Command sets should support; exact match, case sensitive, ? (any character), * (matches any), etc and support stacking as well		
15	The proposed AAA solution must be capable of supporting 802.1X authentication and shall work with endpoint device native OS supplicant and network devices (authenticator) that are enabled for IEEE 802.1X authentication.		
16	Solution should support MAB address based authentication for unmanaged endpoints like IP phone, IP Camera, Printer, IoT.		
17	It should support Authentication by validating any user's login credentials against a central security database to ensure that only individuals with valid credentials will be granted network access		
18	The proposed solution should be able to integrate with industry leading Directory server like but not limited to LDAP server and Microsoft Active Directory		
19	The AAA server should support the following authentication protocols EAP-PEAP EAP-TLS EAP-MD5 PAP CHAP MS-CHAP and MS-CHAPv2		
20	Device command set authorization Network access restrictions and administrative access reporting. Restrictions such as time of day, day of week and session time limits. User and device group profiles. Should have a Web-based user interface to simplify and distribute configuration for user group profiles		
21	The AAA Server should be able to support large networked environments and support for redundant servers, remote databases, and user database backup services. Lightweight Directory Access Protocol (LDAP) authentication forwarding support for authentication of user profiles stored in directories from leading vendors		
22	Different access levels for each AAA Server administrator- and the ability to group network devices- enable easier control and maximum flexibility to facilitate enforcement and changes of security policy administration over all the devices in a		

	networks		
23	The AAA server should support Time Based Access		
24	The solution should be vendor agnostic and based on open standard		
25	The AAA server should support Location and device-based profiles for groups		
26	The AAA server should support Account lockout or account blacklisting		
27	The proposed AAA solution should have a built-in Profiler for network device visibility. Solution should be able to detect both new and existing endpoints and categorizes them based upon the type of endpoint (Ex: Windows, Printer, Network Device, IP Camera, Android, iPad, etc)		
28	The proposed AAA solution must support network-based profiling by targeting specific endpoints (based on policy) for specific attribute device scans, resulting in higher accuracy and comprehensive visibility of what is on your network		
29	The proposed AAA solution should provide support for discovery, profiling, policy-based placement, and monitoring of endpoint devices on the network all within the same appliance		
30	The proposed AAA solution must support Profiling via Active and Passive collectors like DHCP, SNMP, HCP fingerprinting/API, HTTP-agent, NMAP, WMI, TCPIP, SMB, etc.		
31	The proposed AAA solution must provide active scanning via WMI, SSH, LDAP, SNMP and MDM Collector.		
32	The proposed AAA solution must provide flexible filtering capabilities to sort out device information based on different attributes (e.g MAC address, Manufacturer name, hostname, IP address, etc.)		
33	The proposed AAA solution should produce a real-time endpoint discovery with detailed information including which switch port the device is connected.		
34	The proposed AAA solution must provide device inventory in CSV, Tab Delimiter and PDF exportable format.		
35	The proposed AAA solution must provide capability to import device inventory via CSV and binary file.		
36	The proposed AAA solution must provide information on how many devices are not profiled, how many devices are newly seen in day/week/month, etc.		

Feature Support	All the features asked should be available from day one and should be from same OEM. Any open source and third party solution is not accepted		
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36. Load balancer

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
General Specifications	All the features asked should be available from day one		
	Must support high availability		
	Must support SNMP for polling of system statistics		
	Must support SNMP Traps for key system thresholds (specify)		
	Must display a visual representation of authentication in the GUI and Local authentication should be supported		
	Must log all authentication(Radius/ Tacacs+ events): Locally and Via syslog		
	Must support backup of the full system configuration via the GUI		
	Must support automated backup of configuration to an external location		
	Must support a local user database		
	Must have built-in tcp dump-like tool and log collecting functionality		
	Must support REST API for integration with 3rd party management and monitoring		
	Must provide detailed logs and graphs for real time and time based statistics		
	Must support multiple configuration files with at least 2 bootable partitions for better availability and easy upgrade / fallback		
	Must support led warning and system log alert for failure of any of the power and CPU issues		
	The solution should support minimum 12/10 Gbps L4/L7 Throughput		

	The solution should support 5 Gbps SSL Bulk Encryption Throughput		
	The solution should support 15 K SSL transactions per second		
	The Appliance must support minimum 4*10/100/1000 Mbps ports, two SFP Slots and 2 * 10G SFP+ slots		
	The solution must be appliance based, rack mountable and it should be having internal redundant Power Supply from day one		
	The proposed solution should support Virtualization. Should be licensed for minimum 15 Virtual System/Virtual Domains from day one		
Load Balancing requirements	The appliance Must support layer 2 to layer 7 load balancing		
	The appliance Must support server load balancing methods		
	Must support one arm, reverse and transparent proxy mode deployment scenarios		
	Must maintain server persistency		
	Must provide application & server health checks for well-known protocols		
	Must support layer4 and layer 7 load balancing for well-known protocols		
	Must support graceful shut down of real services		
	Must support content routing		
	Must support scripting		
Link Load Balancing requirements	Must support outbound Link Load Balancing		
	Must support outbound multi-homing Link Load Balancing		
Global Server Load Balancing requirements	Must support load balancing of servers between different data centres		
	Must support dynamic proximity		
	Must support inbound Link Load Balancing		
	Must support global server load balancing functionality		
	High Availability Requirements		
	Must provide comprehensive and reliable support for high availability and N+1 clustering based on Statefull session failover with Active-active & active standby unit redundancy mode.		
	Must support communication link for real-time configuration		

	synchronization		
	Must support floating IP address and group for Statefull failover support		
	Must support built in failover decision/health check conditions		
	Must support configuration synchronization at boot time and during run time to keep consistence configuration on both units.		
SSL Offloading Requirements	Must provide secure online application delivery using hardware based high performance SSL acceleration		
	Must support certificate formats		
	Must support Certificate/Private Key backup/restore to/from local disk or remote TFTP server, and through Web UI		
	Must support self-generated CSR (Certificate Signing Request), self-signed Certificate and private key for specified host.		
	Must support HTTP to HTTPS header rewrite for enhanced application delivery support		
	Must have end to end SSL support to act as a SSL Server and/or as SSL Client		
	Must support client certificate verification, CRL's (HTTP, FTP, LDAP) and OSCP protocol		
	Must support Elliptic Curve Diffie-Helman ciphers		
	Must support TLS SNI extension		
	Must support all SSL/TLS versions including TLS1.3		
	Must support SSL Forward Proxy		
Security and Application Acceleration	Must provide performance optimization using TCP connection multiplexing, TCP buffering		
	Must support IEEE 802.3ad link aggregation		
	Must provide real time Dynamic Web Content Compression to reduce server load.		
	Must provide selective compression for Text, HTML, XML, Java Scripts Mime types and pictures		
	Must provide Advanced high performance memory/packet based Web cache		
	Must provide support for customized cache rules including max object size, TTL objects, refresh time interval etc		

	Must provide detailed cache access statistics based on ip or http hosts		
	Must have security SYN flood protection		
	Must have the capability of Rate shaping & QoS Support		
	Must support Web Application Firewall		
	Must support HTTP authentication		
	Must support IP reputation		
	Must support Geo-IP security for DDoS mitigation		
	Must support policy-based Connection limiting		

37. Privileged Access Manager

Privileged Access Manager (2 instances i.e. 1 in DC and 1 in DR; each instance to have local HA mode with hardware redundancy as per specs)	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
A)The Solution Should be On-Premise and hardware-based appliance and configurable in HA mode.		
B)Authentication Models		
· There should be a Generic Target System Connectors to enable one to uses this connector for non-standard devices etc.		
· The solution should be agentless i.e. does not require to install any agent on target devices		
· The solution should support transparent connection to the target device, without seeing the password or typing it in as part of the connection		
· The solution should support direct connections to windows, ssh, databases and other managed devices without having to use a jump server.		
· The solution should have an inbuilt multi factor authentication for soft token, mobile OTP, USB token, RADIUS etc. Also it should have an inbuilt authentication for Bio-Metrics without having to acquire another biometric authentication server		
· The solution should be able to integrate with enterprise authentication methods e.g. multiple 3rd party authentication methods including LDAP, RADIUS and a built-in authentication mechanism		
· The solution should also provide local authentication and all the security features as per best standards.		
· The solution should provide flexibility user/device wise for local authentication or enterprise authentication		
· The solution should support an application integration framework for web based as well as .exe based applications. There should be strong out of the box support including ease of integration with any third party connectors.		
· The solution should provide multi-domain feature whereby the entire operations can be carried out within a tenant or line of business.		
· The solution can restrict end-user entitlements to target accounts by location; that is, allow access only from a specified PC or range or class of PCs		

<ul style="list-style-type: none"> • The solution should be able to handle multi-location architecture or distributed architecture with seamless integration at the User Level. For example: Multiple data center may have multiple secondary installations but the primary installation will also simultaneously work for all users and all locations 		
Password Management		
<ul style="list-style-type: none"> • The solution shall perform password change options which is parameter driven 		
<ul style="list-style-type: none"> • The solution should set password options every x days, months, years and compliance options via the use of a policy 		
<ul style="list-style-type: none"> • Ability to create exception policies for selected systems, applications and devices 		
<ul style="list-style-type: none"> • The solution should enable an administrator to define different password formation rules for target accounts on different target systems and supports the full character set that can be used for passwords on each target system. 		
<ul style="list-style-type: none"> • The solution enables an administrator to change a target account password to a random value based on a manual trigger or automatic schedule. 		
<ul style="list-style-type: none"> • Allow single baseline policy across all systems, applications and devices (e.g. one single update to enforce baseline policy 		
<ul style="list-style-type: none"> • The solution should support changing a password or group of passwords according to a policy (time based or 'on-demand') 		
<ul style="list-style-type: none"> • Ability to generate 'One-time' passwords as an optional workflow 		
<ul style="list-style-type: none"> • Ability to send notifications via email or other delivery methods triggered by any type of activity 		
<ul style="list-style-type: none"> • Ability to send notification via email to the user requesting the password that checkout is complete 		
<ul style="list-style-type: none"> • Flexibility that allows exclusivity for password retrieval or multiple users checking out the same password for the same device in the same time period 		
<ul style="list-style-type: none"> • All locally stored target-account passwords should encrypted using AES or similar encryption with at least 256 bit keys 		
<ul style="list-style-type: none"> • The solution should automatically reconcile passwords that are detected 'out of sync' or lost without using external restore utilities 		
<ul style="list-style-type: none"> • The solution should have the ability to reconcile passwords manually, upon demand 		
<ul style="list-style-type: none"> • The solution should automatically verify , notify and report all passwords which are not in sync with PIM 		
<ul style="list-style-type: none"> • The solution should have the ability to automatically "checkout" after a specific time and "check-in" within a specified time 		

• The solution should set unique random value anytime a password is changed. The password generated should be strong and should not generate a similar value for a long iteration.		
• The tool allows secure printing of passwords in Pin Mailers. Lifecycle of printing and labelling of envelopes should be part of the module (or) Any other offline way to securely login to system such as USB authentication key/ Smartcard etc.		
• The solution should be able to control re-prints with adequate authorization		
• Secured Vault platform - main password storage repository should be highly secured (built-in firewall, hardened machine, limited and controlled remote access etc.)		
• The proposed solution should restrict the solution administrators from accessing or viewing passwords or approve password requests.		
Access Management		
• The solution should be able to restrict usage of critical commands over a SSH based console based on any combination of target account, group or target system and end user		
• The solution should restrict privileged activities on a windows server (e.g. host to host jumps, cmd/telnet access, application access, tab restrictions) from session initiated with PIM		
• The solution should be able to restrict usage of critical commands on command line through SSH clients on any combination of target account, group or target system and end user.		
• The solution should be able to restrict usage of critical commands on tables for database access through SSH, SQL+ (client/), front-end database utilities on any combination of target account, group or target system and end-user		
• The solution should provide for inbuilt database management utility to enable granular control on database access for Sql, my Sql, DB2, Oracle etc.		
• The solution enables an administrator to restrict a group of commands using a library and define custom commands for any combination of target account, group or target system and end user		
• The solution should provide secure mechanism for blacklisting/whitelisting of commands for any combination of target account, group or target system and end user		
• The solution can restrict user-specific entitlements of administrators individually or by group or role		
• The solution should have workflow control built-in for critical administrative functions over SSH including databases (example user creation, password change etc.) and should be able to request for approval on the fly for those commands which are critical.		
• The solution can restrict target-account specific entitlements of end users individually or by group or		

role.		
• The solution can restrict end-user entitlements to target accounts through a workflow by days and times of day including critical command that can be fired.		
• The solution should provide for a script manager to help in access controlling scripts and allow to run the scripts on multiple devices at the same time.		
• System should be able to define critical commands for alerting & monitoring purpose and also ensure user confirmation (YES or NO) for critical commands over SSH		
Privileged Session Management and Log Management		
• The solution should be able to support an session recording on any session initiated via PIM solution including servers, network devices, databases and virtualized environments		
• The solution should be able to log commands for all commands fired over SSH Session and for database access through ssh, sql+		
• The solution should be able to log/search text commands for all sessions of database even through the third party utilities		
• The solution should be able to log/search based on text commands for all sessions		
• The solutions should support option for enabling session based recording for all sessions on any combination of target account, group or target system and end-user.		
• All logs created by the solution should be tamper proof and should have legal hold		
• The solution logs all administrator and end-user activity, including successful and failed access attempts and associated session data (date, time, IP address. Machine address, BIOS No and so on). The tool can generate — on-demand or according to an administrator-defined schedule — reports showing user activity filtered by an administrator, end user or user group		
• The tool can restrict access to different reports by administrator, group or role.		
• The tool generates reports in at least the following formats: HTML, CSV and PDF		
• System should be able to define critical commands for alerting & monitoring purpose through SMS or Email alerts		
• The solution should provide separate logs for commands and session recordings. Session recordings should be available in image/ video based formats (non-editable and encrypted) preferably in any proprietary format.		
• The session recording should be SMART to help jump to the right session through the text logs		
• Secure and tamper-proof storage for audit records, policies, entitlements, privileged credentials,		

recordings etc.		
• The proposed solution shall cater for live monitoring of sessions and manual termination of sessions when necessary		
• The proposed solution shall allow a blacklist of SQL commands that will be excluded from audit records during the session recording (Optional). All other commands will be included.		
• The proposed solution shall enable users to connect securely to remote machines through the tool from their own workstations using all types of accounts, including accounts that are not managed by the privileged account management solution The proposed solution shall allow configuration at platform level to allow selective recording of specific device (Optional).		
• The proposed solution shall allow specific commands to be executed for RDP connections (e.g. Start the connection by launching a dedicated program on the target machine without exposing the desktop or any other executables). It should have capability to support End point privilege management.		
• The proposed solution shall support correlated and unified auditing for shared and privileged account management and activity.		
• The proposed system shall support full colour and resolution video recording.		
• The proposed system shall support video session compression with no impact on video quality.		
• The proposed solution should have offline vault for Break glass scenarios .		
PIM Security		
• All communication between system components, including components residing on the same server should be encrypted.		
• All communication between the client PC and the target server should be completely encrypted using secured gateway. (Example: a telnet session is encrypted from the client PC through the secured gateway)		
• The Administrator user cannot see the data (passwords) that are controlled by the solution.		
• Secured platform -main password storage repository/Vault should be highly secured (hardened machine, limited and controlled remote access etc.).		
• Solution should be TLS1.2 and SHA-2 Compliant and can validate FIPS 140 -2 cryptography for data encryption.		
• The solution should secure Solution should secure master data records, entitlement, policy data and other credentials in a non-modifiable storage device/process.		
PIM Administration		
• There must be central administration web based console for administration, user and device		

management and having of feature to auto on-board them.		
• The tool uses Active Directory/LDAP as an identity store for administrators and end users.		
• The tool enables an administrator to define groups (or similar container objects) of administrators and end users.		
• The tool enables an administrator to add an administrator or end user to more than one group or to add a group to more than one super group.		
• The tool enables an administrator to define a hierarchy of roles without limit.		
• Administrative configurations (e.g. configuration of user matrix) shall be accessible via a separate client where client access is controlled by IP address.		
• Important configuration changes in the solutions (example changes to masters) should be based on at least 5 level workflow approval process and logged accordingly		
• Segregation of Duties - The Administrator user cannot view the data (passwords) that are controlled by other teams/working groups (UNIX, Oracle etc.).		
• All administrative task should be done LOB wise i.e. Line of Business Wise		
Architecture		
• Support of multi-tier architecture where the database and application level is separated		
• Scalable Architecture (Horizontally /Vertically) and not limited to restricted hardware/Software count. (Specified correctly if there is such limit)		
• Solution should work at the network layer instead through a jump server. This will have achieve large number of sessions.		
• Solution can support multiple mirrored systems at offsite Disaster Recovery Facilities across different data centre locations.		
• Solution shall have options for backup or integration with existing backup solutions		
• Solution can handle loss of connectivity to the centralized password management solution automatically.		
• There should not be any requirement of change in existing network topology to control privilege session and can support distributed network architecture where different network segment can be controlled centrally.		
• Solution should support client based and browser based administrations.		
• Solution should preferably be an agentless and include password management and session recording features.		

• Solution must support parallel execution of password reset for multiple concurrent request.		
• Solution should support failover from single active instance to stand by instance without loss of any data.		
• Solution should support virtual server instance for management and installation if required.		
• Solution can support multiple instance with load balancer if required in future.		
• System should support for implemented in high availability mode. The solution is to be configured as Active-Passive / Active-Active mode in HA between DC to DR with Synchronization & Auto failover.		
• Solution should have capability to have direct connection with target device using secured gateway channel without compromising risky ports.		
• System has ability to integrate with enterprise authentication systems like ADS, LDAP, windows SSO, RADIUS etc.		
• Systems has ability to integrate BIOMETRIC Solution, Hardware/Software Tokens, Ticketing system, HSM (Hardware Security Module), Automation Software if any.		
SIEM Integration		
• Solution should be able to integrate with leading SIEM Solutions and or other performance monitoring applications to eliminate password hardcoding feature.		
Password Management		
• Solution should manage to protect and preferably eliminate privileged credentials in application, scripts or configuration files.		
Discovery of Privilege Account		
• Solution should authenticate and trust the application requesting privilege password.		
• Solution should be capable to discover privilege accounts on target system, manage user governance and can reconcile it. It can identify non built-in local (backdoor) admin or equivalent account.		
• Solution should identify public/private SSH key, orphan key, and can ascertain its status.		
Notification of Alerts		
Solution should be able to generate alert through SMS/Email		

• For any critical PIM Events and able to send message		
• For any change in Admin rights or configuration file		
• On Other critical events based on customization		
Dash-Board/Reports		
Solution should provide		
• Real time view of the activities of Administrators		
• Reports based on defined frequency, on-demand		
• Scheduled Reports like User Activity/Privileged account list/ activity logs		
• System Administrator changes performed by PIM Admin		
• Reports of password lockouts/checkout on system/password change report/Password status		
• Other customised reports		
• Other Audit Reports based by IT auditor's requirement		
• Ability to replay actual session recording for any forensic analysis as and when required.		
• Dashboard for viewing critical events and password policies.		
The solution should have dashboard for UEBA/UBA , Threat Analytics and reporting.		
Other Miscellaneous:		
• Credential management for privileged accounts of servers with different OS, databases and network devices		
• Delegation of access to privileged accounts		
• Controlled elevation of commands		
• Secrets management for applications, service and devices		
• Privileged task automation (PTA)		
• Remote privileged access for workforce and external users		
• Unified Central dashboard to monitor & manage all activities, accounts, policies and auditing		
• Approval workflows to automate the privileged escalation requests		
• Ability to monitor live sessions, and if required, capability to pause or terminate the session		
• Build reports for usage, audit, forensics, and regulatory compliance purposes.		
• Defined user activity should generate real-time email alerts, as well as block commands, lock, and		

terminate SSH sessions.		
• 'log off on disconnect' feature to ensure sensitive data is not exposed in subsequent RDP/SSH sessions.		
• Granular access control mechanism for Unix / Linux commands		
• Alerts on invoking unprivileged access and suspicious activity.		
• Ability to store the audit logs and recordings for 1 year and option backing up the logs using sftp or any other mechanism.		
• Solution sizing should be done to support 10000 Target systems and the licenses should be supplied on day 1 for 3000 Target systems.		
• Solution should be supplied with all the required hardware.		
• Solution should work in HA with active standby and audit logs should be mirrored across the Active / Standby systems.		
• OEM should be ISO/IEC 27001/27002/27034 compliant (or) Equivalent		
Support		
This application must support all type of devices including servers, storage routers, firewalls, switches etc placed within DC and DR.		
Licenses should be provided for a duration of 5 years.		
Sizing requirement:		
• The appliance should have storage capacity of more than 10 TB for retention of audit records and option to export the audit records over sftp / rsync for backup.		
• Number of Named Users – 50		
• Target Systems - 3000 scalable upto 10K target machines without change in hardware. The system should support at least 200 concurrent sessions		
SSH key management for without any extra licenses		
Solution should be an agentless and include password management and session recording		
Features		
Solution must be ISO/IEC 27002 compliant (or) Equivalent		
The solution should have End Point Privilege Management and Threat Analytics.		

38. IPS/IDS

Sr. No.	Specifications for Perimeter IPS/IDS	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
A.	Platform Requirement		
1	NIPS solution should be a purpose built dedicated standalone appliance and not an integrated firewall module or UTM appliance.		
2	Monitoring Interface should be able to operate at layer 2.		
3	The appliance must have Real World Throughput of 10 Gbps and scalable up to 30 Gbps for future requirements on the same appliance.		
4	The solution should support on the box SSL inspection.		
5	Solution must support SSL throughput of 5 Gbps from day 1.		
6	The appliance should have below port density:- 1. Fixed 8 - 1G copper ports with/without fail open 2. 4 - 10G SFP+ ports with/without internal fail open 3. Fixed 2 - 10G SFP+ ports 4 All the ports shall be fully populated with its transceivers only.		
7	The appliance should have separate dedicated interface for management console. None of the monitoring ports should be used for this purpose.		
8	The proposed appliance must support 10,000,000 Concurrent Connections.		
9	The proposed appliance must support 200,000 new Connections per Second.		
10	The appliance must have redundant power supply		
B.	Detection Technology		
1	NIPS should support different mode of deployment.		
	a)IDS		

	b) TAP mode		
	c) Inline		
2	Solution must accurately detect intrusion attempts and discerns between the various types and risk levels including Zero-Day attacks, unauthorized access attempts, pre-attack probes, suspicious activity, DoS, DDoS, vulnerability exploitation, brute force, hybrids. The NIPS solution should be able to perform deep inspection of network traffic by using a combination of advanced technologies, including full protocol analysis, threat reputation and behaviour analysis to detect and protect against Zero-day attacks, malware call-backs (C&Cs), Denial of service (DoS) and other advanced threats.		
3	IPS Solution should have built-in SSL decryption Engine for SSL Traffic decryption to support prevention of encrypted attacks - which includes attacks over secured http channel without need to have additional appliances.		
5	The IPS Solution should support Anti-malware protection through various engines as part of solution offerings.		
6	The IPS Solution should have real time emulation techniques for embedded malware protection.		
7	IPS appliance should provide advanced DoS detection with self-learning/ heuristics/threshold based detection for more accurate and fewer false positives.		
8	The IPS must support IPv4 and Ipv6 from day-one and detect attacks inside IPv6 encapsulated packets		
9	IPS should provide protection from evasion based attacks		
10	The solution should have Anti-spoofing capabilities		
11	should have capability for Host quarantine and rate limiting		
12	IPS must support high availability in Active-active and active-passive mode with stateful failover and not only limited to transparent mode.		

13	IPS must support protocol tunnelling for following:- <ul style="list-style-type: none"> ■ IPv6 ■ V4-in-V4, V4-in-V6, V6-in-V4, and V6-in-V6 tunnels ■ MPLS ■ GRE 		
14	NIPS should support provide advanced botnet protection using following detection methods:- <ul style="list-style-type: none"> ■ DNS sink holing ■ Heuristic bot detection ■ Command and control database 		
15	Should protect against DOS/DDOS attacks. Should have learning capability to monitor the network traffic and develops a baseline profile. It should have the ability to constantly update this profile to keep an updated view of the network:- <ul style="list-style-type: none"> ■ Threshold and heuristic-based detection ■ Host-based connection limiting ■ Self-learning/profile-based detection 		
16	Solution should be able to control traffic based on geographical locations -- For e.g. a policy can be created to block traffic coming or going to a particular country. Provision should be there to allow specific IPs for any blocked country		
17	Solution should have the capability to create Black List rules and White List rules which should allow to block or allow traffic to or from specified networks, based on protocols, applications, and other criteria.		
C	Advanced Prevention and Response		
1	IPS Solution must have capability to PRIORITIZE risk of threats to you with Campaigns detected and IP addresses that could be exposed		

2	Solution should provide threat intelligence feeds to provide pre-emptive protection against emerging threats along with geo/country blocking.		
3	IPS must support Inbound SSL Inspection detection and prevention using dynamic agent based key for ECDHA cypher suits		
4	IPS must have multiple signature less engines on the appliance without degrading the performance.		
5	Solution must have dedicated emulation engine to provide protection from advanced attacks. The IPS solution should identify malwares without the need for signatures.		
6	IPS must support on demand throughput scalability by just upgrading software license-Scalable on demand throughput based scalability without changing the hardware		
7	IPS must support Advanced Analytics, Heuristics and Machine Learning		
8	IPS must provide communication fabric based integration with multiple other existing solution. IPS must have the capability to share threat intelligence with other solutions enabling security intelligence and adaptive security.		
9	IPS must have inbuilt network behavioural analysis engine to provide additional context using flows.		
10	NIPS should support High Availability. It should support stateful HA such that state information is shared between the HA appliance. In case one of the appliances fails state is maintained.		
11	NIPS should support Active-Active high availability. The HA should be out of the box solution and should not require any third party or additional software for the same		
12	NIPS should be able to perform entire packet capture of the traffic and sent to the manager for analysis		
D.	Management		
1	Solution should manage the NIPS appliances from a central management console		

2	Management platform supports policy configuration, command, control, and event management functions for the NIPS appliances		
3	Management console should support Radius and LDAP authentication in addition to the local user authentication		
4	Management console should have the ability to allow access to specific hosts by enabling GUI Access and defining the list of authorized hosts/networks		
5	NIPS Management console should support high availability which should have Automated failover and fail-back		
6	NIPS solution should provide Intelligent security management:- <ul style="list-style-type: none"> ■ Intelligent alert correlation and prioritization ■ Robust malware investigation dashboards ■ Preconfigured investigation workflows ■ Scalable web-based management 		
7	NIPS Management console should be capable of producing extensive graphics metric for analysis. Further, users should be able to drill down into these graphical reports to view pertinent details.		
E.	OEM Support		
1	Bidders must address Problems in equipment which cause downtime/degradation of services and resolution of which require development of patches, bug fixes etc. shall be treated, by Security products OEM, on priority basis.		
2	Bidder must provide Schedules and performs Quarterly on-site visits; completes Protection Analysis and offers best practices recommendations.		
3	Bidder must provide Proactive notification of malware threat advisories and product updates		
F.	Feature Support		

	All the features asked should be available from day one and from same OEM. Any open source and third party solution is not accepted		
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39. SSL VPN Gateway

S. No.	Minimum Requirement for SSL VPN Gateway	Marked/ Cross Reference Specification reference page no.	Highlighted Reference of with	Compliance (Yes/No)
1	The appliance should be dedicated SSL VPN Gateway and not a part of UTM/ firewall/ NGFW/ ADC device It should have should have 1x1GbE port for management and 8x10GbE SFP+ ports with its transceivers.			
2	The appliance should have multicore CPU, 64GB RAM, 4TB HDD and dual power supply.			
3	The solution Should have dedicated hardware SSL card and should support 45 Gbps of SSL Throughput			
4	The appliance should be capable of creating multiple virtual portals and support minimum 1000 concurrent users scalable to 10000 concurrent users on the same appliance without changing any hardware			
5	The solution should support different network pools defined per user or group.			
6	Should support IPSec Tunneling within SSL VPN Tunnel			
7	Should Support Split Tunneling, Full Tunneling, IP address assignment based on user			
8	The appliance should support 45 Gbps of compression throughput. This capability shall be compatible with most modern browsers, requiring no additional software. Proposed appliance should support Desktop over VPN feature to provide access to desktop from remote for WFH purpose.			

9	The solution should support desktop publishing on IOS and Android phones along with device ID based authorization. The solution should support enterprise App-store for android and IOS phones. Should also support SAML, Hardware binding and AAA support along with SSO. Solution must support machine authentication based on combination of HDD ID, CPU info and OS related parameters, mac address to provide secure access to corporate resources.		
10	The solution should support following Authentication methods:		
11	a) Active Directory, b) LDAP , c) RADIUS ,d) Local database e) SAML f) Google O-Auth Support g) SMS		
12	The solution must provide at least 4 authentication methods for granular authentication of VPN users		
13	Appliance must support Access control options based on:-		
14	a) User and group, b) Source IP and network, c) Destination network ,e) Service/Port, f) Host name or IP address ,g) IP range, h) Subnet and domain, I) Day, date, time and range		
15	Should have IPV6 support with IPv6 to IP4 and IPv4 to IPv6 translation and full IPV6 support. Also should have IPV6 support with DNS 6 to DNS 4 based health check for intelligent traffic routing and failover.		
16	The solution should provide comprehensive and reliable support for high availability with Active- active & active standby unit redundancy mode using standard VRRP (RFC-2338) or equivalent for HA interconnection over network VRRP or equivalent.		
17	All the features asked should be available from day one and from same OEM. Any open source and third party solution is not accepted		

40. Active Directory Solution

Description	Specification	Marked/ Cross Reference Specification reference page no.	Highlighted Reference of with Compliance (Yes/No)
Device's support required	2500 or higher		
User support	1000		
Hardware & Software	SI must provide desired hardware and software to meet solution requirement along with antivirus for 3 years		
User Management	User life cycle management.		
	Create, modify, move, unlock, enable/disable, delete, and restore the Single/Bulk Users without using any manual scripts.		
	User Self Service portal to reset password and to unlock the account on their own.		
	Delete the accounts automatically on expiry of validity period		
	Automatically lockdown privileged accounts that are inactive for a period of time.		
	Create privileged roles for task delegation and Audit the actions performed by these Delegates, including what action was performed on what object and when.		
	Allow users to request access to privileged groups.		
	Enhance security of privileged accounts by enabling multi-factor authentication		
Computer Management	Protect privileged accounts from password attacks by enabling advanced password policy requirements, including a dictionary rule Create, modify, move, manage, enable/disable, delete, and restore the Single/Bulk Computers without using any manual scripts		

DNS Functionality	Yes		
Group Management	Create, modify, move and delete the Single/Bulk Groups without using any manual scripts.		
Group Policy Objects(GPO) Management	Create, modify, and manage the GPOs. Link the GPOs to users/Computers/Groups/OU's		
Delegation Management	Define the roles for User, Technician and Admin. Provide restricted privileges for a Technician to perform only specific tasks/roles.		
Administrator Management	Review-Approve facility for all admin activities. Privileged access for Users		
Clean up	The clean-up should be configured to run every month as and when required to remove the users based on certain conditions and consolidated task reports to be sent to relevant stakeholders upon clean-up.		
Role-based access and privileged	Should be configurable with roles that can be used to delegate task to help desk technician and other department members		
Integration with other related systems	Yes, to achieve the required functionality such as for RBAC,DNS, etc.		
Backup and recovery	Facilitate backup of entire Active Directory setup including users and rights data		
	Automates the entire recovery process, including rebuilding the global catalogue & FSMO Role DCs Support Active directory bare metal recovery.		

	Recovery solution must be enabled with automated backups, quick compare of backup to current values of AD to pinpoint differences, and instantly recover the desired data		
	Solution should be able to restore entire forest from single console		
High Availability	Yes		

41. Console Management Server

S. No.	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
	Remote OOB Network Management Solution		
1	SI is responsible for overall SITC of all components of the solution which include hardware, software and accessories required for the solution to meet desired outcomes.		

2	<p>The Solution shall be industrial-grade and comply with the following requirements:</p> <div> <div>1) Dual-core ARM Cortex-A9 MP Core with Core Sight</div> <div>2) 1GB DDR3L RAM</div> <div>3) 16GB eMMC Flash</div> <div>4) 2 Gigabit Fiber SFP ports</div> <div>5) 10/100/1000BT) Ethernet interfaces on RJ45</div> </div>		
3	The equipment must support dual AC power supply for ALL Rack Mounted Devices.		
4	Solution should provide secured Serial access to remote network devices over IP along with Fast, automated configuration with Zero Touch Provisioning		
5	The OOB equipment must support Serial (48 ports), Ethernet and SFP connections.		
6	The Solution should provide combination of USB and RJ45 serial ports for target network devices		
7	The solution should support vendor agnostics and to be compatible with Serial and Ethernet connections of target devices from various network vendors.		
9	Both hardware and software components of the solution will have built-in Firewall for additional security which can restrict services to any interfaces, brute-force protection.		

10	<p>Console Management -</p> <p>.Sun break-safe (Solaris Ready Certified) support and remote (NFS/Syslog/OEM management software) syslog filters data buffering Unlimited number of simultaneous sessions (port sniffing) with ability to toggle event notification (e-mail, pager, SNMP trap) support access</p> <p>.Break-over SSH .Off-line data buffering – local .Level-based .Time stamp and rotations for Simultaneous access on the same port .Configurable .Customizable, global time zone .Multiple and customizable user levels of</p>		
11	<p>Security – profiles–secure, moderate and open Custom security profiles support SSHv2 TACACS+, LDAP/AD, NIS and Kerberos authentication SecurID® authentication support PAP/CHAP and Extensible Authentication Protocol (EAP) authentication (for dial-up lines)</p> <p>authorization: RADIUS and LDAP • Port access • Power access • Appliance privilege IP packet and security filtering</p> <p>User-access lists per port</p> <p>System event syslog NAT traversal support</p> <p>.Preset security .X.509 SSH certificate .SSHv1 and .Local, RADIUS, . Two-factor authentication (RSA .One-Time Password (OTP) .Local, backup-user authentication Group • TACACS+, IPsec with</p>		

	IP forwarding support factory defaults enforcement	Secure Strong password		
12	Port Access – name or device name Simultaneous Telnet and SSH access HTTP/HTTPS	Directly by server CLI Command		
13	System Management – Configuration wizard in Web for first-time users Auto-discovery for automatic deployment Command line interface (CLI) Management Interface (HTTP/ HTTPS) Internal temperature sensor available on FTP site, no charge support for network boot	Web SNMP Upgrades TFTP		
14	The Solution must be able to provide remote power reset capability (reboot) of targeted devices when integrated with IPDU.			
16	The solution must be capable of integrate with PDU major vendors			
17	The management platform/Software to be provided along with hardware which should support windows and Linux installation			
18	The management platform shall provide a single pane of glass, to access to any devices that is connected to it by means of secure CLI or IP access			
19	OEM or Manufacturer should be ISO 9001: 2000, ISO 14001 , ISO/IEC 27001:2013 and ISO 45001 certified.			
20	Emissions, Immunity and Safety:			

	• FCC Class A		
	• UL		
	• CE Class A		
	• EN-60950		
Feature Support	All the features asked should be available from day one		

42. KVM Console

Sr.no	Technical Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Proposed 18.5" LCD console tray and 16 port IP KVM switch should be built in design and should occupy 1U space together in 19" standard rack.		
2	It should have cable management arm(CMA) and the 16x RJ45 port KVM switch built in at the rear side of the LCD console tray to save the U space in Rack.		
3	Both LCD console tray and the built-in KVM switch should have separate power supply.		
4	Vendor should supply 16 number of KVM cables with VGA, USB connectors.		
5	KVM cables should have LEDs to indicate Power and connection status.		
6	Built-in KVM switch should have 16 RJ45 port to connect KVM cable/dongle with CAT cable to extension at least up to 30Mt		
7	Supplied KVM cables should support Virtual media to map USB media devices to target servers remotely over TCP/IP and Smart Card(CAC).		
8	Built it KVM switch should have encryption 128-bit AES for keyboard, mouse and video signals and virtual media sessions, internal and LDAP external authentication.		
9	KVM Session should support Keyboard pass through.		
10	Built-in KVM switch should be cascaded with another KVM switch with max 30Mt CAT cable.		

11	Built-in KVM switch should not have power on/off switch to avoid accidental and unnoticed power off.		
12	Built-in KVM switch should have two local console ports. One to connect with the LCD console tray and another for external Monitor and keyboard connection for any emergency local access.		
13	LCD display should support brightness 250 cd /m2, contract ratio 1000:1 and 16.7million colors.		
14	LCD console tray and built in KVM switch should support max resolution 1600 x 1200 at 60 Hz.		
15	Operating temperature and Humidity of LCD console tray should be 0°C to 50°C and 10% to 80%		
16	LCD console tray should have 103 key keypad with number pad and touchpad.		
17	It should have control buttons on the front of the monitor to adjust the characteristics of the image that is displayed.		
18	It should have two independent USB 2.0 compliant pass through ports at front side.		
19	LCD console tray should be global certified by most of the agencies like UL, CE, CCC, BSMI, C-Tick, EAC, VCCI, KCC , FCC Class A		
20	Bidder should provide two (02) Ethernet cable with each KVM. It should be noted that of each Ethernet cable should be at least equal to the cater the distance two adjacent racks in left and two at its right side		
21	All the features asked should be available from day one		

43. Portable KVM console adapter

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Laptop USB Console (LUC) Port	1 x RJ45 Male		
KVM (Computer) Ports	1 x USB Type A Male		
	1 x VGA Male (Blue)		
LEDs	1 (Blue)		
USB bus-powered design and supports 1920 x 1200 @ 60 Hz video resolution	Yes		
Instant BIOS-level access and no software installation	Yes		

44. Monitoring and management tool for servers

S. No.	Specifications:	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	The solution should be deployed at DC and DR working in HA and supplied with all the associated hardware		
2	Access device-level lifecycle management with a single click—no need to navigate among appliances with license to add up to 4000 servers		

3	User defined policy/ template based automated and simultaneous operations like: <ul style="list-style-type: none"> - OS deployment - Firmware update - BIOS update - Server cloning - Creation of Virtual disks along with RAID configuration - Network configuration - Web server and SSH and configuration - Secure erase of storage drives 		
4	Redfish, Restful API support for automated management		
5	Monitoring of multiple aspects of servers like: <ul style="list-style-type: none"> - Server power consumption - Health - Storage (Physical & Virtual) - Cooling - CPU - Intrusion - Network device(s) - Multiple components voltage readings (e.g. CPU, system board, PSU, etc.) 		
6	Integrated reporting to see server hardware & firmware inventory (of all hardware and software components), including associated firmware versions along with option to create customized reports		
7	Fault management: Get monitoring, pre-failure alerts, failure alerts, log (system events, lifecycle, troubleshooting, user session, etc.) monitoring & extraction, automatic call logging (configurable), status monitoring of trouble ticket and contract/warranty registration & display for each device		

8	<p>Should have management features like:</p> <ul style="list-style-type: none"> - Power management and configuration - Virtual Console with management features like boot selection, power on/off, virtual media, virtual clipboard, etc. - Asset Tracking - Server profile import/export - Role based user management with feature for integration with LDAP(AD),AAA - Time-zone/NTP 		
9	Blink LED to identify a particular server		
10	Software and Hardware for this Monitoring and management tool for servers shall be provided by the OEM of servers.		
11	All the features asked should be available from day one		
12	<p>Management of multiple Servers from single console with single source of truth for multiple sites., Automated infrastructure management for patch upgrades, version upgrades ,etc., Simplified management with analytics driven actionable intelligence., System tagging giving admin flexibility to provide metadata tags to each System to enable users to filter and sort systems based on user assigned attributes, Hardware Profile based deployment to multiple Servers simultaneously, Policy template for deployment of single policy to multiple Servers simultaneously, Platform inventory and health status, Server utilization statistics collection (including firmware updates and diagnostic tools), Should provide an alert in case the system is not part of OEM hardware compatibility test, Solution should be open and programmable providing Rest API, SDK for programming languages like Python , power shell scripts etc., Should have customizable dashboard to show overall faults/health/inventory for all managed infrastructure the solution should provide option to create unique dashboards for individual users. the user should be flexibility to select name for dashboards and widgets (viz. health, utilization etc.), Self-service portal deployment for automated provisioning, Real-time out-of-band hardware performance monitoring & alerting.</p>		

45. Fireproof Vault

Description	Specification	Marked/ Cross Reference of Specification with reference page no.	Highlighted Reference of Specification with reference page no.	Compliance (Yes/No)
Volume (Litres)	200 or more			
Type	Fire Resistant Safe, inner temperature remain at less than 118°C even while exposed to a flame of 1,030°C for an hour			
Lock type	Electronic			
Security	Dual Combination Mode(User Password & Mechanical Key)			
High Security Emergency Key	Yes(Unlock possible with mechanical keys when PIN lost)			
Auto Secure Mode	Yes (mechanical keys &Password)			
Certifications	UL Fire Rated, Conforms to UL Test Standards			

46. Degausser

Description	Specification	Marked/ Cross Reference of Specification with reference page no.	Highlighted Reference of Specification with reference page no.	Compliance (Yes/No)
Media Handling:	Standard PC, Laptop and Server 3.5", 2.5" & 1.8" Hard Drives.			
Longitudinal & perpendicular recording	Up to 2TB.			
All drive interfaces	IDE, SATA, SAS and Fibre Channel.			
Power Supply	220-240V 50Hz			

Degaussing Force	7000 Gauss		
Duty Cycle	20%		
Erase Depth	-75dB on 1500 OE Tape, -90dB on 750 OE Tape		
Throughput	20 Hard drives or 40 tapes per hour typical		
Controls	On/Off, Security Key		
Indicators	On/Off Erase Field, Coil Power Supply Warning Light		

47. Data Diode

Specification	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Salient Features	Unique hardware bases one-way communication at physical layer. MAC address-based selection of source at Data Diode Promiscuous mode Easy to use GUI for configuration 19 inch Rack mountable		
Allowed MAC address	4 no. of source MAC		
Network Ports	01no. INGRESS and 01no. EGRESS Ethernet port. 1G optical Ports for INGRESS and EGRESS populated with SFPs (optical/electrical), 01no. MGMT/LOG Ethernet port		
Management/ Status	Ethernet based IP address configuration		
Input voltage	Input voltage 230VAC @ 50Hz , operating environment:10 deg C to 45 deg C		
EMI/EMC	FCC part 15 Class A/Common Criteria EAL 4+ certified/Master mother		

	board should be FCC/ EU compliant		
Physical Security	Tamper Evident		
Logging	Syslog based		
Protocols Support	Protocol agnostic (any unidirectional), Syslog, Netflow /sFlow		
Feature Support	All the features asked should be available from day one		

48. & 51. Intelligent Cabling

Cabling Structure is as follows at DC & DR:

Network-1,100G Network:

- a) There are Two Spine Switch-Primary and secondary.
- b) Each spine switch will have 120 X 100G port (Total 2 X 120, 100G port).
- c) 48 MPO port to be established between Primary and secondary spine rack for connecting Network/routing devices.
- d) 48 each MPO port to be established within (Primary and secondary) spine rack for connecting Network /routing devices.
- e) At Server/storage rack end, there will be two no.s of 24 port Leaf switches.
- f) Each Leaf switch will have 2 X 100G MPO connectivity from Spine switch (Primary & Secondary) Total 4 X 100G connections.
- g) Each Leaf switch will have 24X 10G on fiber, to connect server/storage
- h) 2 X 16 LC Duplex connections will be extended to each Server/Storage via fiber shelf to enable intelligent solution.

Network-2,10GNetwork:

- a) There are Two Core Switch-Primary and secondary
- b) Core switch will have 48 X10G port or 96 X10G port
- c) 24 LC port to be established between Primary and secondary core rack for connecting Routing/Network.
- d) 24 LC port to be established within Primary and secondary core rack for connecting Routing/Network.
- e) At Server/storage rack end, there will be one 48 copper port edge switch to support 10G from core switch.
- f) Edge switch will have 2X 10G LC connectivity from core switch (Primary & Secondary) Total 2X 10G connections
- g) Edge switch will have 48 X 1G on copper to connect server/storage to connect server/storage of the rack.
- h) 48 Copper connections will be extended to Server/Storage via copper panel to enable intelligent solution.
- i) The Top of Rack (ToR) switch in the S/R will connect to the Spine switch (in N/R) via 12F (2 x 12 MPO connectors on each side) MPO trunk cables on OM5. All MPO trunk cables and MPO cable assemblies shall be Method B polarity only. The adapters shall be compliant to TIA/EIA FOCIS 5, which is commonly referred to as "aligned keys" or "key-up to key-up." Each link between the ToR and Spine shall support 100GBASE-SR4 application for the complete channel. Contractor shall check and guarantee the support of 100GBASE-SR4 application for the longest distance possible between the existing network rack and new server rack (part of the additional 70 S/R) inside the data center. All patch cords required to complete the connectivity shall be standard compliant. In the event due to unavailability of the patch cords, patch cords from other OEMs with similar specifications shall also work in the system.
- j) Each edge switch will connect to the core switch (N/W) via 12F (1 x 12 MPO connector on each side) MPO trunk cables on OM4. Each link between the edge and core Switch shall support 10GBASE-S application for the complete channel. Contractor shall check and guarantee

the support of 10GBASE-S application for the longest distance possible between the existing network rack and new server rack (part of the additional 70 S/R) inside the data centre. All patch cords required to complete the connectivity shall be standard compliant. In the event due to unavailability of the patch cords, patch cords from other OEMs with similar specifications shall also work in the system.

GENERAL NOTE for all Active equipment(s): Bidder shall supply required quantity of fiber patch chords (Single mode/ Multimode), patch chord as per site requirements. All accessories for successful installation in rack should be supplied by Bidder.

Product specification for 100G MPO Connectivity- OM5 components

Deploy optical fiber pre-terminated solution consisting of trunk cables with pre-terminated MPO connector, cassettes, patch cords and optical fiber patch panels etc. as a standard configuration. The entire component shall be intelligent enabled solution. The fiber count per MPO trunk cable shall be 12F MPO pinned connectors on either sides) The application shall support up to 10/40/100/400G. The fiber shall be multimode OM5 fiber features extended bandwidth range of 850 to 950nm that enables it to provide optimal support to SWDM applications by enhancing its capability to transmit at least four low-cost wavelengths for longer distance, reducing parallel fiber count by four-folds and high-speed application of 400G. **Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.**

i. Fiber Patch cord assembly OM5 MPO to MPO, Male/Female

S. N.	Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Fiber Type			
4	Interface Feature,			
5	Total fiber quantity			
6	Jacket color	Lime green		
7	Cable Product Type	Fiber indoor cable, Non-armored, Gel free		
8	Outer Sheath/ Environmental Space	Low Smoke Zero Halogen (LSZH), Riser, Indoor Single sheath jacket		

9	Flame Test Method	IEC 60332-3/IEC 60332-1 , IEC 60754-2, IEC 61034-2, IEEE-383,		
10	Standards:	ANSI/ICEA S-83-596, Telcordia GR-409,		
11	Safety Standard	UL 1666, UL 1685 / BIS or equivalent Standards		
12	Insertion Loss Change, mating	0.3 dB		
13	Return Loss, minimum	27dB		
14	Insertion Loss Change, temperature	0.3 dB		
15	Insertion Loss, maximum	0.25 dB		
16	Intelligent compatibility	Patch cord shall be compatible for intelligent solution		
17	RoHS	RoHS Compliant		

ii. Fiber Distribution adaptor OM5, MPO Port

S. N.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
	Interface Feature, rear			
4	Port Duct cover	No		
5	Standard	MPO distribution adaptor shall meet the most recent revision of TIA/EIA-568-C.3 standard, and its published addenda.		
6	Safety Standard	UL/ BIS or equivalent Standards		
7	Intelligent compatibility	Distribution adaptor shall be modular type and Intelligent enabled		

8	Fiber Type	OM5.		
9	Qualification Standards	IEC 61753-1 TIA-568.3-D		
10	RoHS	RoHS Compliant		

iii. Fiber Trunk cable assembly OM5 MPO (Male/Female) to MPO (Male/Female)

S. N.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Interface Feature,			
4	Total fiber quantity			
5	Panel compatibility			
6	Cable compatibility			
7	Fiber Type	OM5		
8	Jacket color	Lime green		
9	Cable Product Type	Fiber indoor cable, Non-armored, Gel free		
10	Outer Sheath/ Environmental Space	Low Smoke Zero Halogen (LSZH), Riser, Indoor Double sheath jacket for more protection		
11	Cable strength member	Ripcord and Aramid Yarn shall be included as cable protection		
12	Flame Test Method	IEC 60332-3/ IEC 60332-1 , IEC 60754-2, IEC 61034-2, IEEE-383,		
13	Standards:	ANSI/ICEA S-83-596, Telcordia GR-409,		
14	Safety Standard	UL 1666, UL 1685/ BIS or equivalent Standards		
15	Insertion Loss Change, mating	0.3 dB		
16	Return Loss, minimum	27dB		

17	Insertion Loss Change, temperature	0.3 dB		
18	Insertion Loss, maximum	0.25 dB		
19	RoHS	RoHS Compliant		

iv. LC type fiber patch cords, OM5

S. N.	Specifications	Requirement	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Fiber type	Multimode OM5		
2	Construction	Two fiber duplex Cordage Non-armored gel free cable		
3	Cable Sheath	Low Smoke Zero Halogen (LSZH) Riser rated		
4	Connector type	LC/UPC to LC/UPC, Fiber patch cord 1.7mm / 3.5mm. Riser		
5	Cable Length	As per the BOQ		
6	Color	Lime Green color for cable and Gray color for connector		
7	Protection	Aramid yarn shall be provided around 250nm coating on fiber cable		
8	Minimum Bend Radius	38 mm (Loaded), 15mm (Unloaded)		
9	Tensile Load, maximum	20N (long term) 67N short term)		
10	Compression	10 N/mm as per IEC 60794-1 E3 test method		
11	Ferrule	Pre-radiused made of Zirconia		
12	Cable Qualification Standards	ANSI/ICEA S-83-596, Telcordia GR-409		
13	Flame Test Listing	<u>NEC OFNR-LS (ETL) and c(ETL) or equivalent</u>		
14	Flame Test Method	IEC 60332-3/ IEC 60332-1, IEC 60754-2, IEC 61034-2, IEEE 383, UL1666, UL 1685/ BIS or equivalent Standards		

v. Intelligent fiber panel- MPO type, OM5

S. N.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Intelligent fiber Patch panel shall be modular, accept cassette type module and distribution adaptor pack for multimode (OM5) type fiber		
2	Standards	Intelligent panel should meet ANSI/TIA 568C.2 specifications and AIM standard such as ISO/IEC 18598 and TIA 606-B and ISO/IEC 14763-2.		
3	LC Port capacity	Intelligent pre-terminated fiber shelves shall be available in 1U sliding/fixed configuration to support up to 48 -duplex LC ports or 2U sliding configuration to support up to 144 -duplex LC ports		
4	MPO Patch connections	Intelligent fiber patch panels shall be available in 1Usliding configurations with up to 24/32 MPO ports, in 2U/4U sliding configuration to support up to 96 MPO ports. Requirement of 1U/2U/4U in each rack shall be assessed by bidder.		
5	Patch cord compatibility	Intelligent patch panel shall provide a button and an LED indicator at every panel port to enable easy tracing and identification of patch connections in the telecom room.		
6	Sensing Assembly Installation	Intelligent patch panels shall be provided with all necessary system-connecting cable(s).		
7	Connection of existing port	Intelligent fiber patch panels should allow for removal and replacement of sensing Assembly. Any fault in the sensor should not disrupt the operation of panel network port.		
8	Patch cord/wire manager	Panel shall have inbuilt rear cable manager and from patch cord manager including visible label plate		
8	RoHS	RoHS Compliant		

vi. Any other item required to complete the OM5 Intelligent cabling – To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid

S. N.	Details	Standard Compliance	Compliance (Yes/No)
1	Any other item required to complete	To be assessed by bidder & its OEM. Quantity and price of the same shall	

	the OM5 Intelligent cabling	be included in bid	
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Product specification for 10G MPO Connectivity- OM4 components

Deploy optical fiber pre-terminated solution consisting of trunk cables with pre-terminated MPO connector, Fiber modular cassette with LC interface, 2F LC -LC patch cords and Intelligent fiber patch panels as a standard configuration. The entire component shall be intelligent enabled solution. The application shall support up to 10/40G. The fiber shall be multimode OM4 fiber. **Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.**

i. Fiber trunk cable assembly OM4 MPO (male/Female) to MPO (male/Female)

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Interface Feature,			
4	Total fiber quantity			
5	Panel compatibility			
6	Cable compatibility			
7	Fiber Type	OM4		
8	Jacket color	Aqua Color		
9	Cable Product Type	Fiber indoor cable, Non-armored, Gel free		
10	Outer Sheath/ Environmental Space	Low Smoke Zero Halogen (LSZH), Riser, Indoor Double sheath jacket for more protection		
11	Cable strength member	Ripcord and Aramid Yarn shall be included as cable protection		
12	Flame Test Method	IEC 60332-3/ IEC 60332-1 , IEC 60754-2, IEC 61034-2, IEEE-383,		
13	Standards:	ANSI/ICEA S-83-596, Telcordia GR-409,		
14	Safety Standard	UL 1666, UL 1685// BIS or equivalent Standards		

15	Insertion Loss Change, mating	0.3 dB		
16	Return Loss, minimum	27dB		
17	Insertion Loss Change, temperature	0.3 dB		
18	Insertion Loss, maximum	0.25 dB		
19	RoHS	RoHS Compliant		

ii. Fiber Distribution fiber panel, Modular, OM4 LC

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Interface Feature, rear			
	Panel compatibility			
	Cable compatibility			
4	Port Duct cover	Yes		
5	Standard	Fibre distribution fiber panel shall meet the most recent revision of TIA/EIA-568-C.3 standard, and its published addenda.		
6	Safety Standard	UL/ BIS or equivalent Standards		
7	Fiber Type	OM4 Multimode		
8	Intelligent compatibility	Fibre distribution fiber panel shall be modular type and Intelligent enabled		
9	RoHS	RoHS Compliant		

iii. Fiber Modular Cassette OM4 MPO – LC

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Interface Feature, rear			
4	Panel compatibility			
5	Cable compatibility			
6				
7	Port Duct cover	Yes, must required		
8	Standard	MPO cassettes shall meet the most recent revision of TIA/EIA-568-C.3 standard, and its published addenda.		
9	Safety Standard	UL/ BIS or equivalent Standards		
11	Approximate dimension	25mm (H) X 95mm (W) X 115mm (D)		
12	Fiber Type	OM4 Multimode		
13	Attenuation	1.00 dB/km @ 1,300 nm 2.20 dB/km @ 953 nm 3.00 dB/km @ 850 nm		
14	Insertion Loss Change, temperature	0.3 dB		
15	Insertion Loss, maximum	0.47 dB		
16	Intelligent compatibility	Fiber Cassette shall be modular type and Intelligent enabled		
17	RoHS	RoHS Compliant		

iv. LC type fiber patch cords, OM4

Sl. No.	Specifications	Requirement	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Fiber type	Multimode OM4		
2	Construction	Two fiber duplex Cordage Non-armored gel free cable		
3	Cable Sheath	Low Smoke Zero Halogen (LSZH) Riser rated		
4	Connector type	LC/UPC to LC/UPC, Fiber patch cord 1.7mm / 3.5mm. Riser		
5	Cable Length	As per the BOQ		
6	Color	Aqua color for cable and Beige color for connector		
7	Protection	Aramid yan shall be provided around 250nm fiber cable		
8	Minimum Bend Radius	38 mm (Loaded), 15mm (Unloaded)		
9	Tensile Load, maximum	20N (long term) 67N short term)		
10	Compression	10 N/mm as per IEC 60794-1 E3 test method		
11	Ferrule	Pre-radiused made of Zirconia		
12	Cable Qualification Standards	ANSI/ICEA S-83-596, Telcordia GR-409		
13	Flame Test Listing	NEC OFNR-LS (ETL) and c(ETL) or equivalent		
14	Flame Test Method	IEC 60332-3/ IEC 60332-1, IEC 60754-2, IEC 61034-2, IEEE 383, UL1666, UL 1685/ BIS or equivalent Standards		
15	Insertion Loss, maximum	0.3 dB		
16	Return Loss, minimum	27 dB		
17	Regulatory Compliance	RoHS 2011/65/EU compliant		

v. Any other item required to complete the OM4 Intelligent cabling – To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid

S. N.	Details	Standard Compliance	Compliance (Yes/No)
1	Any other item required to complete the OM4 Intelligent cabling	To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid	

Product specification for 1G/10G Copper components

Deploy Copper cabling solution consisting of single ended copper patch cord with RJ45 male connector, intelligent Copper patch panel, reduced diameter patch cords for high density connecting servers as a standard configuration. The entire component shall be intelligent enabled solution. The application shall support up to 1/10G. The copper solution shall be Cat-6A U/UTP cabling. **Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.**

i. CAT 6A Intelligent Patch Panel

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Patch panel Unshielded / Unshielded Twisted Pair (U/UTP), Category 6A		
2	Standards	The panel should meet ANSI/TIA 568C.2 Category 6A Specifications		
3	Panel configuration	The panel shall be available in 24-port and 48-port configurations with universal A/B labelling and 110 connector terminations on rear of panel allowing for quick and easy installation of 22 to 24 AWG cable		
4	Material used	Panel shall be available in straight with made of Powder- coated steel. Color shall be Stain chrome		
5	Intelligent system	The panel must be an intelligent system		
6	Additional future for noise cancellation	Termination managers must be provided with the panel. These termination managers provide proper pair positioning, control, and strain relief features to the rear termination area of the panel.		
7	Third party certificate for Genunity	ETL four connector channel certificate for long distance and short distance test report.		
8	Rear cable manager	Panel shall have rear cable manger with proper design to hold all 24 cable. This shall provide strain relief for outlet and organization of cables being routed to the back of a patch panel.		

9	RoHS	RoHS Compliant		
10	Patch Panel Ports	To be assessed by bidder to connect 48 port OoB Switch and other respective units (server and Leaf Switch)		

ii. CAT 6A LSZH U/UTP RJ45 regular Patch Cords

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Unshielded / Unshielded Twisted Pair (U/UTP), Category 6A patch cords		
2	Standards	The Cordage should meet ANSI/TIA 568C.2 Category 6A Specifications		
3	Length	The cordage shall be available in different length based on the site requirement		
4	Conductor	Copper must be solid single strand copper conductor for panel termination		
5	Fire Safety standards:	LSZH		
6	Diameter Over Jacket	7.24 mm		
7	Safety Standard	UL 1863/ BIS or equivalent Standards		
8	Additional info	The cable and cordage shall be UTP components that do not include internal or external shields, screened components or drain wires that require additional grounding and bonding		
9	RoHS	RoHS Compliant		

iii. CAT 6A LSZH U/UTP RJ45 reduced dia. Patch Cords

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Unshielded / Unshielded Twisted Pair (U/UTP), Category 6A patch cords.		
2	Standards	The Cordage should meet ANSI/TIA 568C.2 Category 6A Specifications		
3	Length	The cordage shall be available in different length based on the site requirement		
4	Fire Safety standards:	LSZH		
5	Diameter Over Jacket	4.95 mm 0.195 in		
6	Safety Standard	UL 1863/ BIS or equivalent Standards		
7	Additional info	The cable and cordage shall be UTP components that do not include internal or external shields, screened components or drain wires that require additional grounding and bonding		
8	RoHS	RoHS Compliant		

iv. Any other item required to complete the Copper cabling – To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid

S. No.	Details	Standard Compliance	Compliance (Yes/No)
1	Any other item required to complete the Coper Intelligent cabling	To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid	

49. & 52 Intelligent AIM system Monitor

Sl. No.	AIM System Monitor at Rack level	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	The AIM System Monitor shall be compatible with mounting on 19" (width) based hardware per EIA-310.		
2	The AIM System Monitor shall provide capability for a technician to communicate with AIM System Software component.		
3	The AIM System Monitor shall communicate with the AIM-enabled patch panels in the racks		
4	The AIM System Monitor shall be able to display live end-to-end tracing information on its screen during patching activities. The screen may be a fixed unit or portable unit fixed in the racks using suitable mount/brackets. Both network rack should have one dedicated (AIM) Intelligent system monitor. Bidder shall configure one Intelligent system monitor two Server racks.		
5	The AIM System Monitor shall be able to display on the screen information indicating if a traced panel port is assigned to a scheduled work order.		
6	The AIM System Monitor shall be able to display electronic work orders for moves, adds and changes (MACs).		
7	The AIM System Monitor shall have a configurable Ethernet LAN connection capability (10BASE-T, 100BASE-TX or 1000BASE-T) to enable communication with AIM System Software component.		
8	AIM System Monitor should be fully Integratable with existing AIM system software at DC for seamless operation.		
9	Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.		
10	AIM monitor display system should have the capacity to monitor at least two RACKs		
11	All the features mentioned above should be available from day one		

50. & 53 Intelligent AIM system Software

Sl. No.	Intelligent System (AIM) Software defined by the ISO/IEC 18598 standard	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	The AIM System Software component shall be web based.		
2	<p>The system should support:</p> <p>12000 ports or higher at DR.</p> <p>For DC, 10000 Ports from existing AIM System software OEM and upgrade the hardware as required.</p> <p>Or 15,000 Ports from New OEM Provider. New OEM provider must integrate its AIM solution with existing AIM solution.</p> <p>AIM solution software and its hardware should be from same OEM.</p>		
3	<i>The AIM System Software component shall support REST APIs and Simple Network Management Protocol (SNMP) and support SNMP v1, SNMP v2c, and SNMP v3. Bidder/OEM needs to support integration with third party monitoring and management systems.</i>		
4	The AIM System Software component shall support IPv4 and IPv6 communications.		
5	The AIM System Software component shall support automatic and manual database backups.		
6	The AIM System Software component shall have capability to auto discover the installed AIM hardware component (intelligent panels and control systems) in		

	each rack/cabinet and to auto populate this information in its database.		
7	The AIM System Software component shall have the capability to auto discover networked devices that are connected to the pre-defined managed network switches (LAN and SAN environments) and then to auto populate that information in its database.		
8	The AIM System Software component shall provide end user with ability to define manual, automatic, or disabled mode for conducting discovery of networked devices. The automatic device discovery feature shall allow end user to determine a polling schedule, as well as the ability to automatically trigger the discovery process based on SNMP link-up traps from managed network switches.		
9	The AIM System Software component shall have the capability to auto discover IP address, MAC ID, WWN and Host Name information for networked devices and then to auto populate this information into its database.		
10	The AIM System Software component shall have the capability to auto discover networked devices with multiple MAC addresses (i.e., servers with multiple NICs, virtual machines, wireless APs, IP phone/computer pairs, etc.) and then to auto populate that information in its database.		
11	The AIM System Software component shall have the capability to auto discover VLAN ID information on managed network switches and then to auto populate that information in its database.		
12	The AIM System Software component shall provide the ability to define type of networked devices based on MAC or IP address range that could also be applied retroactively to already discovered devices. Once defined, each device upon its discovery shall be automatically labelled and represented with an appropriate icon in the database to correspond to the device type definition.		
13	The AIM System Software component shall have the capability to detect		

	configuration changes to managed SAN and LAN switches.		
14	The AIM System Software component shall have the capability to detect when a networked device has moved or changed its physical location.		
15	The AIM System Software component shall provide capabilities for defining a set of specific system conditions that need to be tracked.		
16	The AIM System Software component shall provide a dedicated service-provisioning feature for servers, including server templates, and graphics to allow for efficient planning and deployment of servers in the data center.		
17	The AIM System Software component shall provide a server decommissioning feature that ensures removal of all circuits connected to the server to eliminate “dormant” connections.		
18	The AIM System Software component shall have the capability to document various topologies (zone, pod, cell, etc.) for Data Center applications.		
19	The AIM System Software component shall have the capability to audit the switch ports.		
20	The AIM System Software component shall have the capability to send an email message to specified personnel, to automatically execute a designated program or to send a SNMP trap to a destination server each time a pre-defined system event is received.		
21	Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.		
22	The offered AIM Solution should be provided along with backup solution. All the Hardware required for backup should be provided by the bidder. The hardware should be sufficient enough to support the backup of at least 1 months. The time period of backup should be configurable		

23	All the features mentioned above should be available from day one		
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54. Smart Rack

S. No.	Description of Requirements	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Scope of Work		
1.1	Intelligent Integrated Infrastructure with inbuilt hot and cold aisle containment of 1 rack should cater IT load up to 6 KVA with minimum 24 U usable space available for IT equipment(s).		
2	Requirements		
2.1	Intelligent Integrated Infrastructure with inbuilt hot and cold aisle containment of 1 rack catering IT load up to 6 KVA .The Critical systems like rack-mounted air-conditioning & UPS systems should have N+N topology respectively.		
2.2	The support of all the components supplied and installed for smart rack should be serviced by the smart rack OEM .		
3	The Intelligent integrated Infrastructure shall have following components:-		
3.1	Rack based closed loop Air-Conditioning (6 kW – 02 nos. (1Working+1Standby))		
3.1.1	Rack based Air Cooling with indoor - out door design, SHR >0.9, 100% Duty cycle, auto controlled Compressor, 0U or rack mountable, Electronically commutated centrifugal/Axial evaporator fan , High Pressure & Low Pressure protection , Washable filter with 80% efficiency down to 20 micron , Hydrophilic evaporator coil, ON/OFF switch at indoor unit for emergency purpose, R407C/R410A Refrigerant.		
3.1.2	<ul style="list-style-type: none"> The Cooling Unit can consume U space while it should provide min 25 U usable space for IT. The redundant Cooling units ensure automatic changeover in the event of a failure of any one of the unit. It should be able to support indoor to outdoor piping up to 30 mtr		
3.2	UPS System – Total 02 Nos in N+N redundancy		

3.2.1	UPS should be of True On-line, Double conversion and IGBT 6 kVA capacity in N+ N topology, 1 Phase input & 1 phase output, rack mountable (≤ 2U) with unity power factor and efficiency up to 95%		
3.2.2	Input Voltage Range: 176Vac ~ 288Vac(Variation of +/- 10% allowed), at full load 100Vac ~ 176Vac (Variation of +/- 10% allowed), Input Power factor ≥0.99, at full load; ≥0.98, at half load		
3.2.3	Output Voltage : 220Vac/230Vac/240Vac (Single phase output) ; rated power factor as 1, Voltage harmonic distortion < 3% (linear load); < 7% (non-linear load)		
3.2.4	Frequency synchronization range: Rated frequency±3Hz. Configurable range: ±0.5Hz ~ ±5Hz		
3.2.5	Overload capacity for the UPS : At 25°C, 200ms		
3.2.6	Certification & Compliance : General and safety requirements - IEC/EN 62040-1 , EMC - IEC/EN 62040-2		
3.2.7	Surge protection for UPS : IEC/EN-61000-4-5, ANSI C62.41, 6kV/20hms		
3.2.8	UPS should be RoHS & energy star certified with IP20 Protection level. Noise level should be < 55dB		
3.2.9	Operating temperature for the UPS : 0°C ~ 50°C ; Relative humidity : 5%RH ~ 95%RH, non-condensing		
3.2.10	UPS system should support battery backup of 30 minutes on full load. Batteries to be placed in external battery racks.		
3.3	Racks & Accessories		
3.3.1	Rack is 42 U/48 U 19" mounting type with 2100/2350 (Height) x 800 (Width) x 1100/1200 (Depth) with safe load carrying capacity of 1400 Kg on enclosure frame and 1000 Kg on 19" mounting angles		
3.3.2	Front Glass door for complete 42U/48U height visibility and rear split steel door with stiffener and PU gasket for strength		

3.3.3	Cable entry provision from top & bottom both side of rack		
3.3.4	Cut outs with rubber grommet on top and bottom cover of rack for cable entry		
3.3.5	Vertical Cable manager on both LHS & RHS on rear side		
3.3.6	Thermally insulated cold aisle chamber		
3.3.7	Blanking panels to prevent air mixing		
3.3.8	Status based LED light to be provided on each rack		
3.3.9	Hybrid IPDU 02 no's per Rack(As per Specifications Given below)		
3.4	Safety & Security		
3.4.1	Access Control		
	The system deployed will be rack based access control system based on electronic Technology. The front rack doors should be operated with Biometric door access system and will operate on fail-safe principle through Biometric access control system. Front/Rear doors should be operated with auto lock opening system. Should have provision for auto opening of front/Rear Door in case of Emergency situations		
3.4.2	Rodent Repellent System		
	Racks to be covered with rodent repellent system		
3.4.3	Fire detection & Suppression System		
	Rack to be covered with Fire alarm system		
	The system should have fire suppression unit mounted internally / externally on the rack .		
	The fire suppression agent should be NOVEC 1230 Gas as per NFPA 2001 guidelines		
3.5	Monitoring		
	Detailed Monitoring & Diagnostics thru Rack Data Unit ,1U rack mountable, with redundant power supplies & capable of single window monitoring of all the environmental parameters i.e. IP based monitoring of temperature, humidity, water leak detection, smoke, etc through a single window dashboard." UPS , air conditioning & rack PDUs should be integrated & monitored in a single dashboard with the rack monitoring unit"		
3.6	Electrical System (POD Device):		

	19" rack mountable Power Output Device with essential breakers to be mounted in the rack.		
3.7	OEM Credentials		
A	The support of all the components supplied and installed for smart rack should be serviced by the smart rack OEM .		
B	(DX) Rack based air conditioning unit using refrigerant R407C/R410A. Test certificate shall be submitted prior to shipment		
C	The OEM must have executed minimum 5 Modular/Smart Rack Data Centre infrastructure projects during the last 3 years from the of bid submission date.		

- **Hybrid iPDU:**

S. No.	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Each rack should have 2 IPDUs to be connected to the two different UPS sources A and B individually. The 2 IPDUs in each rack should have different chassis color for identification of UPS source. Electrical rating – Input – 230V, 32A, 1 Phase, 3-meter-long input cable with Splash proof IEC60309 input plug. high temperature grade, operating temperature up to 60°C.		
2	Output - iPDU should have minimum 30 Nos color coded outlets (Color coding w.r.t circuit breakers) of hybrid nature which can be utilized as either C13 or C19 outlet. All outlets should provide high retention to avoid accidental dislodging of power cords. The IPDU hybrid outlets should meet electrical compliance and should be UL certified.		
3	Monitoring parameters – The IPDU should have monitoring capability at the Strip level, phase level and Circuit/ Breaker		

	<p>monitoring.</p> <p>Following monitoring parameters should be included at input and phase level.</p> <ul style="list-style-type: none"> • Total Unit Monitoring (kWh, W, VA, PF) • Phase Monitoring (kWh, W, VA, PF, V, A) 		
Network & Security -			
4	Network communication – PDU should have dual gigabit Ethernet Network Ports 10/100/1000 Mbps. IPDU should support communication protocols including DHCP, HTTP, HTTPS (TLSv1.3), Ipv4, Ipv6, LDAP, NTP, RADIUS, RSTP, SSH, SMTP, SSL, SNMP (v1, v2, v3), Syslog, TACACS+ & TLS 1.3. Communication module should be hot-swappable.		
5	IPDU should have USB support for firmware upgrade, backup, restored device configuration or expand logging capacity via USB storage device. IPDU should have separate reset buttons for reset to factory defaults.		
6	IPDU should support strong password enforcement, where the user can select the minimum number of password characters, uppercase characters, digits, symbols.		
7	IPDU should support cryptographically signed firmware upgrades and must comply with FIPS 140-2.		
Certification & Compliances			
8	The IPDU should have approvals form RoHS, CE/UL.		
9	OEM or Manufacturer should be ISO 9001: 2000, ISO 14001 , ISO/IEC 27001:2013 and ISO 45001 certified.		
10	OEM Service Support for Major Equipment's / OEM or Manufacturer should have its own service centers in India.		

55. Non Smart Rack with Redundant IPDU

Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Front doors in Steel fully perforated curved steel		
Rear doors in steel dual split, fully perforated		
The rack should be powder coated to avoid rusting and damage.		
Vented top cover with cable entry provision		
Bottom Cable entry		
Fully reversible 19" mounting angles at front and rear		
Rear 19" mounting angles supplied as split pairs to allow easy adjustments for equipment of different depths.		
Side panels with Slam latches and Indents for improved strength and aesthetics		
Side panels 2000Hx1200D (set)		
Comfort handle with lock & Key		
Rear door mount Fans		
Cable management Duct with 1U Cable managers		
Earth conduit kit with Rail		
Captive hardware pack of 20 Secure Screws		
Component Shelf 720mm Depth - 2 Nos		
Baying Kits		
Racks should be with all requisite accessories and parts.		
2 numbers of Hybrid iPDU (as per annexure) Metered PDU with minimum 24 sockets each and power cord, with ability to monitor power consumption of individual servers and network		

equipment.		
Supply and installation/laying of all the required electrical cabling to the racks shall be carried out by the bidder as per standards. All accessories for successful installation of rack should be supplied by Bidder.		

56. LED Display

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Product type	LED		
Panel Technology	IPS		
Screen Size	65"		
Resolution	3840 x 2160		
Connectivity	HDMI, USB, Ethernet		
Design	Bezel-less/ Narrow		
Number of HDMI Ports	3		
Number of USB Ports	1		
Number of Ethernet Ports	1		
Speaker	10W x 2		
Operation Temperature	0°C to 40°C		
Power Supply	AC 100-240V~, 50/60Hz		
Smart Energy Saving	Yes		
Remote	Yes		

ACCESSORY	Basic: Remote Controller, Power Cord, QSG, Regulation Book, Phone to RS232C Gender Optional: Stand, Wall bracket, VESA Adapter		
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57. Heavy-duty workstation

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Processor	Intel 12th Generation Core i7 Processor or AMD Zen 3 Ryzen 7 series		
OS	Windows 10 Pro/11 with Latest Microsoft Office License (Perpetual) along with Antivirus (for 3 Years)		
RAM	64GB, DDR4, 3200MHz		
Storage	512GB Solid State Drive (Boot) + 1TB 7200 RPM Hard Drive (Storage)		
Monitor	24" inch FHD IPS (1920 x 1080) Anti-Glare Narrow Border Infinity Touch/ Non-Touch Display		
Camera	FHD Camera		
Ethernet	Dual 1000BASE-T Ethernet Adapter		
Ports	1 HDMI / VGA, 1 Audio-in / out, 1 USB 2.0, 1 USB 3.0		

Keyboard	Standard Wired USB Keyboard (same OEM Make)		
Mouse	Two button scrolling wired USB Optical Mouse (same OEM)		

58. Mobile Workstation (Heavy Duty Laptop)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Processor	12th Generation Intel® Core™ i7 Processor or AMD Zen3 Ryzen Series or Apple Silicon Pro Series		
OS	Windows 11 or Mac OS with Latest Microsoft Office License (Perpetual) along with Antivirus (for 3 Years)		
RAM	32GB, 3200MHz or above		
Storage	1TB Solid State Drive		
Monitor	14" inch FHD (1920 x 1080) or Higher		
Ethernet port	Ethernet port In built or External		
USB Ports	USB 3, USB 2.0 or USB Type-C		
HDMI Port	Yes		
Wireless	802.11ax 2x2 Wi-Fi + Bluetooth 5.0		
Camera	FHD Camera		
Speakers	Yes		

Battery	Fast Charging, Minimum 8 Hrs backup with Standard Usage		
Accessories	Bag and Fast Charger		

59. Heavy Duty Color Printer

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type	All In One, office Jet		
Device Function	Print, Copy, Scan		
Print Type	Colour		
Minimum Speed per Minute as per ISO/IEC 24734 in A4 Size- Monochrome	25		
RAM	2GB		
Original Document Feeder Type	ADF, DADF/RADF, SPDF Or higher		
Scanning Feature Availability	Yes		
Wi-Fi	Yes		
Duplexing Feature Availability	Yes		
Networking Feature Availability	Yes		
Compatible OS: Win 10, Win 7	Windows 10 Pro/11 ,Win7		

60. 10G SFP SR of appropriate OEM server(s)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-SRTransceivers		
SFP Mode	Multi		
Compatibility with OEMs Products	All		
Fibre Cable Type	MMF		
Maximum Data Rate	10 Gbps		

61. 10G SFP LR of appropriate OEM server(s)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-LR Transceivers		
SFP Mode	Single		
Compatibility with OEMs Products	All		
Fibre Cable Type	SMF		
Maximum Data Rate	10 Gbps		

62. 5% patch cords

Description	5% patch chords (as described in BoM) Specification	Compliance (Yes/No)
5% patch cords	5% refers to 5% of each type of patch cord supplied in the solution e.g. if 1000 number of 1m & 300 number of 3m patch cords are supplied in total with the solution, then 50 number of 1m and 15 number of 3 m patch cords are required to be supplied as a part of item number 60. The 5% patch cords of remote locations are required to be supplied at DC.	

63. Layer 3 Access Switch (48 Ports)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Number of 1000Base-T Ports	48 or higher		
Number of 10G SFP+ Port(Uplink)	4 or higher		
Number of 40QSFP+ Port (Uplink)	2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1		
Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps)	336 or higher		
Number of VLAN Supported	512		
Layer2 Protocols	802.1QVLAN,LAG,LACP,STP,MSTP,RSTP,IEEE802.3x,VLAN		
Basic Layer-3 Protocol from day1	Static Routing, PBR		
Advance Layer-3 Protocol support	OSPFv2,OSPFv3		
Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP		

Security Feature	RA Guard or equivalent, DHCP Snooping, Dynamic ARP Inspection(or similar security feature which validates ARP packets and prevents attacks such as MITM/(Control Plane Policing (CoPP), ARP cache poisoning or Similar		
Management Protocol	GUI/Web,CLI,Telnet,TFTP,,SNMPv1,SNMPv2/V2C,SNMPv3,NTP, RMON,SSHv2, IP Based Management		
QoS	802.1p,SP,Queues per port, WRED /WTD, Sflow/Netflow, Shaping, Policing/Rate Limiting, Strict Priority Queueing or Low Latency Queueing		
Stacking	Should be supplied on day1with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

PART B

1. Data Center Infrastructure Management (DCIM), RF Id Based Rack Level Live Physical Asset Tracking & Heat Humidity Sensor Solution

S. No.	Specifications for Data Center Infrastructure Management (DCIM), RF Id based Rack Level Live Physical Asset Tracking, Heat and Humidity Sensor based Solution	Marked/ Highlighted Cross Reference of Specification with reference page no. in bid.	Compliance (Yes/No)
1	<p>The DCIM may be pre-integrated with EMS solution from single OEM or the DCIM solution may be from different OEM than EMS OEM. Integration of RF Id based Rack Level Live Physical Asset Tracking Solution (including its asset tags), Heat and Humidity Sensor based Solution (including its sensor tags) & DCIM should be the responsibility of DCIM OEM and bidder.</p> <p>The Unified Data Center Infrastructure Management Solution should provide real-time visibility & access across all IT and facility resources including DC & DR.</p> <p>These resources comprise of:</p> <ol style="list-style-type: none">2. Existing 32 RACKs at DC location installed & commissioned during phase-1 stage-1 of this project.3. Non IT and IT equipment such as NEs and Servers being installed & commissioned at DC during the phase-1 stage-1 of this project.4. New RACKs being installed & commissioned at DC and DR via this bid.5. Non IT and IT equipment such as NEs and Servers to be installed & commissioned at DC and DR via this bid.		

2	<p>It should be a comprehensive SSL 256-bit secure web based & an enterprise grade solution, consisting of all enterprise grade industry standard features. Bidder holds the responsibility to ensure the complete integration and testing of these modules before proposing an integrated solution in the bid.</p> <p>The solution should include a RFID based Rack level live physical asset tracking and monitoring solution(RLPAT). It should also include a Heat and Humidity sensor solution. The RF Id based Rack level live physical asset tracking solution and Heat and Humidity sensor solutions may be separate modules in themselves, but must be well integrated with DCIM solution as per specs & scope of work. These two modules must also be integrated with proposed EMS solution in this bid.</p> <p>RF based Physical Asset Tags and Humidity and Temperature Sensor Tags should also be provided for the existing racks supplied in phase 1 at DC besides the equipment supplied & installed in this bid.</p> <p>It may be noted that RFID based live asset tracking is not required at Remote Locations, the assets / inventory should be tracked & audited manually at these locations by the system integrator as a scope of work. The complete solution should have a perpetual license.</p>		
3	<p>The solution should be able to detect, collect, register and manage information on infrastructure elements related to Power, Temperature, Cooling, Rack space, rack PDUs , Assets tags of data center. It shall show available power, available space, heating and cooling on floors in racks, and network ports and power connectors on the UI/dashboards readily, depending upon the interfaces. There will be an existing BMS system, bidder must scope & plan to integrate with BMS (if the access/permissions are provided) for any of the relevant data for any of such systems.</p>		

4	<p>Solution should provide mapping of assets on the state level, city level, building level , floor level rack level etc. so as to pinpoint the asset location and area. In case the solution has any geo-maps, the solution should not connect with Internet for this or any of such feature, the maps must be in-built. The solution should support 2D and 3D based visualization for Areas, Buildings, Floors, Rack Aisles, Racks, equipment level views. These views should be able to show the interfaces of all device types, storage, I/O. The solution should be bundled(in-built) with Symbols library for OEM icons, Device maps, and Item shapes and Icons etc. Should have capability to upgrade this symbol's library as well. It should integrate with EMS in a way so as to present the alarms per equipment level in this visualization view. Overall, the solution will not have privileges to connect to internet, it must support any updates via non Internet based mechanisms.</p>		
5	<p>The solution should support the:</p> <ul style="list-style-type: none"> i. Counting of Rack Aisles, Rack space etc. ii. Power Consumption Monitoring for Elements in racks of DC and DR iii. Display of Heat map view 		
6	<ul style="list-style-type: none"> 1. The solution design and deployment architecture should meet the availability requirements ensuring that the deployed solution should be distributed or has a load balanced implementation of application(s) to ensure that availability of services is not compromised at any failure instance. 2. The complete solution should be provided in High Availability mode. There should be seamless automatic successful switchover/handover (in case of failure) between the two instances. Each instance of applications/modules should execute at different physical servers. The servers should be of industry standard and data center compatible. Each instance should be able to manage & monitor complete infrastructure at DC and DR. 3. SI must ensure the automatic sync of all relevant data amongst the different data bases of the instances. There shouldn't be any data loss during or after completion of sync. 4. The SI must budget to provide the relevant hardware / software (if any) which can 		

	<p>sync DCIM & its module's data from DC to DR and vice versa (DR to DC sync is applicable in special cases when DC went down or DC's Link to MPLS Network goes down and comes back & vice versa for DR's Link too). The software must only sync the delta (i.e. changed part) every time to maintain whole database sync.</p>		
6.	<p>It must be noted that HA is provided within two instances running on different physical servers.</p> <ul style="list-style-type: none"> a) SI must ensure to provide another third instance at DR, which will remain passive until complete DC is down and/or DC's Link with MPLS Network is down and/or as per any other defined scenario. b) When the link between DC and DR and/or DC to MPLS network goes down & DC's instance is monitoring - managing the DC's infra, the instance at DR must monitor - manage DR infrastructure. c) Also, when the link between DR to MPLS network or DC and DR goes down & DC instance is still in active state monitoring the DC equipment, the instance at DR must begin to monitor and manage DR infrastructure. d) The data (such as alarms and/or application etc.) received/generated at DR must be synced with DC instance, when DC-DR link comes back or DC/DR join back the MPLS network. Also on such occasions/scenarios, whenever the DC and DR instance are running actively at same point of time, solution should not require any additional licenses. Sufficient licenses for the solution should be provisioned to handle such scenarios i.e. ensuring DC and DR instance can run without the need for any extra license. e) However, it must be ensured that no duplication of alarms from DCIM happen at EMS irrespective of the design that's chosen. f) Overall & in General, DC and DR are at physically different locations, two different subnets. DC, DR and Remote locations are connected on MPLS Network. Our Main requirement is HA should be provided on different physical servers, none of our data centres (i.e. DC and DR) go unmonitored and unmanaged and sync of data between all the instances provided should be maintained. Design for HA has been proposed in this spec, other design may be suggested by bidder adhering to all our requirements. g) SI must create Standard operating procedure document for replicating the data (from all of the supplied modules) from DC to DR on regular basis with a 		

	periodicity allowed to be defined (between 30min to 5 days).		
7	Solution should connect and integrate with the Facility (Non-IT), IT infrastructure & Internet of Things (IoT) based systems in the same unified platform. The UI should remain unified for operators. Should be able to show faults/alarms from IT/IoT systems added to the platform.		
8	It should get integrated with EMS (proposed in this bid) for Alarms/Events, Change Management, IT helpdesk/Service desk (for any requests/authorizations) etc. using REST APIs, SNMP Traps etc. The DCIM application should be 64-Bit Application and run on 64-bit architecture.		
10	The system shall have visual capability of 3D color-coded, floor map overlays, power, cooling, and capacity data, drilldown from floor map view to contents inside cabinets, thermal real time data.		
11	The system shall support preconfigured chart widgets, performance graphs, filters.		
12	The system shall allow to analyse KPIs and gain data center business insights from chart widgets with drilldowns across multiple dashboards that address most common reporting needs.		
13	The system shall have drilldown capability allows easy access to the data that drives charts.		
14	The system should be a RBAC (Role-based Access Control) based system with fine control over access and restrictions on monitored objects, groups, system elements. The UI should support and provision the operators to configure the settings. The system should be ready for AAA / LDAP based integration for RBAC. Bidder must do the AAA / LDAP integration as a part of scope of work for achieving these requirements.		
15	The system shall allow to track detailed information on data center IT equipment.		

16	The system shall allow to quickly search, locate & help to map server(s), network, and storage equipment etc. . It must provide various search / advanced search and filtering mechanism/criteria's. It should also allow to reserve the capacity by allowing to enter parameters such as RU height & Rack, no. of data connections and power connections etc. while reserving a capacity. It should be able to show reports about the reserved capacities.		
17	The system shall have pre-configured and pre-integrated dashboards views for the DCIM, & Operations Management System. The operators should be able to browse seamlessly across the platform.		
18	The system should allow to take intelligent decisions help in efficient data processing and data analysis		
19	The system shall have pre-configured dashboards display charts by category such as : Overall health, Overview, Custom Health Parameters, What-If, Inventory, Space, Power, Cooling, Connectivity, Change, Tabular Reports.		
20	The system shall have feature to visualize floor plan drawings and rack views in real time on the Dashboard.		
21	The system shall easily show real-time capacity, consumption for all the data-center physical infrastructure on the Dashboard.		
22	The system shall have rich filtering allows quick search by several asset parameters.		
23	Apart from the trending feature , overall System proposed shall support Root-Cause Analysis so as to Isolate and pinpoint the problem area before it impacts the overall DC operations & business continuity while suppressing down the unwanted events.		
24	The search-locate-map option should also help to identify , vacant spaces in any of the racks in the data-center, for insertion of newer servers/networking devices etc.		
25	Integration of Solution with Helpdesk and EMS: Whenever a fault arises in the monitored/managed infrastructure/ or its own solution, a ticket should automatically get logged as an incident in the service desk. The Alarm/Fault should be visible into the Integrated EMS system being proposed by SI in this bid. As a process, the ticket should be assigned with predefined/preconfigured SLAs to the concern team/team members.		

26	The system should help in optimizing power usage vs cooling on racks. Should also be able to determine the optimum placement of new equipment on the racks. Should be able to identify and calculate Stranded capacity i.e. installed capacity (cooling, power, space) which cannot be used to support the critical load.		
27	Should allow to effectively monitor the Power consumption of the infra, subject to the permission granted/availability of same interfaces for integration of DCIM/EMS with iPDUs installed (as iPDUs supply would not be the scope of work of this bid). Though upon permission, Bidder must provide integration with all iPDUs, RACK PDUs (Socket Level / Strip Level) . Also, should be able to monitor/manage per device level power failures as alarms (provided that the rack level PDUs allow the monitoring and / or management).		
28	Solution should provide a real look and feel of the layouts & equipment exactly as they are placed in the racks or on the floor. This must be shown on the exact floor and building layout .		
29	The client Web browser GUI shall provide a comprehensive user interface. It shall be constructed to function as an application and provide a complete and intuitive mouse- or menu-driven interface. It shall be possible to navigate through the system using a Web browser. The Web browser GUI shall (as a minimum) provide a navigation menu for navigation, and a pane for display of graphics, alarms/events, active graphic setpoint controls, configuration menus for operator access, analytics and reporting actions for events. All system graphics are to be HTML 5 compatible. The GUI shall at least support browsers as : Microsoft Edge , Google Chrome , Mozilla Firefox etc.		
30	The Web browser GUI shall make extensive use of color in the user interface to communicate status information about the equipment being monitored.		
31	Equipment view - The equipment view shall show the status of applicable equipment such as rack, rPDU and so on. The view must allow users to drill down into equipment pages to view alarms and equipment information in full detail, including individual status of all associated device points.		

32	<p>Floorplan views must provide geographical navigation and are flexible to show local data center specific views of site/location hierarchy. Components of the floorplan view must include:</p> <ul style="list-style-type: none"> • Ability to import image to match level of hierarchy being viewed (map, data center, etc.) • Add groups, devices, racks, points, labels, or other devices to the floorplan view. • Ability to add a heatmap view, capable of showing hot spots and cold spots for environmental or power data • Visualization of alarms • When racks are added, a dropdown view selector to allow : alarm status, free front/rear rack U space, max contiguous front/rear rack U space, max rack temp, max rack kW load percent, total rack kW, heatmap view etc. 		
33	The user must be able to create, edit and add boards, dashboards and floorplan views		
34	<p>Graphics shall show each piece of equipment monitored or controlled at :</p> <ul style="list-style-type: none"> • Each building (DC/DR), • Each floor , • Each room , • Each rack , etc. 		
35	Events and alarms associated with a specific system, area or equipment shall be displayed on the main view and/or within an embedded alarm console. The solution must have native capability to show alarm on all connected devices. Users must be able to drill down through views to locate alarm sources. The alarm should be accessible from the device level. Multiple configurable severity levels for Alarms must be supported. System should support separate Rule Engine based alarms apart from the generic threshold(min, max and average values).		
36	The alarms generated in DCIM for the components should also be reflected in the EMS system.		
37	The user shall be able to view events across the system. Depending on access level, it should also be able to manage the event through acknowledgements, deletions, sorting rules and viewing alarm notes.		
38	<p>The system should support following two methods for third party integrations i. REST APIs (PUSH & PULL methods) ii. SNMP Trap Forwarding</p> <p>In case required bidder must be ready to perform an integration w.r.t Generated Log File (used for writing alarms / events) to achieve the overall functionality.</p>		

39	<p>Role based access / User Management</p> <ul style="list-style-type: none"> • Permissions: The Permissions field allows administrators to set access level for different users. Permissions should be role based permissions include options such as : <ul style="list-style-type: none"> o Read/Write: Full read access and full write access to the entire system. o Read Only: Full read access but no writes or changes may be done. o Read/Acknowledge: Full read but no write or changes may be done, except to alarm database for acknowledging alarms. System owner shall have the ability to assign combinations of roles and privileges to users that define access levels. <p>The UI should support and provision the operators to configure the settings. The system provide a LDAP based integration while configuring users for Role based access.</p>		
40	<p>Audit History: A log shall record operator activities and some system level activities per user, such as configuration changes ,etc.</p>		
41	<p>Histories/Trending: Histories shall be user-configurable and displayed via GUI. Trends shall comprise native points, along with calculated points (collections of point data). A trend log's properties shall be editable within the GUI.</p> <p>The operator shall have the ability to view trends with a time series line chart by using the history database or by selecting a specific point within the GUI. The line chart must be exportable within the pop-up window to Microsoft Excel and able to be saved as a visualization to be used within the Analytics tool. Historical records shall be saved to match the "configurable" user-defined polling interval per device. Each trended point shall have the ability to be trended at a unique interval as specified by the user.</p>		

42	<p>IT Assets: The solution includes an asset database. IT Assets are representations of a physical rack assets that will be associated to IT Racks within the software. These assets are created within a dedicated assets feature. The assets feature contains a detailed list view of assets. The asset feature shall provide the following capabilities:</p> <ul style="list-style-type: none"> • Asset database which is sortable, filterable and searchable by key asset data • Add assets – manually or via CSV import • Edit assets individually or by group • Support of assets within assets (blade server enclosures, as an example) • Export & import of existing asset database • Ability to assign IT assets to IT racks • Asset tab within the Rack View to visually display IT assets within each IT rack 		
43	<p>Maintenance: The solution must provide users with a feature to manage device maintenance events. This feature will silence all alarms on specific equipment or multiple pieces of equipment for the duration of the maintenance event.</p> <ul style="list-style-type: none"> • Users must be able to place a device into maintenance mode instantly or schedule maintenance within the interface, for single or multiple grouped devices at a time. • Users have the option to receive email notification for the start and end of maintenance events. • Maintenance events must include start and end dates, devices and task descriptions. • Users must be able to view maintenance history. • The solution shall allow users to add, edit and delete maintenance tasks. Events that have completed cannot be deleted. 		
44	<p>Vendor must integrate DCIM solution & its modules with proposed EMS, Change Management, IT Helpdesk solution under this project. The bidder may integrate or also have to integrate this solution with other necessary (proposed) modules as desired to accomplish the required functionality.</p> <p>Bidder must also ensure that all the hardware of various different OEMs proposed in this solution by the bidder must be managed, monitored by the proposed DCIM+EMS solution. The proposed solution should be able to show the alarms from all sub-system & system components planned to be supplied in this bid including Phase-I and other bids referred in this tender. In general solution should be OEM agnostic & should by default support integration with major OEMs of Network and server equipment and natively support SNMPv3 for other devices.</p>		

	Humidity and Temperature sensor Solution & RLPAT Solution		
1	<p>Humidity and Temperature sensor tags are required which need to be mounted on each RACK placed at DC and DR only. The sensor should be able to provide both temperature and humidity from a single sensing tag and not two different devices. The sensors should stick to the RACK. Three sensors per RACK, with two in front and one at the back are required. Actual location on the RACK will be confirmed during Installation. The sensors must be operating in free ISM unlicensed RF Frequency bands. The solution shouldn't use 2.4/5Ghz bands (Wi-Fi/Bluetooth) instead use Sub Ghz bands. For completeness of requirements & efficient solution design, the solution may use the same Communication Gateway device (Proposed with RLPAT Solution) . The same Communication Gateway device shall be configured and integrate with Humidity and Temperature sensor tags and Asset Tags (supplied with RLPAT solution) in a Star Topology. The communication Gateway device may further connect with EMS/DCIM over SNMP/REST API or other possible mechanisms for accomplishing the requirements. The exchange of data amongst these devices should be in an encrypted form.</p>		
2	<p>The Humidity and Temperature sensor software Solution should be able to manage and monitor the Humidity and Temperature sensor tags, should be able to work as a standalone solution as well as should get integrated with DCIM to provide completeness of DCIM solution & scope of work. It should be a web based solution deployable as a standalone on a hardware or on a VM.</p>		

3	Proposed sensors must allow in maintaining the environment within threshold defined via configuration at EMS/DCIM. The Humidity and Temperature sensor Solution should get integrated with DCIM/EMS solution. Overall these sensors should help the DCIM/ EMS in bringing the floor's heat map view / each RACK wise heat view. The alarms generated via the sensor hardware supplied should be visible at DCIM and EMS solution supplied. The data(generated/configured) related to temperature & Humidity should be supplied to both EMS and DCIM e.g. the temperature data should be used at DCIM for the purposes of generating heat maps (visualization) etc. This is to note that this data (both temp and humidity) will also be required at EMS to generate any alarms such as whenever temperature / humidity goes beyond a configured threshold. Humidity and Temperature sensor Tags should also be provided for the existing racks supplied in phase-1 at DC. No Humidity and Temperature sensor Tags are required at remote locations.		
4	After integration with DCIM, the Solution should allow proactive identification of potential areas which may need attention (including cooling, power, storage, temperature etc.) .		
5	Real time heat & humidity measurement for equipment's on the racks should reflect on the central dashboard of DCIM.		
6	Sensors should not be larger than 35mm x 55mm x 8mm without enclosure and a should not exceed 76mm x 40mm x10mm with enclosure . Total weight of an enclosure should not exceed 75gms. The enclosure must be stuck on Rack using VHB tapes. The enclosure must be Tough, impact resistant and temperature stable.		
7	Sensors should have accuracy of +/- 1degree Celsius and +/- 3 for relative humidity. They should be operatable within -20 °C to +70 °C & Operating Humidity levels < 95% RH non-condensing .		
8	Proposed solution must have an inbuilt feature to support multiple internal departments by mapping them against tenant ID, thus it should provide information regarding power used, capacity used by a tenant.		
9	The system should be a RBAC (Role-based Access Control) based system with fine control over access and restrictions on monitored objects, groups, system elements.		
10	The system should be integrated with IT Helpdesk solution proposed by the SI via the DCIM or directly.		

11	<p>Solution should provide Rack level Physical IT Asset Tracking to optimize and keep a check on Data-center IT inventory Tracking and audits.</p> <p>The software solution supplied to manage and monitor the Rack level Physical IT Assets Tracking should be able to work as a standalone solution as well & should get integrated with DCIM.</p> <p>It should be a web-based solution deployable as a standalone on a hardware or on a VM.</p> <p>The solution should be integrated with proposed EMS and IT Helpdesk solution by the SI via the DCIM or directly.</p>		
12	<p>RLPAT Solution should be able to collect the information of IT assets and upload to a central database server provided. Near Real time monitoring of the assets location up to rack level by addition of tracking via asset tags so as to notify / alert the user(s) if an asset is added, moved, removed in an authorized or unauthorized manner. For completeness & compactness of the solution, the Live Asset Tracker are also required to be integrated with Communication Gateway to send the information to EMS/DCIM. They should use encrypted communication techniques for communication with Gateway</p>		
13	<p>Communication mechanism in RLPAT Solution should be wireless in nature & working on RF frequency (Unlicensed Band). The solution shouldn't use 2.4/5Ghz bands (Wi-Fi/ Bluetooth) and instead use Sub Ghz bands. This will be responsibility of the bidder that frequencies used in this solution should not interfere with any of the supplied equipment frequency or hamper any of their operations.</p>		
14	<p>RLPAT Solution's Asset Tag form factor & mounting - Form factor of asset tags should be small enough to be able to easily attach to a IT asset but it should also be noticeable to naked eye. Should not be more than 76mm x 40mm x10mm with enclosure.</p> <p>No cables and wiring should run between asset tag to any hardware or RF / Controllers gateways. The Asset Solution should support OTA (Over the Air) upgrade of its components. The tags should be tough, impact resistant and temperature stable .</p>		
15	<p>RLPAT Solution's Asset tag & Heat and Humidity Sensor's battery Life - their battery should have Operational Life for at least 3 years from date of acceptance of the solution. In case the battery life of tag is less than 3 years, SI shall provide the battery replacements until 3 years (from the date of acceptance) duration for each of the supplied tags.</p> <p>The SI needs to also budget for a mandatorily replacement of battery (as a preventative</p>		

	maintenance of all asset tags with fresh battery in the last quarter of 3 rd year of O&M .		
16	<p>RLPAT Solution's Asset tag Features - Should be able to alert in real time, if an unauthorized movement of asset is made or an asset falls or there is an attempt to remove or forceful removal of tag from asset or has a low battery.</p> <p>The solution must be an integrated solution with IT helpdesk, Change Management, DCIM etc., so as e.g. movement of asset can be authorized change request, whose time taken for a change may be tracked via the Helpdesk manager.</p>		
17	<p>RLPAT Solution's Alarms & Notification from the Asset Solution- Solution should be able to provide real Time alarm & event notification. Should be able to Generate Alert in at least the following conditions:</p> <p>Addition & removal of Asset , movement of Asset from a RACK, Cage area, Store Room, FLOOR & DC/DR , Falling of an asset or there is an attempt to remove asset or a forceful removal of tag from asset or if an asset tag has a low battery & needs battery replacement or Out of Warranty Alarm of the asset . Accordingly to the locations defined (such as RACK, Cage area, Store Room, Floor , DC,DR etc.) bidder may ascertain & accordingly include the number of Communication Gateways required)</p>		
18	RLPAT Solution's Built in Local Indicator on Tags - All tags should have in-built indicators to reflect working status		
19	RLPAT Solution's Asset solution should support TLS & SSL, adheres to FIPS, access is protected through username & password. The OEM needs to provide an undertaking for FIPS adherence.		
20	RLPAT Solution's should have RoHS Certification		
21	RLPAT Solution's should have Capability -Locate IT asset accurately with Rack Level Accuracy		
22	RLPAT Solution's Battery in Asset tags must also be replaceable in nature & Tags should be reconfigurable/re-writeable		
23	RLPAT Solution's Asset solution should have Scalability - System should support minimum of 5000 tags in an area of 30,000 sqft.		
24	Assets Tags in RLPAT Solution should have a 2D barcode to allow ease of configuration or physical audits. Supplied Handheld Tag readers should be able to read, configure these 2D		

	<p>barcodes and save the information into the system about the asset if required. It should be compatible and integrated with the solution. It should have at minimum following communication interfaces, 4G LTE, WLAN, Bluetooth, NFC . It should have Environment specs with IP65 compliant and at least 1.5mtrs Drop tested. It should have a minimum of 7000mAH battery & at least 3GB RAM with 32GB Flash.</p> <p>The bidder is also required to provide two numbers of compatible 2D barcode / QR code printer along with consumables (Cartridge, DK Rolls stick able labels etc.) for 3 years duration. The Printer should have at least 300dpi printing resolution, should have WLAN, RS232 and USB interfaces. Should support DK Rolls (DK die cut labels / DK Continuous Tape).</p>		
25	<p>RLPAT Solution's Integration - Should integrate with DCIM, EMS, Helpdesk/Service Management etc. modules of the system for various of its features such as authorization process of movement of an asset, raising alarms for unauthorized access/movement / tracking the assets .</p> <p>If an instruction is given to system to find an asset, it should be possible to locate that asset and give a beep sound locally on tag.</p> <p>e.g. If there was a request to move an asset from a RACK To another RACK in the IT Helpdesk system, this will be tracked via a ticket/service desk ticket. Any change needs to undergo via change management workflow , which means this request will be reviewed and approved by different users. Upon approvals a change becomes an authorized change.</p> <p>Similarly, if there is an alarm that arises in RF based physical asset system due to movement of an asset, this alarm must be sent to EMS. An alarm in EMS will auto raise a ticket in IT helpdesk (based on certain criteria). The ticket may be closed by a user by referring / adding remarks to the ticket id w.r.t a ticket generated for authorized movement of asset as above. The alarm may be also acknowledged with this ticket id.</p> <p>The bidder needs to create such processes and perform similar integrations</p> <p>Data Integration - proposed solution should be able to route the data to DCIM/EMS by forwarding SNMP traps e.g. Alarm generated via an unauthorized movement of asset should be sent to EMS or any other alarm generated w.r.t Asset Management Functionality should be seen in EMS.</p>		
26	<p>RLPAT Solution's Inventory Management module should be able to manage assets inventory as individual or bulk items, set re-order levels and amounts and keep a history of transactions. Able to provide ability to account for assets and components in inventory and facilitates maintaining appropriate levels of stock .</p>		

27	RLPAT Solution's Inventory management module should record OEM, Make, Model, Serial Number, Contract Details, Maintenance Details and link/maintain it in DB to each asset. User should be allowed to search the records/inventory based on any of fields / attributes .		
28	The system should allow to generate the reports containing inventory details as mentioned above and including the other details such as current assigned IP, device type, device name, location , RACK etc.		
29	Asset record detail: Provide a general tab that stores specific information about the device depending on the device type.		
30	Provide a Components tab that stores sub-components information of the asset, E.g. ID, Serial Number, Licenses, Version, Status, Category, Type, Item, etc. and also should support in SLA management , assist in a Help Desk call.		
31	Provide a tab that stores information about different types of contracts and helps in Support, Warranty, Software, Maintenance , SLA, EoL, EoS etc.		
32	Provide a People tab / column that stores custom fields per asset such as individuals or groups who are owners and users of the asset.		
33	Should be able to provide the asset's inventory details along with details such as location, rack, IP details (where ever applicable). It should support both IPv4 and IPv6 stack.		
34	Deployment Mode of the overall Solution: The DCIM, RLPAT software module , Heat Humidity Module / Application(s) provided should be capable to be deployed on physical server and/or on virtual servers. They should all run in HA mode. The solution supplied should have a perpetual license.		
35	Updating of Patches, Bug Fixes within support period, upgradation of version during the support period is the responsibility of the SI. SI must ensure to update the patches or provision the upgrades via the non-internet modes i.e. by following local update/upgrade mechanisms using HDDs/USBs .		
36	In case the solution consists of separate independent modules or as a single solution, each of them or the overall solution should be capable to run on Linux or Windows or on their VM . The solution with all modules, must run in HA mode in either case.		
37	The proposed solution (DCIM, Humidity and Temperature sensor & RLPAT Solution) should include hardware(s) and software(s) (including web application stack, database, any servers, any other relevant software etc. required for accomplishing the scope of work and requirements) with operating system(s). Bidders must keep in mind the future and		

	<p>scalability of requirements before deciding for a hardware configuration.</p> <ol style="list-style-type: none"> 1. Also, the sizing of the computing in the proposed hardware should be sufficient enough to cater to futuristic projection of IT & Non-IT equipment mentioned in this bid. 2. Moreover, the specifications of the proposed computing hardware must be chosen so as to ensure that only 70% of the CPU and RAM are utilized at any point in time. In case a higher CPU / RAM than this defined threshold is observed for more than an aggregated 60 minutes per day, the bidder shall upgrade/replace (with higher specifications) the hardware within 31 working days. Otherwise, equipment/solution will be considered down and SLA/Penalty will be applicable. 3. The specifications of the proposed computing hardware and overall solution must be sufficient enough to handle infrastructure of such 3 additional data centres (i.e. 3 times the sought items of BoM). 4. The proposed solution (hardware + software) must be scalable in future. <p>The proposed solutions/Modules for the sought requirements should be able to run on latest versions of Microsoft windows and Linux operating systems. All the updates and upgrades of the proposed solutions/Modules must also be supported on the upgraded / updated versions of OS during the entire contract period. The bidder also needs to provide the relevant software(s)/licenses to ensure security of the provided hardware, software/ system.</p> <p>In case of any updates/upgrades of base OS, the supplied solution(s) must be updated/upgraded free of cost during the entire contract period. Also any bug fixes within support period must be supported.</p>		
38	The proposed solution should provide a secured single sign-on and unified console for seamless cross-functional navigation for all functions of components/modules offered across multiple areas of monitoring & management.		
39	Proposed solution should provide current and historical reports for various statistics monitored. The solution must also allow for generation of customized reports in addition to default reports as per templates. System should be able to generate the current alarm/assets etc. reports for entire inventory or per device basis. Reports should be allowed to be generated for the historical data with custom time period. Should allow sending out(emailing) of all types of reports on custom schedule such as daily, weekly, monthly basis etc. Reports should be allowed to be generated in various templates such as excel, csv, pdf etc.		

40	The SI is required to provide a clean VAPT report of the complete solution at the time of acceptance testing, where all categories of vulnerabilities are fixed in the deployed solution. Additionally, periodic VAPTs must be done yearly from the date of acceptance and additional VAPT should be done , upon any major upgrade in solution or solution's respective modules.		
41	Integration of RF Id based Rack Level Live Physical Asset Tracking Solution (including its asset tags), Heat and Humidity Sensor based Solution (including its sensor tags) & DCIM should be the responsibility of DCIM OEM and bidder		
42	OEM(s) should be ISO 9001, ISO 14001,ISO 27001 certified.		

7. EMS Solution

S. No.	Specifications for Enterprise Management Solution(EMS) , Asset Manager , IT Helpdesk Manager , Change Management, Configuration Management , IPAM	Marked/ Highlighted Cross Reference of Specification with reference page no. in bid.	Compliance (Yes/No)
	General Requirements		
1.	It should be a comprehensive SSL 256 bit secure web based IPv4 and IPv6 compliant solution, consisting of all standard features/modules of Enterprise Management Solution (EMS) such as fault management, performance management, configuration management, event management, an IT helpdesk/service desk to perform SLA management , Configuration Management Database(CMDB) ,incident, problem, document/knowledge management, schedule, asset management and has a inbuilt syslog server / capability to integrate a syslog server / or an integrated syslog server, so as to act as a sysLog aggregator, EMS solution (including its various modules) should provide traffic analysis , service management & their respective functionality on all the Non IT and IT (network and server) infrastructure procured and/or deployed at following different physical locations:		

	<p>i. 32 RACKs at DC location & its 15 remote locations including the Non IT and IT equipment such as NEs and Servers at these locations from the phase-1 stage-1 of this project.</p> <p>ii. New RACKs being installed & commissioned at DC, DR and its remote locations including the Non IT and IT equipment such as NEs and Servers to be installed and commissioned at these locations via this bid.</p> <p>iii. IT Equipment being purchased via the bid “GEM/2022/B/2183782” titled as “Selection of System Integrator for Setting up of ICT (Security) Infrastructure at 18 Remote Sites”.</p> <p>The solution in general should be able to manage/ control/ configure/ integrate/ view alarms from all of infrastructure from above equipment commissioned at these sites.</p> <p>The complete solution should have a perpetual license.</p>		
2.	<p>The proposed EMS solution can be from a single OEM or final EMS solution with IPAM including Switch Port Management may be an integration of OEMs to fulfill the sought requirements, in other words, EMS solution and all modules (e.g. Configuration Management, network monitoring, server monitoring, asset management, IT Helpdesk , Change Management etc.) must be from a single OEM whereas the IPAM Solution may be from a different OEM to fulfill the sought requirements & functionality. Bidder holds the responsibility to ensure of testing the functionality of these components/modules before proposing a solution in the bid.</p> <p>The proposed solution should be able to manage and monitor all the devices mentioned & planned as per requirements and scope of project.</p> <p>Solution OEM(s) should have a development/development support center in India to facilitate quick issue / bug resolution/ any custom requests and upgrades. EMS Solution should be a GUI based support portal with all features mentioned in EMS Specifications</p>		

3.	<p>Proposed solution must provide role based access for each user / user groups. The access & privileges of users/user groups should be possible on per module/application basis. The users/user groups access should be possible on features within the modules/applications on Read only or Read-Write basis per feature.</p> <p>The role based read/read-write privileged user /user groups should also be possible for various solution module(s) sought , device level groups(network groups, server groups etc.)</p> <p>The RBAC (Role-based Access Control) system with fine control over access and restrictions on system elements/modules/functionality should be supported for all the supplied modules/applications. The module/application UI should support in provisioning the operators to configure these settings via an administrative login.</p> <p>Integration: The system should be ready for AAA and AD based integration to support these features. Bidder must do the AAA and LDAP integration as a part of scope of work for achieving this role based requirements and AAA integration for authentication between EMS and Network devices must be performed prior to acceptance.</p> <p>The users should have same login credentials to access these various modules while navigating across the solution. The access to various modules should be dependent upon privileges defined per user per module.</p>		
4.	<p>The proposed solution should include hardware(s) and software(s) (including web application stack, database, any servers etc. required for accomplishing the scope of work and requirements) with operating system(s). Bidders must keep in mind the future and scalability of requirements (mentioned in these specs) before deciding for a hardware configuration.</p> <ol style="list-style-type: none"> 1. Also, the sizing of the computing in the proposed hardware should be sufficient enough to cater to futuristic projection of IT/Non-IT equipment mentioned in this bid. 2. Moreover, the specifications of the proposed computing hardware must be chosen so as to ensure that only 70% of the CPU and RAM are utilized at any point in time. In case a higher CPU / RAM than this defined threshold is 		

	<p>observed for more than an aggregated 60 minutes per day, the bidder shall upgrade/replace (with higher specifications) the hardware within 31 working days. Otherwise, equipment will be considered down and SLA/Penalty will be applicable.</p> <p>3. The specifications of the proposed computing hardware and overall solution must be sufficient enough to handle infrastructure of such 3 additional data centres (i.e. 3 times the sought items of BoM).</p> <p>4. The proposed solution (hardware + software) must be scalable in future. The application should be 64-Bit Application and run on 64-bit architecture. However, it may be noted by bidder before proposing the solution that no server or any other hardware is allowed to kept at remote locations for monitoring or management i.e. w.r.t EMS.</p>		
5.	<p>The overall solution should be provided in High Availability mode. There should be seamless automatic successful switchover/handover (in failure cases) between the two instances. Each instance of applications / modules should execute at different physical servers. The servers should be of industry standard and data center compatible. Each instance should be able to manage & monitor complete infrastructure at DC, DR & Remote Locations.</p> <p>SI must ensure the automatic sync of all relevant data amongst the different data bases of the instances. There shouldn't be any data loss during or after completion of sync.</p> <p>The SI must budget to provide the relevant hardware / software (if any) which can sync EMS & its module's data from DC to DR and vice versa (DR to DC sync is applicable in special cases when DC or DC's connectivity with MPLS Network went down and comes back). The software must only sync the delta (i.e. changed part) every time to maintain whole database sync.</p> <p>It must be noted that HA is provided on two instances running on different physical servers, SI must ensure :</p> <ul style="list-style-type: none"> To provide another third instance at DR, which may remain passive (or active) until complete DC is down and/or DC disconnects from the MPLS network and/or as per any other similar/ required scenario. 		

	<ul style="list-style-type: none"> • When the link between DC to MPLS network or DC and DR goes down & a DC instance is still in active state monitoring the DC equipment, the instance at DR must begin to monitor and manage DR infrastructure and remote locations. • Also, when the link between DR to MPLS network or DC and DR goes down & DC instance is still in active state monitoring DC equipment and remote locations, the instance at DR must begin to monitor and manage DR infrastructure. • The data (such as alarms or application data etc.) received/generated at DR must be synced with DC instance, when DC-DR link comes back or DC/DR join back the MPLS network. Also on such occasions, whenever the DC and DR instance are running actively at same point of time, overall solution should not require any additional licenses. Sufficient licenses for the solution should be provisioned to handle such scenarios i.e. ensuring DC and DR instance can run without the need for any extra license. • SI must create Standard operating procedure document for (if required) replicating the data (from all of the supplied modules) from DC to DR on regular basis with a periodicity allowed to be defined (between 30min to 5 days). <p>Note1: Each instance of the application provided e.g. One instance of the EMS solution while working in HA mode (as an example) should be able to manage and monitor the 100% of the infrastructure (mentioned above i.e. all Infra at DC, DR & remote locations and already existing phase-1 infra and its remote locations, etc. as per scope of work) irrespective of its location of execution on a physical server .</p> <p>Note 2: Bidder may propose an alternate design / solution in combination full-filling the sought requirements, if required. SI may add any other third party components (such as a backup solution etc.) to achieve this requirement.</p>		
6.	<p>The proposed software and hardware should be scalable to accommodate network growth of upto 10,000 IT Devices (~2500 Networking Devices , ~7500 Servers, etc.) and 10,000 non-IT devices. The hardware (servers/ databases/ respective storage and computing) planned to be supplied with the EMS solution should be capable to handle the data from these many number of IT and Non IT devices (including their alarms, backups, configurations etc. for duration of contract without any upgrade).</p> <p>The solution should allow 50 simultaneous (concurrent) users while performing the CPU & RAM intensive operations and a capability to support futuristic scalability requirements.</p>		

7.	The OEM/OEM(s) should have their own IP rights on the solution being supplied, so as any customization required in solution may be possible by them. This will include integration with third-party Non-EMS / EMS applications over REST APIs /any other interface. The integration should be bi-directional in nature.		
8.	The solution should be bundled with adequate cyber security measures by including 3 rd party security software or by having in-built security measures to alert/ prevent any cyberattacks on the provided solution.		
9.	Should have the Asset management module which should be able to manage the all IT devices and Non IT devices. This asset management solution should be a comprehensive solution that allows to manage all devices as assets.		
10.	Should be able to provide the change request (CR) management module.		
11.	The solution should be accessible via the intranet and internet in the secured manner. However, the solution i.e. any of the modules should not connect to Internet for accomplishing any required features asked in this solution e.g. fetching geo-maps for any functionality, and not even for the updates / upgrades etc. It should have in-built or capability to use custom maps as background and the updates/upgrades of the solution should be possible via non-internet mechanisms. Solution be bundled with Data base /Data store encryption for Documents encryption and decryption using AES 256 bit cipher. The solution should only be accessed by secure browser supporting SSL 128 bit and SSL 256 bit encryption ciphers and without SSL there should be restriction/control on the solution so as to prevent malware attacks, virus attacks, browser based attacks, ransomware attacks. The encryption should be performed via an industry standard ciphering algorithm. The solution must have in-built AES 256bit encryption for monitoring data and session within the platform.		
12.	Deployment Mode of the Solution: The Module / Application provided should be capable to be deployed on physical server and/ or a virtual server.		

13.	Bidder must ensure that all the hardware of different OEMs proposed in this bid and other bids referred in this bid's scope of work must be managed, monitored by the proposed DCIM & EMS solutions. The proposed solution(s) should be able to show the alarms from all system components envisaged to be supplied in this bid, including Phase-I and other bids referred in this tender. In general, solution should be OEM agnostic & should by default support integration with major OEMs of Network and server equipment and natively support SNMPv3 for other devices.		
14.	Enterprise Management Solution (EMS) Specs		
15.	The solution should work without any agent installation for most (90%+) of the use-cases/requirements mentioned in this document, however specific uses-cases that are not supported without agent , are allowed by using agent-based deployment. All the uses-cases/updates should be fulfilled without any requirement of internet connection. The agent or agent-less communication should be secured.		
16.	Should integrate with a proposed Automated Infrastructure management(AIM) solution (Comprising of Intelligent Cabling Management and other features) using REST APIs / SNMP so as the alarms, events can be monitored & managed from EMS. Bidder must also integrate with an already existing (Phase-1) AIM solution at DC (refer Scope of work for details). Integration should be on API level/SNMP without any requirement of installing any 3rd party software.		
17.	Should provide Network performance monitoring (NPM) via reports and dashboards. It should support the reporting, status , threshold breach reports for all monitoring parameters for servers, Network elements. It should have features for proactive monitoring of network performance. Additionally, the diagnostics module of EMS should support ping check, telnet or ssh access, traceroute route checking and Device logs analysis .		

18.	<p>The proposed solutions/Modules for the sought requirements should be able to run on latest versions of Microsoft windows or Linux operating systems. All the updates and upgrades of the proposed solutions/Modules must also be supported on the upgraded / updated versions of OS during the entire contract period. The bidder also needs to provide the relevant software to ensure security of the provided hardware, software/ system. In case of any updates/upgrades of base OS, the supplied solution(s) must be updated/upgraded free of cost during the entire contract period. Also any bug fixes within support period must be supported.</p> <p>SI must ensure to update the patches or provision the upgrades via the non-internet modes i.e. by following local update/upgrade mechanisms using HDDs/USBs .</p>		
19.	<p>Should allow & perform integration with other third-party applications (such as AIM, DCIM etc.) through APIs. It must be ensured that all alarms arising out of any module of the solution should be sent to EMS and its database. e.g. If there is an alarm that arises in DCIM, it must be sent to EMS . The EMS must serve as an all alarm and event data base. Also, there should be a provision for Northbound and Southbound Integration Adaptors , gateways or CLI based integration for seamless integration and customization possibilities.</p> <p>System should have Node Tags for device grouping and resource/interface tagging for element grouping. Apart from Node Tags additionally system should have options to do device grouping based on default fields and customer fields. No restriction in the number of level of grouping for the devices. provides the option to create the grouping based on the service offered to customer and map all the devices involved in the specific service till the component / resource level.</p> <p>It may be noted that "node tags" refer to - a tag whereby devices having similar characteristics can be grouped inside it for the devices at DC, DR and Remote locations.</p>		
20.	The current performance state of the entire network & system infrastructure shall be visible in an integrated console of proposed solution		
21.	It should provide a secured single login with unified console for seamless cross-functional navigation for all functions of components/modules offered across multiple areas of monitoring & management.		

22.	Should be able to monitor network traffic by capturing flow data from network devices, such as but not limited to Cisco NetFlow v5 or v9, Juniper J-Flow, IPFIX, sFlow, sampled NetFlow data and Cisco ASA NetFlow.		
23.	<p>Should support Network device or configuration management by supporting with Automated Backups of configurations, Change management in Real-Time , Allow execution of special Scripts (e.g. execute sequence of commands in different devices for troubleshooting & creation of such scripts) , Compliance auditing & Automation of repetitive configuration management tasks.</p> <p>The scripts should be allowed to run on single NE or can be issued in bulk on different set of NEs.</p> <p>The scripts may be used for upgrading the Firmware in NEs. Additionally, the scripts functionality may be used for changing configurations, running and executing commands for troubleshooting or, so as it can automate configuration management , device management etc. by giving convenience to an operator / user for executing self-created scripts.</p>		
24.	Should also provide a feature of Remote Firmware upgrade on single or bulk devices		
25.	Should monitor hardware and software health for Data Center Network & Server Equipment and should allow alarms, alerts and reports on hardware and software monitoring e.g. over system resource use beyond threshold limits, fault / alarm upon excessive network usage. May perform Hardware monitoring using Trap based integration with existing hardware monitoring solutions or element management solution supplied / asked from OEMs in this bid's scope of work.		
26.	Should be an integrated solution for managing & monitoring devices , bandwidth utilization, configuration management.		
27.	Should be able to perform Real-time monitoring of each of the alarms and resources (but not limited to such as CPU, Memory, Disk, IO, network etc. aspects) of physical and virtual servers including the other network devices		

28.	The solution should have self-monitoring ability to track status of its critical components & parameters such as Up/Down status of its services, applications & servers, CPU utilization, Memory capacity, File system space, database Status, status monitoring between primary and secondary system and event processing etc. It should provide this information in real-time through graphical dashboards, events/alarms as well as in the form of historical reports. Reports shall contain visualizations utilizing the applicable graphic types such as Bar Chart, Gauge , Pie Chart, Scatter Plot, Simple Value, Table, Time Series, User Image, User Text etc.		
29.	The proposed solution should be able to monitor Physical Servers running UNIX , Linux ,windows or any other operating systems & also Virtual Servers on VMware or any other Hypervisor-based Virtual Network Function infrastructure network management must also be supported .		
30.	Supplied Solution should monitor the devices/VMs continuously and identify & capture the faults/alarms from each of it.		
31.	There should not be any agent on the managed node, and the overall solution must provide the system performance data. For event management it should be able to prioritize events, perform duplicate suppression ability to buffer alarms .		
32.	Users must be able to choose the thresholds (high and low) for when an alarm and/or warning will activate, along with the points for the severity level. Users must be able to acknowledge and filter alarms. Alarms should have a way to prioritize more important alarms. The solution shall include an alarm history page where all system alarms are stored. Users should be able to search for previous alarms by site, device, or point. should be able to manage and display alarms/events/alerts, store them and should allow creation of new alarms/events/alerts from scratch with customizable threshold limits. The threshold may be applied to any valid parameters which are being monitored per device .		

33.	<p>Should Support Assignment of Alarms/events/Alerts to System Administrators for processing and completion via a Helpdesk / Service Desk feature. It must also allow the logging/recording of solution/Actions during Alarm/event/Alert Completion/closure.</p> <p>As an hypothetical example, after the analysis of Alarm/event/Alert, if solution requires a change in configuration at a Network Element(NE), this change in configuration should flow via the change management system for ensuring appropriate approvals and recording . A ticket for this alarm should be created in helpdesk, which should trigger a Change Request in Configuration Change Management system. Upon various approvals, the CR is implemented in the system and only then CR , ticket and alarm are closed . CMDB is updated with this configuration change for future records. User must also be able to map an Alarm/event/Alert with a ticket as well as CR.</p>		
34.	Should support to have various actions that can be taken, including but not limited to, sending out emails, forwarding SNMP traps, sending SMS text alerts, playing sound, emailing any type of reports generated etc.		
35.	Should Support Incident/ Alert Escalation through defined Escalation Metrics		
36.	Should Generate Green Alerts / automatic update the alert status as down / indicate the new status after successful alert processing		
37.	Should support variables in alert email messages to make message self-explanatory		
38.	Should be able to define relationships (based on topology, etc.) between servers and applications to avoid false-positive email alerts in case of outage		
39.	Proposed monitoring solution should provide current and historical out-of-the-box reports for various statistics monitored. The solution must also allow for the customized reports in addition to default reports as per templates. System should be able to generate the current alarm reports for entire inventory or per device basis. Same for the historical data with custom time period.		
40.	Should allow advanced customization in reports allowing options to extract custom data from database		

41.	Should allow sending out (emailing) of all types of reports on custom schedule such as daily, weekly, monthly basis etc., i.e. allow to Schedule Report Generation. It shall allow to schedule execution of tasks allowing automation.		
42.	Should allow Creation of Customized dashboards as per requirement		
43.	Solution should provide feature that facilitates suppression/reduction of alarms displayed by means of alarm suppression feature. For example, during a maintenance, it should allow to suppress alarms from devices. The system must support filtering options by alarm status , device type/category to facilitate quick actions .		
44.	The proposed system shall integrate network , servers or other equipment alarm/performance information in a single console/dashboard and provide a unified reporting interface for each category of components.		
45.	Alarms should be mapped to the live topology views and real time updates to topology based on alarm occurrences. System can support one click alarm masking capability.		
46.	Should trigger (pre-configured and customized) automated actions based on incoming events / traps. These actions can be automated scripts/batch files. Scripts/batch files should be customizable.		
47.	Should support out of the box network Trap Analytics		
48.	Tool should support automated Change Plans including but not limited to: Conditions to validate, Pre-Change Validation, Change Script (similar to legacy Command Script), Post-Change Validation, Rollback Script		
49.	Should provide the comparison views for configuration versions e.g. Original Configuration Vs Latest Configuration		
50.	Should provide Compliance Model w.r.t Configuration, Software, Running State		
51.	Should provide Risk Visibility Dashboards of network infrastructure		
52.	EMS solution proposed should have capability to fetch / receive alarms from other Network Monitoring tools / Systems monitoring tools / other domain monitoring tools like AIM , DCIM solutions supplied as a part of this bid and including equipment from other locations / bid as defined earlier in this document and /or as per scope of work.		

53.	Alarm Filtering should allow flexible filtering rules for users to filter the alarms by category, severity, elements, duration, by user, by views, by location or by any other custom field of choice present in the alarm object		
54.	The discovery processes may be configurable to perform continuous and auto discoveries. Should be able to auto discover, monitor devices installed and commissioned at different Physical locations		
55.	Should have an Asset management system for maintaining and managing the all assets as defined in the scope of work .		
56.	The EMS solution should be integrated with DCIM solution detect physical assets movement from racks and receiving alarms from DCIM / RLPAT Solution.		
57.	Should be able to integrate with modules serving other monitoring/ management purposes and consolidate the information into a single view such as should be able to integrate with the AIM solution over REST APIs/other mechanisms to receive alarms from AIM.		
58.	Should be scalable to allow the addition/integration of new instances of devices to be added in future		
59.	Should allow information from multiple instances of application to be consolidated into a single view		
60.	The EMS solution should integrate with Network Equipment's OEM supplied Element Management systems. Bidder needs to provide the Network Equipment's OEM supplied Element Management systems along with the NEs. Also, SI may budget to integrate the proposed EMS in this bid with other Element Management Systems / Network Management Systems solutions supplied earlier w.r.t other Phase-1 bids / Infra referred in this bid.		
61.	It should monitor performance across heterogeneous networks		

62.	<p>The tool should automatically discover different type of heterogeneous devices (all SNMP supported devices i.e. Router, Switches, Servers etc.) and map the connectivity between them with granular visibility up to individual ports level. The tool shall be able to assign different icons/ symbols to different type of discovered elements. It should show live interface connections between discovered network devices.</p> <p>It must support auto Discovery of network inventory and create a network topology</p>		
63.	<p>The solution should allow for discovery to be run on a continuous basis which tracks dynamic changes near real-time in order to keep the topology always up to date. This discovery should run at a low overhead, incrementally discovering devices and interfaces.</p>		
64.	<p>EMS should provide the compliance management report in the integrated view showing network topologies. Proposed DCIM & EMS should adhere to guidelines so that the CERT can stay compliant with its current day industry standards like HIPAA/ SOX/ PCI or equivalent standards. The minimum security guidelines to be adhered are:</p> <ol style="list-style-type: none"> 1.) All the data stored or getting communicated over LAN should be encrypted as per encryption level mentioned in detailed technical specifications. 2.) The data communication for replication between DC-DR (for HA system) should be encrypted as per encryption level mentioned in detailed technical specifications. 3.) Malicious code test certificate to be provided. 4.) VAPT – Ensure VAPT is done immediately after the software is deployed but before taking the system into production. 5.) To provide regular hot fixes/updates to ensure the system security. 6.) The Software to be integrated with AD and AAA as well to ensure the strong access control measures. <p>The SI is required to provide a clean VAPT report of the complete solution (i.e. including all modules) at the time of acceptance testing, where all categories of vulnerabilities are fixed in the deployed solution. Additionally, periodic VAPTs must be done yearly from the date of acceptance and additional VAPT should be done , upon any major upgrade in solution or solution's respective modules.</p>		

65.	EMS's Network Configuration Analysis feature should allow Network Configuration Analysis Reports that help to diagnose and resolve faulty configurations such as reports on all network devices that have a start-up-running conflict (don't have a sync) as well as the ones that have their start-up and running configurations in sync. It should also be able to provide reports on Configuration Change Trend –a report that provides the historical trend of all configuration changes during a specific time period , aiming to allow to manage network better by performing extensive / in-depth configuration analysis on all device types in network.		
66.	The system must be able to build and visualize network topology using SNMP, information in ARP tables from routers, MAC tables from layer 2 switches. The discovery should be automated and continuous.		
67.	It should support various discovery protocols to perform automatic discovery of all L2, L3 Network devices across MPLS and or any further Network connectivity's planned in future.		
68.	The tool should support dual-stack (IPv4&IPv6) shall be able to discover IPv4 only, IPv6 only as well as devices in dual-stack. In case of dual stack devices, the system shall be able to discover and show both IPv4 and IPv6 IP addresses.		
69.	The tool shall also be able to work on SNMP v1, v2c & v3 based on the SNMP versions so as proposed solution is able to monitor and manage the supplied equipment/devices as per the RFP. It shall provide an option to discover and manage the devices/elements based on SNMP as well as ICMP. It should also support extensive discovery mechanisms and must easily discover new devices using mechanisms such as SNMP Trap based discovery.		
70.	Solution must also allow for inclusion and exclusion list of IP address or devices from such discovery mechanisms		
71.	The proposed solution must provide a detailed asset report, organized by vendor name, device type, listing all ports for all devices.		
72.	Should be able to create and allow management of Service requests by integrating with the IT Helpdesk solution/module. Must have Email-to-Incident feature, allowing automatic conversion of emails to tickets if a person sends an email to helpdesk. Must maintain a history tab against all the communication happened on		

	a ticket and/or maintains a thread not only on per ticket Id basis. but also on email sender, cc responses to that email chain.		
73.	<p>Must have the following Device (especially for Networking Devices) Monitoring Capabilities. Should be able to generate alarms based if any of the parameters being monitored goes out of threshold range.</p> <p>These parameters should be allowed to record in a report for a selected time duration.</p> <p>The reports should be allowed for performance issues observed while monitoring during a specified period of time (performance reports).</p> <p>The performance reports should also be allowed for only a specified group of devices.</p>		
74.	i. Device Monitoring parameters such as a Device status and Availability , b CPU Load Data , c Device Disk Space Data ,d Memory Utilization etc.		
75.	ii. Device Hardware Monitoring such as a Device Fan Monitoring , b Device Temperature Monitoring ,c Power Supply Monitoring etc.		
76.	<p>Link Monitoring: Graphically represent the various links over geographical maps. Each link's information on status and latest alarms generated shall be presented to give a quick bird's eye view of entire link health.</p> <p>These parameters should be allowed to record in a report as well.</p> <p>Should be able to generate alarms based if any of the parameters being monitored goes out of threshold range.</p>		
77.	Solution should allow per link parameters such as a Link Availability Monitoring b Average Response Time Data for each link(optional) c Bandwidth Utilization Monitoring d Network Latency Data e Network Topology f Packet Loss Data g Network Discard Data, Error Rate etc. Note - optional meaning that if this parameter is there in the MIB or provided by the respective element management system, this has to be implemented at EMS.		
78.	Should allow to generate Link Monitoring Reports with parameters such as a Performance Data Analysis ,b Performance Data Collection , c Performance Report Generation ,d Traffic Analysis e Utilization and Error Rates .		
79.	Should support Bandwidth Monitoring with parameters such as : a Network flow analysis ,b Netflow collector , c Sflow collector d Jflow collector e Real time monitoring f Bandwidth Utilization etc.		

80.	Should support bandwidth Monitoring Reports with parameters : a API for data extraction , b Single click instant reports ,c Usage history based on hours minutes days , d Top talkers report , e Top Listeners report , f Top users report , g Top hosts report , h Protocol/Application level reports , i Interface level reports , j Customised reports , k Customised email alerts, l Application Mapping, m Device Grouping etc.		
81.	<p>Solutions should allow to maintain Logs such as: a Historical Logs in respective modules, b Interface Error Data/ logs ,c Syslog Messages</p> <p>Solution should have an inbuilt feature of an integrated SysLogServer, i.e. EMS solution should be configured to receive individual syslogs from different systems/solutions/devices. It should be able to parse the SysLogs based on the parameters defined/configured and is able to show the alerts/critical/alarms etc. as per configuration in EMS.</p> <p>In case of no inbuilt feature of a SysLog Server, the OEM may integrate an enterprise grade Syslog server, test and create a customized solution for above requirement.</p>		
82.	It should be able to capture, track & analyze traffic flowing over the network via different industry standard traffic capturing methodologies viz. NetFlow, jflow, sFlow, IPFIX etc. required as a part of Network Traffic Flow analysis system.		
83.	It shall provide key performance monitoring capabilities by giving detailed insight into the application traffic flowing over the network.		
84.	Should monitor Virtual Private Networks (L3, L2), VLANs, MPLS service availability and inventory. It should support in end to end management and view of IPSec tunnels. It should support monitoring of connectivity of all the network elements / servers / other IP equipment as per scope of work		
85.	Should provide inventory view of L3 VPNs, detailed views per L3 VPN. Should be allowed to be exported to reports		
86.	EMS solution must have the capability to import MIBs of 3rd party Data Center components so as trap monitoring can be enabled.		
87.	Access Privileges and Roles for different users/operators		

88.	Each user/ operator should be allowed to provide with user roles that should include operational service views enabling operators to quickly determine impact and root cause associated with events.		
89.	The system should integrate with Helpdesk / Service desk tool for automated incident logging and also notify alerts or events via e-mail or SMS besides GUI/browser.		
90.	Permissions and Features to access the system should be defined within the roles / based on roles and access privileges definer per user basis.		
91.	Should be able to send e-mail or Mobile –SMS to pre-defined users for pre-defined faults.		
92.	Solution should visualize server, network, storage, and logical application environments and dependencies and compliance state.		
93.	Besides the alarms per device the solution should be able to provide per device virtual visualization of interfaces, management interfaces, interface status, link status etc.		
94.	In addition, provided the device's MIB supports, the solution should be able to provide the power(ON/OFF) status of each supplied device in the bid. In case of multiple power modules per device, multiple power status per device should be shown wherever the MIB allows this feature.		
95.	Provides Layer 2 and virtual LAN (VLAN) network information. Should be allowed to be exported to reports		
96.	Should provide out of the box Reporting such as: • Site-to-site quality-of-service reports using any inbuilt tools within supplied modules. • VPN / IPSec reports		
97.	EMS module shall allow all types of reports to be exported to .pdf & comma-separated values (.CSV) formats.		
98.	Reports generation should be customizable , so as to allow to choose the fields/columns/parameters per report.		
99.	Should provide agentless discovery and shall use Industry-standard protocols such as WMI, SNMP, JMX, SSH etc. to perform discovery		

100.	The solution must have the ability to add network devices into inventory via auto discovery or the auto discovered devices into the inventory (if not yet added to inventory)		
101.	Network Traffic Flow Analysis System		
102.	It shall be able to capture, track & analyse traffic flowing over the network via different industry standard traffic capturing methodologies viz. NetFlow, jflow, sFlow, IPFIX etc.		
103.	It shall provide key performance monitoring capabilities by giving detailed insight into the application traffic flowing over the network.		
104.	It shall be able to monitor each interface status per device, network fault at device level, per device basis - network traffic utilization, packet size distribution, protocol distribution, application distribution, top talkers etc. for network traffic. It should be able to generate reports for above stats.		
105.	It shall collect the real-time network flow data from devices across the network and provide reports on traffic based on standard TCP/IP packet metrics such as Flow Rate, Utilization, Byte Count, Flow Count, TOS fields etc.		
106.	The platform must provide complete cross-domain visibility of IT infrastructure issues		
107.	The platform must consolidate monitoring events from across layers such as Network, Server, Database, 3rd party tools (monitoring solutions to monitor key DC elements like wires / cables etc.)		
108.	The solution should support single console for automated discovery of enterprise network components e.g. network device, servers, virtualization, cloud, application and databases		
109.	The solution must support custom dashboards for different role users such as Management, admin and report users		
110.	The solution must allow creating custom data widgets to visualize data with custom preferences		
111.	The solution must support multiple visualization methods such as gauge, grid, charts, Top N etc.		
112.	The solution should provide top level view of infrastructure health across system, networks, application and other IT Infrastructure components into a consolidated, central console		

113.	The reporting and dashboard module of the solution must have capability to integrate with 3rd party data center monitoring solutions. Bidder needs to integrate EMS with proposed DCIM solution, Element Management solutions provided by OEM's w.r.t NEs proposed in this bid & NEs of phase-1 bid (if element management system is available via phase-1 bid) & also incorporate the MIBs of NEs proposed in this bid.		
114.	Upon the integration with DCIM solution, the EMS solution should have the capability to present critical metrics w.r.t Data Center infrastructure in the form of a dashboard to gain visibility into overall health of the other infra components.		
115.	The solution must support visually representing network outages and other error conditions on the topological map. In General , Solution should be able to generate alarms based on if any of the parameters being monitored goes out of configured threshold / threshold range.		
116.	Provision the following Device Performance Monitoring Capabilities for Servers (Application/Historical /others) & Integration with OEM's Element Management solutions to achieve described monitors from installed servers, is also the scope of requirements.		
117.	1 Physical Server Monitoring parameters such as a. Server Status and Availability , b. CPU Utilization c. Memory Utilization d. Process Monitoring e. File System Monitoring f. Disk Utilization etc.		
118.	2 VMware and ESXi Host Monitoring parameters such as a. Status and Availability b. CPU Utilization c. Memory Utilization d. Monitoring of Virtual Hosts e. Disk Utilization f. Network Utilization g. Hardware Monitoring h. Performance Dashboard i.VM Replication Monitoring etc.		
119.	3 Linux server Monitoring parameters such as a. Server Status and Availability , b. CPU Utilization , c. Memory Utilization ,d. Process Monitoring ,e. File System Monitoring ,f. Disk Utilization ,g. Network Interface Monitoring , h. services, i. applications , j. open ports etc.		
120.	4 Windows server Monitoring such as a Server Status and Availability b CPU Utilization c Memory Utilization d Process Monitoring e File System Monitoring f Disk Utilization g Network Interface Monitoring h Event Log Monitoring etc.		

121.	5 Database Monitoring parameters such as a Database Availability b Database Process and Logs c Locks and Buffers d Tablespace/Database e Sessions/Connections f Database Memory h SQL Statistics i Database Jobs etc.		
122.	6 SSL Certificate Monitoring or SSL Certificate Inventory Management for its attributes such as a. expiry b. Availability c. Validity d. Certificate Information		
123.	7. SLA Management parameters such as a Customized SLA for Applications , b SLA escalation ,c SLA Reporting feature to provide downtime per equipment , link etc. primarily for cases, where tickets due to alarms are sent to ticketing tool etc.		
124.	EOL and EOS Management - Keep track of all devices (networking, servers and other equipment) for their end of Life , end of Sale, and end of Support.		
125.	Should be able to integrate with Service Desk module to support and handle large volume of incident, event, service requests, changes, etc.		
126.	Network Configuration Module		
127.	Should allow Network Configuration change management on multiple vendor devices for all the hardware equipment as stated in the 'General Requirements' of this document. Change management should include the tracking and version maintenance of configuration changes in real-time on each of them.		
128.	It should allow to audit configurations and deploy configuration updates in single or multiple devices at once. From the scalability perspective, purposed solution should support managing configurations of hardware of more than 180 different OEMs , including all major OEMs .		
129.	It should have enhanced network security by preventing unauthorized configuration changes and notifying the admin about any changes .		
130.	The proposed management solution's network configuration module, should be able to automatically backup configurations (for both text based and binary configuration files etc.) on routers, switches, and other network devices. The trigger to automatic back up may be setup in EMS such trigger could be upon a detection of a configuration change and/or an automatic timer based. The configuration change should be recorded with the date-time stamp along with the user info. The EMS must integrate with Firewall and Access point OEM's EMS to bring the backup of these configuration files for Firewall and Access Point,		

	provided OEM's Element Management System allows a automatic mechanism and a standard interface for backup of configuration files from Access Points and Firewall, then these files must be brought to proposed EMS.		
131.	Should be able to backup, compare and restore network configuration for all the networking devices defined as per scope of work of this tender. Backup system should allow to store for at least 1 year of historical data. Further, it should be a provision on the tool for configuring the data retention and log archival so that operator(s) may be able to control as per its discretion.		
132.	Should be able to make single or bulk configuration changes across multiple devices. For example: such as change community strings, update ACLs etc. Also, in case a user changes the configuration on a NE, the EMS's Configuration change management module should be able to detect this change per user basis. It should be able to display the new configuration , show its difference with old configuration version and also show which user made the changes at what time etc.		
133.	The system should be able to clearly identify configuration changes / policy violations / inventory changes across the network of networking devices from multiple OEMs .		
134.	The system should support secure device configuration capture and upload and thereby detect inconsistent “running” and “start-up” configurations and alert the administrators.		
135.	The proposed system should be able to administer configuration changes to network elements by providing toolkits to automate the administrative tasks (such as mentioned below) of effecting configuration changes to network elements: a) Capture running configuration b) Capture start-up configuration c) Upload configuration d) Write start-up configuration e) Upload firmware		

136.	The proposed solution must able to merge configuration changes & load it to multiple network devices		
137.	Should allow automated and scheduled backups of configuration files , it should tend to eliminate manual configuration management , by allowing features such as and not limited to - scripts , automation etc.		
138.	Should allow to Encrypt and store configuration files in enterprise standard and internationally complaint standards. The users session and data on the storage should also be encrypted including the support terminal session or shell session .		
139.	Should allow to setup / mark a configuration as the best working "Baseline Configuration" , so as to allow for a quick backup during a disaster / crisis event.		
140.	Should provide configuration mechanisms that allow roll back to a selected 'marked' working configuration version or any baseline configuration whenever any configuration change is unsatisfactory.		
141.	Should follow configuration versioning and comparison between saved versions		
142.	Should support Network Configuration Analysis: Should allow through in-depth analysis of configurations.		
143.	In the integrated Configuration Analysis module it should allow to perform configuration analysis for network equipment's like router's and switches. The configuration management module should also be integrated with AAA/AD server for providing RBAC. The solution should be completely multi-tenant in every module for allowing RBAC. There should be logging of each command performed at any NE by the users . This should be logged and reported at AAA server.		
144.	The system should be able to capture the configurations in the database/datastore.		
145.	The system should be able to differentiate the old and current configuration with version control.		
146.	The system should be able to capture exact configuration change with color coded highlights, and date and time of addition, modifications, removal or change in the configuration.		

147.	The system should be able to provide the reports for various actions described under Network configuration management feature. The reports may include status and summaries of different activities such as device configuration details, changes in configuration (within a specified period / per user basis), network inventory, conflict between start-up and running configuration, device audit details, policy compliance details etc.		
148.	The system should be able to export the configurations in TXT , CSV , PDF formats.		
149.	Description for IPAM & Switch Port Management Specs		
150.	The IPAM Solution must support 65,000 IP Address Management for both IPv4 & IPv6 together. It should be scalable upto 1,80,000 without any hardware change.		
151.	The solution must be agentless can be an pre-integrated module of EMS or it could be a separate module. It may be noted that the functionality and specifications sought via IPAM and Switch Port Management Module may be fulfilled as an integrated module of EMS.		
152.	The IPAM solution must be run on high availability as per previously suggested architecture for HA in this document.		
153.	The solution must be flexible to allow the creation of custom fields for objects in IPAM. This must be configurable via the Web GUI.		
154.	The solution must include an application programming interface (API) in order to interface with IT Helpdesk / network and/or asset management systems, a configuration/change management database (CMDB) solution or other applications. In General, the overall system should support REST APIs(PUSH and PULL) for integration with 3rd party systems such as EMS or otherwise the proposed IPAM module may be a part of EMS system itself.		
155.	The IPAM solution should be able to seamlessly integrate with DNS and DHCP records.		
156.	It should support the features such as : Creating groups, Subnet ,Adding subnet to group , Automatically detect devices , Manual / Automatic allocation of IP to the nodes, Support in Manual/Automatic assigning the IP to the device interface via EMS, Manually adding the device, Display Interface name with IP address , Scanning devices in the network , IP address scanning within the subnet or IP address scanning within the group etc.		

157.	The IPAM solution should be able to create its own widget / report to display customized subnet reports that should include details such as free IP, used IP and per IP Address details such as DNS name, Last alive time, Status(Used, Unused) etc. i.e. any other custom fields added		
158.	The IPAM solution should have the ability to locate the available subnets inside a Supernet. This is to provide assistance to users when creating subnets inside an aggregated Network. IPAM system should support VLSM (Variable Length Subnet Masks)		
159.	IPAM user interface must be web-based without specific browser vendor requirements		
160.	In General , the history and backup data w.r.t IP Address Management Tool and Switch Port Management Tool should be saved for at least 1 year and The IPAM shall have inbuilt adequate security tools to avoid any unauthorized access to the system in particular and solution as a whole .		
161.	IPAM system should be able to export reports in PDF, CSV format and in any other formats		
162.	IPAM system should have support for workflow process for various administrator roles and should include a change approval oversight capability. It must allow to create different user profiles with different level of permissions. Preferably, it should integrate with AAA/AD to achieve this feature.		
163.	The system's audit records should contain a timestamp, username and record modified.		
164.	The system's reporting engine should include audit reports.		
165.	The system should support granular rights administration, limiting the functions and rights to user and/or Zone level by integrating with Active Directory.		
166.	The tool should show up and map the devices plugged into each switch port in real-time		
167.	Should allow admins to find out which devices were connected to a particular switch at a specified period of time		
168.	Advanced search mechanisms should allow the devices searching by MAC, IP Address, DNS Name etc.		
169.	Allow grouping of switches for easy identification and control		

170.	The IPAM tool should be able to perform and track address space allocations in accordance with routing topology to model and support optimize route aggregation via EMS..		
171.	Should provide notifications upon Switch port status changes		
172.	Should allow to Manage Switch Port using SNMP by allowing administrators to block or unblock a switch port		
173.	The IPAM component must perform host discovery using a variety of methods including ping, TCP port 80 connections, Address Resolution Protocol (ARP), cache data, and device OS mapping etc.		
174.	MAC Address Scan – The tool must have the ability to scan a given range of IP Addresses and display the MAC addresses for various devices available in the given range. Also must display the IP address, port number, community, MAC address, DNS name, system name (<i>optional</i>), and system type (<i>optional</i>).		
175.	DHCP Scope Monitor – The tool must be fully integrated with the DHCP system and support the capability to fetch all the scopes that are defined in the DHCP Server and display the total, used, and available IP Addresses in each scope. When the number of available IP addresses falls below a defined value, the display should indicate the criticality.		
176.	The IPAM must have the capability to find free address space across a range.		
177.	The IPAM must scan multiple subnets simultaneously. It should be able to make out which IP address have been assigned statically .		
178.	It must provide the requisite information to EMS to build and visualize network topology using information in ARP tables from routers. It may also use the information of MAC tables from layer 2 switches as well for this feature.		
179.	The system must have the capability to group the subnets in a hierarchical tree format		
180.	It should be able to handle Device/Network templates (Creation, Deletion, Modification & Uploading) and the system must automatically discover the network's subnets or import them from a CSV file		
181.	DNS Resolver – The IPAM tool must provide the host name of any node whose IP Address is known and vice versa with additional details like the default net mask, network type, and the status for the forward and reverse lookups		

182.	DNS Scan – Using this tool one must be able to scan a range of IP addresses to see whether the forward and reverse lookup actions are working fine for the devices. It may also show the response time. In cases where an IP is not used in the network, the tool must prompt that the system does not exist in the network.		
183.	The IPAM shall support appropriate logging functionality on itself as well as on external source like Syslog servers. All the activities made by administrators must be logged inside an Admin Audit Log Report.		
184.	The IPAM must provide integration with Vmware, HyperV, Openstack etc. and discover the VMs with clientless integration. The solution must provide details of virtual servers / VMware server running Linux or Windows as deployment of a virtual appliance		
185.	Asset Inventory Monitoring & Management		
186.	An asset management module should be in-built part of proposed EMS from same EMS OEM.		
187.	System shall have an ability to track (automatic/manual/via integration with other modules of overall system) and manage all data center and remote location assets including but not limited to IT/IoT/Non IT/Software(s) - Racks, Network equipment, IT equipment, Intelligent PDUs, sensors, application(s) etc.		
188.	System should allow to search / locate a data center asset based on various filters/fields, it should also provide detailed information about the assets. It should allow a provision / feature with ability to define down time for Assets to conduct Maintenance activities.		
189.	The solution should allow for discovery to be run on a continuous basis which tracks dynamic changes near real-time in order to keep the topology always up to date. This discovery should run at a low overhead, incrementally discovering devices and interfaces.		
190.	Should provide the compliance management report in the integrated view showing network topologies.		

191.	The tool shall be able to work on SNMP v1, v2c & v3 based on the SNMP version supported by the device. It shall provide an option to discover and manage the devices/elements based on SNMP as well as ICMP. It should also support extensive discovery mechanisms and must easily discover new devices using mechanisms such as SNMP/ Trap based discovery. Solution should be able to integrate with EMS to auto discover the IT Assets via its scan/discovery process		
192.	Solution should allow to manage the physical aspects of all IT assets & Non IT Assets —from request of movement , to their end of Life , Sale, & Support related timely triggers, making it easier to optimize costs, mitigate security, and compliance risks.		
193.	Assets and Non IT Assets will include category of devices as defined in scope of work such as Network switches, routers, firewalls, application servers, historical servers, packet brokers, etc.		
194.	The Asset system should allow Role based access.		
195.	While performing discovery, solution must also allow for a feature that allows to include and exclude IP addresses / subnets or devices from auto discovery.		
196.	The proposed solution must provide a detailed asset report with different filters mechanisms, organized by vendor name, device type, listing all ports for all devices. Should be able to create Service requests for each of the asset.		
197.	Tool should provide the information about equipment's dependency on each other. This affects the overall performance of the data-center. Performance data of each equipment in the data-center should be available for analysis. Thus any product vendor for an underperforming asset can be alerted and the inventory is either repaired to perform or replaced in time. Alerts for such scenarios should be generated in EMS system		
198.	It must easily and automatically discover newly add devices to the n/w.		
199.	The system shall provide an easy method of searching and locating assets and asset groups		
200.	The system shall support an importing of asset list from a 3rd party tool in CSV format into an asset database. If a specific asset in not defined, the tool shall be able to create it.		

201.	The system should allow the user to create Asset profile with unique serial no, asset tag, asset owner, asset life, details of assets etc. The assets must be searchable with any of the parameters such as serial number, asset tag . It must allow to list out assets based on owners , location etc.		
202.	The system should allow the user to search & track assets at any time to know the status of an asset – location, assigned to which user, contracts/warranty/AMC renewal for maintenance etc.		
203.	Overall system's solution should support virtual installation or server based installation. This should not be a proprietary hardware based or embedded based solution.		
204.	Change Management (CM) Module Requirements		
205.	The CM solution could be a module within EMS supplied. The CM solution should be web based, must also work in HA mode.		
206.	Solution should allow to create different roles (preferably after integrating with AAA/AD) with different privileges such as Change Requester, Change Record Authorizer, Change Implementer , Change Advisory Board Member , Change Manager , Post Implementation Reviewer , Customer Approver , Customer Tester , Work-Flow Administrator etc. This will ensure the restricted access to devices. Different privileged users should be able to play the role of implementers, reviewers, approver etc., so as to allow a workflow w.r.t change request. Change management must be implemented in conjunction with configuration management, so as wherever required, a view of the infrastructure may be provided to assess an impact of a change.		
207.	CM should allow to Create, View , Edit the Change Requests (CRs) .		
208.	Each CR must be allowed to follow a chosen / predefined work-flow . The solution may also allow to create work flow for CR.		
209.	The solution must facilitate Assigning of roles to ensure that a change process workflow is started, managed, and implemented by the right people .		
210.	The solution must provide Change history: Captures the change history of all the fields and can be viewed for each record. Audit trails like changes done by the user, modification time, current value and previous values.		

211.	The solution should have CR correlation: Linking of CRs to related incidents, problems, assets, Cis		
212.	CRs must support Multi Stage custom based approvals.		
213.	The solution should Achieve complete visibility into which CIs have changed.		
214.	The solution must have defined Standard Reports		
215.	CRs should be authorized by Authorizer before taken up further in CM system		
216.	Change Advisory Board Member is able to sign-off, reject, or recommend changes necessary for anything that need to be processed.		
217.	Should be able to provide the status of all CRs (Open, Close, etc.) in a view. It should be filterable per user basis .		
218.	The system shall have integrated ITIL v3 or higher processes complied Operations Management System for Helpdesk, Ticketing, Maintenance and Configuration Management Database (CMDB). The system shall enforce best practices workflow and meet ITIL framework guidelines. All monitoring elements should be stored and accessed from a central datastore. This also should be have RBAC.		
219.	Change Implementer Implements the change and updates the status. In General, the status change of a CR triggers the email request to its configured workflow owners and assigns the new 'action owner'		
220.	Change manager is able to review all the CRs, sets Change Record Authorizers, forwards the CRs to the CAB, issues Change Schedules related with CRs , reviews all the implemented CRs, and Generates Regular Reports		
221.	Customer Approver(s) is able to review and approve the CR before the CR is implemented.		
222.	Customer Tester is able to update the result for a CR		
223.	The solution must Assign downtime time start and end for a CI(Configuration Item)		
224.	The solution should be able to allow Assign Priority, impact, urgency and risk to CRs		
225.	Solution should have its own application and data base. It should be a web based portal hosted in an on premise manner.		

226.	CM Module should allow the end users to create, update, search and get status update of change requests. It should allow the attachments of documentation (such as pdfs etc.) with the CM requests		
227.	It should be able to use IMAP, POP3, SMTP protocols to provide email integration and able to send emails for CRs status as configured . The solution must be able to use IMAP, POP, protocols & should be able to automatically convert service request emails into help desk tickets.		
228.	CMS should be integrated with overall solution or be in-built as a part of EMS.		
229.	Supplied solution should have a standard search , advance search mechanism on the fields for enhanced productivity.		
230.	Should be able to well integrate with the supplied IT Helpdesk / Service Management solution to achieve the overall functionality. This is to ensure that a mapping between Ticket & CR can be made. On same lines, in case the CR is created in the Change Management Solution it should trigger an automatic Ticket creation in IT Helpdesk solution.		
231.	Supplied solution should be able to generate insightful reports on changes, compliance, inventory and other vital network parameters.		
232.	Supplied solution should allow at least backup / history database maintained for at least 1 year including but not limited to configurations, alarms, services , assets, asset locations, network performance related database		
233.	The EMS system as a whole should be able to send notifications on GUI, email and SMS		
234.	The supplied CM solution should be provided with a hardware capability to support 15000 service requests in a day with at least 50 simultaneous users. Hardware supplied should be capable enough to store data at least for 1 year.		
235.	Features for IT Service Management (ITSM) / IT helpdesk solution for managing the day to day Operations		
236.	The solution should have its own IT Service Management (ITSM) / IT helpdesk solution which is based on ITIL best practices. Should provide an GUI interface w.r.t emails. The ITSM system shall be capable of assigning, tracking tickets to users manually as well as automatically based on predefined rules, and shall support notification		

	and escalation over email. E.g. A ticket with 'Network fault' as a keyword(s) tickets gets automatically assigned to a user whose role is configured network technician.		
237.	IT Service Management solution must be an industry standard, enterprise grade web based solution that enables end users to create service requests and must be placed in High Availability Mode as sought in General requirements.		
238.	The ITSM solution proposed should be designed & architected so as to allow to use ITIL framework and processes across sought modules including DCIM / EMS, Alarm / Incident Management, Asset Management , CMDB etc. , so as unique data and workflows can be maintained for overall solution. The ITSM solution should automatically provide suggested knowledge base articles based on Incident properties/attributes/tags/keywords etc. The ITSM solution must integrate with all the supplied and required modules such as DCIM,EMS,AIM,IPAM,CMS,RLPAT solutions etc.		
239.	There should be a database in place to store data w.r.t integrated Tickets, Alarms, Incident & Problem management, Service Level management/ targets , configuration data base etc. The ITSM tool should allow to export the ticket reports in different formats such as HTML,PDF ,Excel etc.		
240.	The ITSM solution should support multi-tenancy with complete data isolation as well as with ability for analysts based on access rights to view data for one, two or more organizational units.		
241.	The system should be able to create service desk tickets/ work orders/approval receipts for any work to be done in data center. For example - mounting a new server, connecting it to specific ports on network, powering it ON from specific outlets of the iPDU etc. This workflow should have various pre-defined approvers/reviewers / implementers etc., who should be able to approve/ disapprove/ comment(add remarks etc.) . The tickets templates should be customizable .The system should allow to edit , assign , search and track these tickets. It should allow to provide dash boards with different filtering options that also allow to take out customized reports such as w.r.t ticket status , groups / user wise assignments etc. System should also allow to search a ticket and track its historical details of various actions performed on same.		

242.	The ITSM solution should provide to browse through Configuration Management Database (CMDB) which should offer powerful search capabilities for configuration items (CIs) and services, enabling to quickly find Configuration Item as well as their relationships to other CIs.		
243.	Configuration item should get automatically attached with the ticket to enable the support team for faster resolution.		
244.	ITSM solution should provide an option for adding new workflows/catalogues with custom SLAs & multistage approvals. The workflows / catalogues may be based on hierarchy, roles, category of service request per catalogue. It should include notification and escalation capability if approval is not performed within the defined time period. Tool should be able to send alerts via SNMP Trap. Also, Optionally, it may support XML notifications, Pop-up window and Audio alert.		
245.	The ITSM Solution should be a web based solution and should be accessible via the browser.		
246.	ITSM solution should provide out-of-the-box categorization, as well as routing and escalation workflows that can be triggered based on criteria such as SLA, impact, urgency, CI, location, or customer. Solution should be able to provide the aging reports of the tickets based on various types/categories of tickets. The Notification mechanism should allow administrator to define notification channel per time of day and trigger multiple notifications per person.		
247.	Solution should provide modern data analysis methods for insights and adding value to service desk .		
248.	The solution should be able to record the actions of users per session basis including details such as time stamp etc. as per user for audits and records purposes.		
249.	Integrates with any underlying service management solution including Service Desk, Change Management, Service Level Management and CMDB for request fulfilment.		
	General Features II		
250.	The EMS solution should be able to group devices into different categories.		
251.	The EMS solution must display the topological information in graphical form representing nodes and groups of nodes on a realistic/custom static geographical map.		

252.	Uses the communications channel with enhanced security features, audit logs, and access control policies to provide direct connections to servers in any location.		
253.	The system (IT Helpdesk system, etc.) shall allow to create request i.e. Tickets or work orders (and approvals) with customizable task details and timelines so as to allow measurement of the time taken for a task/work completion or equipment / service downtime and hereby allowing the calculation of SLA and penalties via the tool. The IT Helpdesk system should allow the attachments of documentation (such as pdfs etc.) with the CM requests .		
254.	The IT Helpdesk system should also be integrated with AD/LDAP for providing the access to users		
255.	The system should support filtering options to search and list down tickets.		
256.	The system should have a SLA Management module. The system should provide the operator ease of access on SLA creation for nodes and services. Escalation should be configurable and optimized for day-to-day operations. It should allow to add formulas for helping any calculation in SLA / downtime . SLA module should be customizable to provide the penalty details as per SLA criteria mentioned in the tender. The provided reports are ready to be used for penalty calculations.		
257.	Document Management/Collaboration and Knowledge-based module - The system should also have knowledge-based module built in for the operators for quick issue identifications and resolution, thus minimizing the time and efforts. This will should server as a historical database of documents and can be used for training of new recruits, resolution of alarms, resolution of certain specific issues. Users should be able to add information, categorize it, add files to it. The proposed storage for Collaboration and Knowledge-based module artifacts should be scalable. It must sufficient enough by default to store data for the complete contract period. In case of any shortage of storage , SI will be required to immediately(within 1week notice) provide the double the original capacity storage base.		
258.	The applications (solution) per hardware should be installed as follows and must work in High Availability Mode: The bidder may also suggest the optimized solution for effective/smooth execution of modules/application. However, it will be decision of ERNET India will be final in this regard.		

	<p>Server#One to host apps: DCIM+RLPAT Solution+ Solution for Heat and Humidity Sensors</p> <p>Server#Two to host apps: EMS (including its all components such as Network Device Management, Device Configuration Management, Network Performance Management, IPAM, Switch Port Management, Change Management, Network Asset Management etc.) .</p> <p>Server#Three to host apps: IT Helpdesk Tool.</p> <p>Server#Four to host apps: AAA Server & Automated Infrastructure Management etc. The AIM is also allowed to be installed on a separate server as well.</p> <p>Server#Five to host apps: Active Directory (with DNS, DHCP etc.) - may be combined in Server # Four in a VM based configuration.</p> <p>A replica of above is to be provided at DR.</p> <p>OEMs having all required modules of EMS in a single software, is allowed to provide all EMS modules on a single server.</p>		
259.	OEM of EMS Solution should be ISO 27001&ISO 27034 certified		

PART –C Manpower Specification

Minimum Qualification, Relevant Experience & Certifications at DC/DR & Shastri Park, Delhi

Sl. No.	Role	Min. Qualification, Relevant Experience & Certifications	Compliance (Yes/No)
1	Project Manager	B.E./B.Tech/MCA 8 Years relevant experience in IT/ITeS (minimum 6 years' experience for managing large data centers) + CCNP-DC/ JNCIA-DC or equivalent Certified	
2	Security Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience in IT Network Management + Certification: OEM certified engineer on proposed security equipment Such as JNCIP- SEC, Fortigate NSE 4, CCNP Security or equivalent	
3	Network Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience in IT Network Management + OEM certified engineer on proposed networking equipment Such as JNCIP, CCNP or equivalent. Must have 5 years of work experience on leaf and spine architecture	
4	Network Engineer	B.E./B.Tech/MCA in Computer/IT / Electronics + 4 Years relevant experience in Network Management + OEM certified engineer on proposed networking equipment Such as JNCIP, CCNP or equivalent. Must have 3 years of work experience on leaf and spine architecture	

5	System (Server) Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience of different flavors of OS with Storage + Must have 5 year of experience on offered OEM Servers.	
6	System (Server) Engineer	B.E./B.Tech/MCA in Computer/IT / Electronics + 5 Years relevant experience of different flavors of OS with Storage + Must have 3 year of experience on offered OEM Servers.	
7	EMS & DCIM Engineer	B.E./B.Tech/MCA + 3 Years relevant experience + Proposed EMS certified engineer, if any or Should have CCNA/JNCIA or equivalent certification.	
8	Help Desk Support Staff	B.E./B.Tech/ MCA in Computer/IT / Electronics with 3 Year relevant experience.	

Section VI: Qualification Criteria

A. Bidder's Qualification Criteria

1. Copy of Board Resolution and/ or registered Power of Attorney for authorized signatory which authorizes the signatory to commit and submit bids on behalf of the bidder shall be submitted along with technical bid; ***failing which, the bid will be liable to be rejected.***
2. The minimum average annual audited financial turnover of the bidder during the last three years (FY 19-20, 20-21,21-22), should not be less than Rs. 350 Crore. The bidder should also have Positive Net Worth as on 31/03/2022. A certificate from a practicing Chartered Accountant (with UDIN) on its letter *head confirming annual turnover, average turnover for 3 years as specified above and confirming positive net worth as on 31/03/2022 is to be provided along with the technical bid.*
3. Bidder should have experience of successful implementation of similar project(s) in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India as:

Single order of Rs. 250 Crore or more;

OR

Two orders each having minimum of Rs. 150 Crore or more;

OR

Three orders each having minimum of Rs. 120 Crore or more

Similar Projects: - Setting up of Data Centre (including computing, storage & networking Infrastructure) / Operation & Maintenance of Data Centres / Network Operation Centres/ Security operation centres/ Smart City Projects/ Large IT networking.

4. At least one order should contain Supply & successful implementation of IT Equipment (similar to BoM of this Tender i.e Server, Storage, Networking and firewalls equipment etc.) in Data Centre environment of value not less than Rs. 80 Cr. in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India. In case of supply of IT equipment in Data Centre project is a part of larger project(large IT Networking/Smart City Projects) then bidder should get certificate from Statutory Auditor/Practicing CA- (With UDIN) regarding value of IT Equipment at Data Centre supplied and installed. This order may be one of the order from the orders provided against clause-A(4) above or a separate order altogether.
5. Bidder should have experience of successful implementation of Supply & Installation at 100 locations, of WAN setup, in customer office premises in single or multiple orders *in*

Central/State Government/ Govt. undertakings / UT's /Autonomous Bodies/Public listed companies.

Note i.r.o clause 4,5&6- Bidder shall provide relevant copies of the customer purchase orders in support of scope of work, deliverables, project value and satisfactory work completion certificate from client. Bidder shall also provide Name, Address, email and contact no. of organization whose Purchase orders are submitted by Bidder. Order Completion date/date(s) should fall between 01/03/2016 to 28/02/2023.

6. Bidder should have offices at following cities:
 - i. Mumbai
 - ii. Chennai
 - iii. Delhi/Noida/Gurgaon/Faridabad/Ghaziabad
 - iv. Kolkata
 - v. Bengaluru
 - vi. Chandigarh/Mohali
 - vii. Guwahati

An undertaking to this effect must be submitted by Bidder along with details of office address of each location. Detail shall contain, Office address, Contact no. email ID, Office incharge etc. In case, Bidder doesn't have office at any of the above location, A declaration shall be given by the bidder to open the office within 60 days from the date of issue of Contract.

7. The bidder must be an authorised representative of the products/Equipment(s) offered. The authorisation letter from the OEM must be submitted along with the bid **Authorisation** must be issued by OEMs Authorise signatory. **OEMs MAF should contain mainly the following points in its MAF (Manufacturer Authorisation Form) while issuing to bidder:**

- a) Offered equipment(s)/Software(s) should not be declared end of life/support till **31.12.2029**.
- b) Offered equipment(s)/Software(s) should not be declared end of sale before installation.
- c) Offered equipment(s)/Software(s) are IPv6 ready.
- d) Make and Model of Offered equipment(s)/Software(s).
- e) Equipment(s)/Software(s) supplied by the OEM should be transferrable to any other government agency at a later date along with warranty.
- f) An assurance from OEM that in case <name of the Bidder> is not able to fulfil its obligation in respect of Warranty, the OEM will continue to meet the warranty terms as prescribed in the Tender document towards ERNET India/CERT-In.

Additionally, in respect of Intelligent Cabling, OEM shall give a certificate that their cabling infrastructure shall have the warranty for 25 years.

8. Bidder should provide a dedicated/Toll free no. for service support. Relevant details to be submitted with Bid Document or an Undertaking to this effect that the same shall be provided within 15 days from the date of placement of contract.
9. Malicious Code Certificate:

Bidder should upload following certificate in the bid: -

- a) This is to certify that the Hardware and the Software being offered, as part of the contract, does not contain Embedded Malicious code that would activate procedures to: -
 - i. Inhibit the desires and designed function of the equipment.
 - ii. Cause physical damage to the user or equipment during the exploitation.
 - iii. Tap information resident or transient in the equipment/network.
- b) The entity will be considered to be in breach of the procurement contract, in case physical damage, loss of information or infringements related to copyright and Intellectual Property Right (IPRs) are caused due to activation of any such malicious code in embedded software.

B.Original Equipment Manufacturer (OEM)'s Criteria

1. OEMs whose products have been offered in the bid shall have Technical Assistance Centre (TAC) in India. OEM shall have dedicated / Toll Free Number for TAC to support the equipment. OEM(s) should have direct presence with their own office in India. *Relevant documentary proof (i.e. Registration/Incorporation Certificate, Self-certification of TAC availability and Dedicated/Toll free number) should be submitted.*
2. **The minimum annual average financial turnover for the Server OEM during the last three years (FY,19-20,20-21, 21-22), should not be less than 150 Cr.** *A certificate from a practicing Chartered Accountant (with UDIN of the CA) on its letter head confirming annual turnover and average annual turnover have to be provided along with the bid. In case the OEM has been incorporated in a country outside India then specified financial detail needs to be provided in INR by converting the foreign currency with INR.*
3. **The OEMs of Server, Networking equipment(s), firewalls & Intelligent Cabling should have Positive Net Worth as on 31/03/2022.** *A certificate from a practicing Chartered Accountant (with UDIN of the CA) on its letter head confirming positive net-worth has to be provided along with the bid.*
4. OEMs shall not be debarred/blacklisted/suspended by Government. A self-declaration to this effect from respective OEMs shall be required to submitted by the bidder at the time of submission of bid.
5. The product (same or similar type as per BoM) offered by OEM should have been supplied and installed (as listed below in last five years) to any Central/State Government/ Govt. undertakings / UT's/ Autonomous Bodies/Public Listed Companies in India from 01/03/2018 to 28/02/2023. *Copies of relevant documents in this regard should be submitted to the satisfaction of ERNET India.*

Item	OEM should have supplied and installed a minimum of	Unit
Servers	400	no.
Spine Switch with 100G port	1	no.
L3 Switch with 10G/25G/40G/100 G Ports	75	no.
Routers with at least 50 Gbps throughput	1	no.
Routers with at least 1 Gbps throughput	100	no.
IDS/IPS minimum throughput of 2 Gbps	2	no.
Firewall minimum throughput of 100 Gbps	2	no.
AAA Appliance	2	no.
Active Directory Solution	2	no.
SSL VPN Gateway	2	no.
Load Balancer	1	no.
Fireproof Vault	2	no.
KVM Console	20	No.
Degausser	3	no.
Intelligent Cabling & Automated Infrastructure Management	2	Two project of Intelligent Cabling& AIM should be completed.
EMS	4000	Nodes/devices managed in one single project
DCIM	2000	IT/IoT , Non IT nodes in one single project
RF Id based Physical Asset Tracking Tags (rack level Tracking),RF Id Based Heat and Humidity Sensors Tags and RF Id Rack Identifiers	1000	Tags, Sensors, Identifiers
Smart Single Rack (minimum usable space 24 U or more)	5	Smart Racks
Data Diode	5	no.
Laptop	50	no.
Desktop	50	no.
Privileged Access Manager	1000	Node, users

6. The Make & model of the IT equipment offered in bid should be listed (along with Data Sheet) on the OEM website. *Relevant details shall be submitted with bid.*

7. Malicious Code Certificate: OEMs should upload following certificate in the bid: -

This is to certify that the Hardware and the Software being offered, as part of the contract, does not contain Embedded Malicious code that would activate procedures to:

- a) Inhibit the desires and designed function of the equipment.
- b) Cause physical damage to the user or equipment during the exploitation.
- c) Tap information resident or transient in the equipment/network.

8. While quoting the equipment(s) in Bid, Bidder shall make sure following in respect of

OEMs

- a. In DC, all Networking equipment(s) should be from same OEM. Name of such equipment(s) are Leaf Switch and OOB Switch.
- b. In DR, all Networking equipment(s) should be from same OEM. These networking equipment(s) at DR can be from same or different OEM from DC. Name of such equipment(s) are Spine & Leaf Switch, OOB Switch, Interconnect Type1 & Type 2 Switch, Border Leaf Switch, WAN Switch, CE Routers (WAN Router), Internet Router.
- c. Remote Routers cum Firewalls/ Remote Router and Firewalls should be either from DC Networking OEM or from DR Networking OEM.
- d. In each networking and security equipment(firewalls), the transceivers must be of same networking and security equipment(firewalls).
- e. OEM of Internet Firewalls at DR (in HA mode) should be different from the OEMs of the other two types of Firewalls (Internal Firewall & Solution / Application Firewall).
- f. Other line items which are more than one in quantity should be from same OEM line item wise.
- g. Quoting Multiple OEM for single product is not allowed.

Section VII: Scope of Work

1. Project Overview

ERNET India has been entrusted a project by Indian Computer Emergency Response Team, Ministry of Electronics and Information Technology Government of India to achieve the following outcomes:

- i. To setup & Integrate IT Infrastructure and commissioning of Monitoring and Management software at DC , its DR and 250 remote locations.
- ii. To Facilitate installation of third party Operating System and applications on the commissioned computing Infrastructure. The end user will supply Operating System(OS) and licenses of required server OS: Windows, Red Hat Linux, SUSE Linux, Ubuntu. Bidder responsibility shall be to provide the necessary support for installation of these OS on the supplied servers.
- iii. To Establish MPLS connectivity at DC, DR and 250 remote locations. Please note that ERNET India will arrange MPLS service provider, however, integration of supplied hardware with MPLS link will be the responsibility of contractor
- iv. To Establish IPSec tunnels over MPLS so as to create data path between commissioned remote sites & Data Centres in order to receive metadata from remote locations to Data Centres.
- v. O&M of supplied Infrastructure and MPLS Links

1.1 Other Tenders Floated for the Project

In order to successfully accomplish the objectives of this project, ERNET India and CDAC have already floated the following tenders:

1. Procurement of IT equipment(s) for 18 remote sites - GEM Bid Number: GEM/2022/B/2381749 : Floated by ERNET India. *For the limited purpose of this tender, the IT infrastructure referred in 1.1 (1) has been referred to as '18 remote sites' in this tender.*
2. To establish core networking infrastructure at DC & 15 remote locations - GEM Bid number# GEM/2021/B/1539956: Floated by CDAC. Currently, this is under installation at this stage.
3. CDAC also procured GEM/2020/RA/57224 & through CPPP portal CDACT.TP.PHS.CSG019D.52.20-21 150 Servers spread in Data Center and remote locations
For the limited purpose of this tender, the IT infrastructure referred in 1.1 (2 & 3) above has been referred to as 'Phase-1' in this tender.
4. To Establish MPLS connectivity - GEM Bid Number: GEM/2022/B/2254639: Floated by ERNET India.

Note: Non-Disclosure Agreement(NDA) Signing : Those Bidders who are interested in getting Phase-1 equipment details and Data Centre(s) Layout will be required to sign (by its authorised signatory) and submit a NDA as per Form-10 before submission of bid and provide relevant documents with regard to meeting of the Annual average turnover Criteria as specified in Clause no. A (3) of Section VI .

2. Overall Deliverables of Contractor

The overall deliverables of the Contractor/System Integrator (SI) to be selected under this tender are as follows:

- i. Submission of HLD, LLD & site survey reports of DC, DR and 232 remote locations.

- ii. The draft Acceptance test plan (ATP) with detailed procedure shall be submitted by Contractor within sixteen (16) weeks of issuance of Contract for review and approval by ERNET India /CERT-In.
- iii. Supply, Installation, Testing & Commissioning of IT Infrastructure and Monitoring and Management software at DC, DR and remote locations as specified in this bid.
- iv. Integration of:
 - a. supplied infrastructure at DC, DR and remote locations as per finally accepted HLD & LLD.
 - b. supplied infrastructure with Phase-1 infrastructure.
 - c. supplied infrastructure & Phase-1 infrastructure with Monitoring and Management software.
- v. Support the installation of third party Operating System and applications on the commissioned computing infrastructure.
- vi. To configure MPLS WAN links & IPSec Tunnels at 250 remote sites & Data Centres.
- vii. Training & certifications as specified by ERNET India in this tender.
- viii. Acceptance Testing as specified by ERNET India in this tender.
- ix. Operations and Maintenance (O&M) of supplied equipment & Phase-1 infrastructure, including supply of manpower for a period of one year at Data Centre (DC & DR).
- x. Any other electric/networking accessories related work required for installation/commissioning of equipment(s)/software.
- xi. Any other activity essential or incidental for successfully accomplishing the objectives & outcomes of this project.

Note: It may be noted that the Operating System and other core software applications in servers to be supplied under this tender, shall be deployed by empanelled agency of CERT-In, however the servers will be required to be made ready by contractor to enable installation of Operating system and other relevant applications/software on servers.

3. Roles and Responsibilities of Contractor

3.1 Submission of HLD, LLD & site survey reports of DC, DR and 232 remote locations.

- i. Contractor shall carry out necessary site inspection to identify & prepare itself for the required pre-requisites at DC, DR and remote locations for overall smooth installation and commissioning of entire hardware. The contractor is also required to submit the site survey reports of DC, DR and 232 remote locations as per Delivery Plan.
- ii. The Contractor is required to prepare detailed deployment plan along with HLD, LLD and shall submit the same for approval within 10 weeks from the signing of the contract Agreement.

3.2 Roles and Responsibilities of Contractor under this tender & Interlinkages with Other Tenders Floated for the Project:

Contractor of this tender should coordinate with the selected system Integrators / Contractors chosen in the bids mentioned under sub-section ***“Other Tenders Floated for the Project”*** to perform:

- i. End to end integration of all infrastructure procured, including
 - a. Phase-1 IT infrastructure (i.e. Networking, Security appliances & Servers) at Data Centre
 - b. 15 remote sites of Phase-1.
 - c. 30 leaf switch lying with customer extra at DC. Same shall be configured/reconfigured as per requirement
- ii. Synchronize the delivery plan at sites/location with MPLS service provider for ensuring timely end-to-end IPsec Tunnels over MPLS from all sites/locations.
- iii. O&M of Phase-1 infrastructure.
- iv. Coordination with Contractor of ***'18 remote sites' for driving the activities of scope of work or O&M etc. Further, it is clarified that O&M activities for '18 remote sites' is not in scope of this tender.*** Also, it is clarified that 18 Remote sites are required to be integrated with DC and DR equipment by the contractor of this tender.
- v. Warranty/AMC of phase-1 equipments are not under purview of this tender. However, contractor must ensure that due to activities undertaken by it during the O&M period, warranty of Phase-1 equipments should not become void.

4. Role and Responsibilities of contractor at Data Center:

It must be noted by Contractor of this bid that 32 networking and server racks are under installation at the DC and contractor needs to understand HLD and LLD of existing IT infrastructure of Phase-1 Data Centre so as to ensure that the expansion of DC with equipment supplied in this bid is carried out seamlessly. Following are the broad list of roles and responsibilities of the contractor of this tender:

- 1) Perform the Site Survey and submit the survey report along with the HLD & LLD.
- 2) Supply of equipment & related software as per specification & BoM at DC and the installation, testing, commissioning & configuration of all supplied equipment(s) & software at DC. Integration of all remote sites through IPsec over MPLS Links.
- 3) Expand and Integrate the existing IT infrastructure of Phase-1 Data Centre with the equipment (s) planned in this tender utilizing the existing HLD and LLD.
- 4) To provide necessary support for the installation of third party Operating System and software applications on the commissioned computing infrastructure.
- 5) Coordinate with other SI(s) for MPLS link(s) availability
- 6) Integration of ***'18 remote sites' & additional '15 remote sites' of Phase-1*** with DC.
- 7) Installation, Commissioning and Integration of AIM (Refer section "Integration with existing AIM at DC) , EMS, DCIM, & other relevant software with complete IT infra. Refer to their integration in respective sections of this tender document.
- 8) Setup of High Availability Modes of operation for the equipment(s) & software at DC as per specification .
- 9) Contractor will update the configuration of the networking equipment(s) as required by CERT-In/ERNET India.
- 10) Contractor shall configure all the components and sub-components for end-to-end user access to all applications/services. it is clarified that further, it is a contractor's responsibility to change the configurations (if required) for DC equipments which are already installed to integrate with equipment procured through this bid.
- 11) Training on the infra and software installed via this tender & certifications as specified by ERNET India in this tender.
- 12) Perform the security audit (including VAPT) and fix all security issues at the time of acceptance.

- 13) Acceptance testing as specified by ERNET India in this tender.
- 14) Operation & Maintenance (O&M) for one year after successful implementation and acceptance by ERNET India including O&M for existing equipment(s) of Phase-I.
- 15) Supply of requisite manpower as per specifications.

5. Role and Responsibilities of contractor at Disaster Recovery Data Center (DR):

Contractor will be required to perform the following activities to setup DR of the above mentioned DC as specified in this tender:

- 1) Site Survey, and Preparation of High Level Design & Low Level Design for DR in sync with DC. Submission of Survey reports and design. The architecture in DR would follow the same design and functional principles as laid down for DC . Contractor to ensure for smooth integration/functionality of various analytics application and tools across DC and DR.
- 2) Setup of Cabling structure at DR similar to as described for DC . The fiber pathway will already be installed at DR. These Pathways shall be suspended from the ceiling at above the rack height.
- 3) Supply of equipment & related software as per specification & BoM at DR and the installation, testing, commissioning & configuration of all supplied equipment(s) & software at DR . Integration of all remote sites through IPsec over MPLS Links.
- 4) To provide necessary support for the installation of third party Operating System and software applications on the commissioned computing infrastructure.
- 5) Coordinate with other SI(s) for MPLS link(s) availability
- 6) Integration of **'18 remote sites' & additional '15 remote sites' of Phase-1** with DR.
- 7) Configuration of equipment(s) to establish interconnectivity and integration of DC with DR .
- 8) Installation, Commissioning and Integration of EMS, DCIM, AIM & other relevant software. Monitoring & Management of services and equipment through Hardware & software procured in this tender.
- 9) Establish Automated Infrastructure Management (AIM) solution at DR in line with DC for monitoring of all racks which will be around 60. Integration of AIM with DCIM & NMS as per tech specs.
- 10) Setup of High Availability Modes of operation for the equipment(s) & software at DR as per specification .
- 11) Contractor shall configure all the components and sub-components for end-to-end user access to all applications/services.
- 12) Contractor will provide Operation & Maintenance for supplied equipment/software at DR for one year after its successful implementation and acceptance by ERNET India.
- 13) Contractor will update the configuration of the networking equipment(s) as required by CERT-In/ERNET India.
- 14) Training on the infra and software installed as specified in this tender .
- 15) Perform the security audit (including VAPT) and fix all security issues at the time of acceptance.
- 16) Acceptance testing as specified by ERNET India in this tender.
- 17) Supply of requisite manpower as per specifications.

6. Role and Responsibilities of contractor at Remote Sites & its Integration

Contractor will have following roles and responsibilities for the remote sites:

- 1) Site Survey and Submission of Survey Reports of 232 remote sites.
- 2) Preparation & Submission of High Level Design & Low Level Design to be followed at remote sites.
- 3) Supply of equipment & related software as per specification and BoM at 232 sites and installation, Testing, Commissioning & Configuration of all supplied equipment(s) at 232 remote locations.
- 4) Integration of equipment(s) with MPLS Links and data path establishment with Infra at Data Centers (DC & DR) via IPSec tunnels between commissioned remote sites & Data Centres (DC & DR) in order to receive metadata from remote locations to Data Centres and established secured IPSec Links for data communication. Please note that Coordination with MPLS service provider will be the responsibility of contractor.
- 5) Management and Monitoring of services and equipment through software procured in this tender.
- 6) SI needs to coordinate with Contractor of '18 remote sites' tender to ensure that these '18 remote sites' are well integrated over MPLS via the IPSec tunnels with the DC and DR.
- 7) Configuring/Integrating the Management and Monitoring software at DC and DR with all remote sites including '15 remote sites' of 'Phase-1'.
- 8) Configuration to establish data communication of remote sites with DC or DR based on link availability at DC and DR..
- 9) Perform the security audit (including VAPT) and fix all security issues at the time of acceptance.
- 10) Operation & Maintenance for one year after successful implementation and acceptance of services & acceptance by ERNET India.
- 11) The power connection will be provided by end user. Thereafter, if any extension of power cable is required from power point to UPS/Rack or In case the RACKPDUs are not available in RACK, the same shall be in the scope of bidder.

7. Role and Responsibilities of Contractor i.r.o EMS, DCIM and related software applications:

- 1) Setting up, configuring and integrating requested software modules such as AAA, Active Directory, EMS, AIM, DCIM, IT Helpdesk, Asset Management etc. (its complete list as per BoM & specifications) in a High Availability (HA) mode for administration, monitoring and management of infrastructure and established Network. EMS OEM holds the responsibility to must perform integration of overall EMS solution & DCIM (with all their respective sought modules). Contractor must ensure that the integration of EMS with all IT equipment procured via
 - a. 'Phase-1' tender ,
 - b. '15 remote sites' of Phase-1,
 - c. '18 remote sites' tender
 - d. Equipment supplied as a part of this bid. Contractor must ensure that all this equipment is discoverable and manageable via the EMS.
- 2) Installing & configuring AAA server & Integrating AAA within the setup for required functionalities such as authentication of all users, logging of session information/details pertaining to NEs, tracking of sessions, logging of configuration changes per user , enforcing security policies on the end network elements etc.

- 3) Installing & configuring Active Directory (AD) for setting up users with different roles/privileges to allow privileged access to different modules , setting up user-privilege based different workflows for change management / configuration changes etc.
- 4) Accordingly, the contractor should ascertain any other requirements such as configuring DNS /DHCP etc. w.r.t full functioning of AD/AAA.
- 5) Installing & configuring AIM solution at DC and DR. Integrating new & existing AIM solution at DC with EMS. Integrating AIM solution at DC and DR with EMS.
- 6) Deployment and Integration of RF based Physical Asset Tracking, Heat and Humidity Sensor Solution with DCIM at DC and DR.
- 7) Integration of DCIM and EMS using REST APIs/SNMP and / or any other available non –proprietary interfaces available for integration between modules for accomplishing requirements and complete functionality.
- 8) Installation, configuration of a syslog server, its integration with EMS and integrating it with all network devices & servers to aggregate syslog(s) at this server.
- 9) Data & Module wise Integration:
 - a. RF based Physical Asset Tracking solution should be able to route the relevant data to DCIM and then to EMS by forwarding SNMP traps and/ or the relevant data e.g. Alarm(s) generated via an unauthorized movement of asset should be sent to EMS or any other alarm generated w.r.t Asset Management Functionality should visible in EMS alarm module and EMS database. Further, such an alarm in EMS should auto raise a ticket in IT helpdesk (based on certain criteria). The ticket may be closed by a user by referring / adding remarks to the ticket id w.r.t a ticket generated for authorized movement of asset as above. The alarm may be also acknowledged with this ticket id.
 - b. Another such desired required integration is to move an asset from a Rack to another Rack in the IT Helpdesk system, this will be tracked via a ticket. Any change needs to undergo via change management workflow , which means this request will be reviewed and approved by different users. Upon approvals a change becomes an authorized change.
- 10) The Contractor needs to create processes and perform required integrations to accomplish the functionality.
- 11) Installation and commissioning of IP Address Management and Switch Port Management solution along with the EMS so as to allow advanced IP scanning of IPv4 and IPv6 subnets in network for identifying the available and used IP addresses. i.e. it must support Network inventory management with IP address and Switch port management.
- 12) Setting up / configuring SLAs per device/logical device / link basis and as desired in tender SLA conditions and provide the detailed weekly/ monthly downtime using tools (if any tool than supplied EMS is used, contractor needs to provide the same as well). Provide root cause analysis for the alarms etc. contractor needs to configure the SLA management module as per the SLA/penalty terms and conditions mentioned in the tender. contractor needs to ensure that SLA module is able to generate the report with penalty details based on the downtime as per conditions mentioned in tender.
- 13) Configuring Drawings , Photos & Videos of Floor(s) of DC , DR and Building Layout in the DCIM and / or EMS.
- 14) Integration of DCIM with all RACK's PDUs at DC and DR.
- 15) Integration with Email Gateways/servers, SMS Gateways. Please note that Supplied EMS must have the capability to get integrated with standard solutions available in market w.r.t Email Gateways/servers, SMS Gateways.
- 16) Integration of DCIM with BMS is in the scope of Contractor, provided the BMS supports and provides the requisite APIs.

- 17) In order to complete the solution and scope of work, contractor needs to provide and configure OEM's MIBs for IT equipment (servers, networking equipment etc.), OEM's Element Management Systems (Networking, Server equipment and all other possible IT equipment) and perform the end to end integration of EMS with OEM's Element management systems for the completion of the requirements. e.g. Element Management system is required to monitor and manage the alarms / events pertaining to fan, physical ports etc. Hence , for such alarms/events/traps based integration, Contractor must provide the relevant source MIBs from OEM. Contractor must ensure the Element Management Network's integration with EMS(Enterprise Management System) .
- 18) Contractor must provide & configure CA certificates from Verified CA store to allow both Internet and Intranet Access to software web based modules (such as EMS/DCIM etc.) which are valid for the total duration of work on all **applicable** devices/servers to support SSL based encryption. The default access to EMS and other management modules provided should be via only Intranet, whereas in certain special cases, internet access to specific modules may be provided upon authorized requests& approvals in system (Helpdesk).
- 19) Deployment of relevant applications/ software modules for EMS and DCIM solutions should be on different physical servers. The requisite modules should be integrated as per specifications on Day-1. There should be seamless automatic successful handover (in failure cases) between the instances provided in HA. Refer Technical specs for more details. Contractor must also create and provide the SOP to be followed whenever any instance / instances goes down.
- 20) It is responsibility of contractor to maintain the backup of EMS for at least one year which includes data, configuration, alarms, performance etc. Assets data must be maintained throughout.
- 21) Contractor may choose the best and optimized design to deploy the various sought applications / solutions on Hardware. The contractor must ascertain the hardware & other requirements of these servers as per the sought criticality, HA, scope of work, total users, backup , total concurrent users, amount of data to be saved per server per application and other factors.
- 22) Contractor is responsible to offer complete hardware and software to run the applications and monitoring of equipment and appliances mentioned in the BoM along with the equipment procured under different bids referred in this document. The Contractor must ensure automatic sync up of data related to EMS & DCIM applications between various instances under different fail over scenarios.
- 23) Maintain backups of all the versions of equipment software, configuration user details, log details etc. Contractor shall perform proper version management of all the equipment configurations. All the changes must be formally approved by the ERNET India/ CERT-In designated team leaders and recorded as per process.
- 24) Contractor shall ensure that these backup and configurations are accessible only to the authorized person and must be kept with the ERNET India/ CERT-In and designated in-charge as per Information security policy of ERNET India/ CERT-In.
- 25) The Contractor shall ensure that all the devices that will be installed in the DC, DR , remote locations as part of the physical infrastructure shall be Simple Network Management Protocol (SNMP) latest version enabled and shall be centrally monitored and managed on a 24x7 basis.

8. Role and Responsibilities of Contractor i.r.o Integration of DC equipment(s) with Phase-1 IT equipment(s):

- 1) CERT-In is in the process of setting up of Networking, Security & Servers etc. through another Contractor in approximate 32-34 Racks. HLD & LLD of DC i.e. phase-1 IT infrastructure will be provided to Contractor, Contractor needs to align themselves according to HLD & LLD to extend the DC with the IT Infrastructure of this tender. List of available equipment(s) with Make & Model shall be provided to prospective Contractors on submission of Non-Disclosure Agreement.
- 2) Contractor shall perform SITC of the IT equipment(s) and software planned at DC in this bid and integrate with the already existing equipment(s) of phase-1.
- 3) The existing Data center is under implementation with open standards Leaf and Spine architecture. The Additional Leaf Switch procured through this tender must be fully integrated with existing Spine Switch of phase-1 to make it a part of existing DC Fabric. These new leaf switches should be seamlessly managed by existing controller. This is to ensure that the New and existing networking environment of Data Center works as a single unit and can be used seamlessly.
- 4) The Integration of the existing DC with extension of leaf switches is very critical. The existing DC will be made up soon and the extension of the OOB and leaf's Switches should not affect the existing DC architecture, traffic flow, performance, resiliency, overlay, underlay etc. The Contractor needs to perform PoC (proof of concept) as per requirement in existing DC to confirm single fabric unified architecture along with security and Routing functionality desired.
- 5) The Contractor shall integrate EMS (i.e. in this bid), DCIM and remaining software with existing equipment installed and commissioned in phase-1, by referring to this bid's technical specs, scope of work and sought functionality.
- 6) At present 32 remote locations planned to be connected through IPSec tunnels to the available WAN Switch and CE Router at Data Center. New 232 remote locations will also be connected through these existing equipment (s) in same manner.

8.1 Integration with Phase-1 Intelligent Cabling Infrastructure at Data Center:

ERNET plans to expand an existing data center with additional 70 (seventy) Server Racks (S/R). The 70 S/R are to be seamlessly integrated with the existing data center. This would include integrating the complete passive structured cabling solution (copper & fiber) and the Automated Infrastructure Management (AIM) solution currently under installation in the existing data center. The existing data center would approximately consist of 30 (thirty) S/R and 2 (two) to 4 (Four) Network Racks (N/R). The following sections will detail the Scope of Work (SoW) that needs to be fulfilled for a seamless integration of all areas. List of available equipment(s) with Make & Model shall be provided to prospective Contractors on submission of Non-Disclosure Agreement.

8.1.1 Integration with existing Passive Structure Cabling at DC:

- 1) The passive structured cabling design that is to be deployed in the additional 70 S/R will follow the same design that has been planned to implement in the 30 S/R for the existing

data center. Refer to Phase-1 Networking Infrastructure description in Technical Specification under Data Center Intelligent Cabling section for more details.

- 2) All structured cabling products proposed shall be governed by the Technical Specifications listed in this tender. All copper and fiber panels shall be intelligent enabled from Day 1. The existing data centre uses standard based patch cords and the same shall be the case for the additional 70 S/R. Bidder can use Intelligent Patch cord also subject to seamless integration between new and existing racks.

8.1.2 Integration with existing AIM at DC:

The Automated Infrastructure Management (AIM) solution proposed by Contractor for the 70 S/R shall seamlessly integrate and shall be interoperable with the existing AIM solution and work as a single entity. All 70 S/R shall be intelligent enabled where all the connectivity within the rack shall also be monitored via the AIM system. The AIM solution shall monitor the complete connectivity between N/R racks and S/R racks; therefore, the software shall provide the complete end to end circuit trace (including the active equipment port) between N/W and S/R on the same window and shall also appear on the rack controller when prompted physically from the rack. The integration shall be such that only a single web-based window should be required to monitor both the existing AIM software and the proposed AIM software. The proposed AIM solution shall have the following features that are currently available/functioning on the existing AIM solution. (refer to detailed feature specification has been provided in the Technical Specifications). The AIM Software shall have the capability to select the endpoints of the circuit and let the AIM Software automatically identify the patch connections, available routes necessary to complete the circuit.

- 1) The AIM Software shall have a dashboard feature which allows various types of indicators to be viewed and monitored. Some mandatory indicators that shall be part of the AIM software are, total fiber and copper panel ports in use, total space utilized in a single rack, total fiber and copper switch ports in use, total fiber and copper server ports in use.
- 2) The integration of existing and new AIM with EMS for the Alarms or any other events.
- 3) In case Contractor proposes cabling from existing OEM in this bid, the Contractor may use existing AIM Hardware and Software with extra licenses as required, provided there are no constraints on performance. In case of any scalability/performance issues envisaged with existing AIM Hardware and/or Software, the Contractor may provide the relevant and appropriate AIM Hardware and / or software with required licenses.
- 4) In General, it's bidder responsibility to provide additional licenses, hardware, software etc. in existing AIM solution for integration with New AIM.

9. General Activities to be performed by Contractor for the project: -

- 1) The tasks under SoW are to be performed by selected Contractor of this bid in coordination with respective OEMs/vendors, MPLS Bandwidth service provider, existing Contractors, ERNET India, CERT-In and other agencies relevant for this project.
- 2) Define processes (SOP) such as for IT equipment & their security Policies, defining the security plan for audits, other processes such as for SITC and O&M of IT equipment, it should also include unloading of assets, placement as inventory, unpacking, addition of asset tags on inventory, installation, commissioning and its discovery in EMS. The SOPs

- should include the scenarios of Asset movement, configuration, reconfiguration of asset tags for new location with proper documentation and reporting etc.
- 3) Define and document the processes for various activities to be performed such as Pre-Installation, Installation-Configuration-Commissioning, Coordination with other Project Vendors processes etc.
 - 4) Documentation of implementation procedures/guidelines and workflows for processes/ use cases manually/automatically identified. Revise and re-issue of such guidelines / procedures based on feedback during O&M period.
 - 5) Create and manage a project documentation library containing the project documentation templates and ensure continuous process improvement for the project under knowledge management.
 - 6) Contractor shall suggest a change management process based on the network, systems, solutions and applications deployed. It must help to create the workflow templates, define the users and their access roles.
 - 7) Contractor adhere to the change management procedures already defined (if any) in ERNET India/CERT-In policies to ensure that no unwarranted changes are carried out on the devices.
 - 8) Training of ERNET India and CERT-In manpower about installation and operation of equipment(s).
 - 9) Contractor shall have proper escalation procedure and emergency response for any failure of DC and DR.
 - 10) Since the project is being implemented in a secured environment, all the updates/patches of the devices and software solutions shall be performed without direct connectivity to Internet. The updates/patches files should be download offline in an independent system, from where in-turn USB/portable HDD based updation /patching etc. is carried out to periodic & on-demand mechanism. Any other offline patching mechanism that doesn't require direct internet connectivity is allowed after a prior approval from ERNET India. Further, Remote patching through the internal network is allowed.
 - 11) Contractor to ensure that Servers are supplied along with all the necessary drivers to run Operating systems as mentioned in technical specification.
 - 12) The bid should include OEM professional services for the successful implementation of project. The OEM professional services shall include but not limited to solution architecture, design, installation, preparation of acceptance test plan & procedure with expected results and end user training leading to OEM Certification. The above activities should be jointly done by the Contractor and the OEM, as per the best security practices for the final acceptance.
 - 13) Any other activity essential or incidental as decided by ERNET India during the project period as per the scope of work and technical specifications.
 - 14) Any other essential or incidental work required to be performed by the contractor to commission the project.
 - 15) **Processes & Guidelines:** The Contractor must create and develop the relevant processes for the project implementation phase and get those approved from ERNET India. These must be (version) maintained and saved in knowledge management database.

10. Acceptance Testing (AT)

- 1) The draft Acceptance test plan (ATP) with detailed procedure shall be submitted by Contractor within sixteen (16) weeks of issuance of Contract for review and approval by ERNET India /CERT-In. AT shall be carried out jointly by Contractor and ERNET India/CERT-In after successful delivery, installation, testing and commissioning of project as per milestones. On successful completion of AT, certificate for the same shall be issued by ERNET India to the Contractor. Operation and Maintenance of individual milestone will start from the date of acceptance by ERNET India. Responsibility of Contractor shall include below mentioned artefacts but not limited to:
 - a) Submission of ATP document.
 - b) OEM(s) Certification for installed equipment(s) as per the best practices and guidelines with requisite quality as per OEM standards.
 - c) Low level and High level design and Network security policy document.
 - d) All equipment(s) and software items must be installed at site as per the specification and establish of transfer of data between central and remote sites through IPSEC tunnel.
 - e) Availability of all the defined services shall be verified.
 - f) Successful Vulnerability assessment (VA) and Penetration Testing (PT) report through a Third-party certified agency (CERT-In empanelled Security auditors) and Fixing of all identified Vulnerabilities upon upgrades/patch updates and providing the “all clear” reports.
- 2) ERNET India may require the Contractor to carry out any test and/or inspection not specified in the Contract but deemed necessary to verify that the characteristics and performance of the equipment(s) and services comply with the technical specification’s codes and standards under the Contract. The Contractor shall be required to carry out such test and/or inspection at its own cost.
- 3) Final Acceptance for each of the milestone in the project will be given by ERNET India along with CERT-In.
- 4) Any other document/activity identified during project implementation period.

11. Training

The Contractor must conduct training for users (ERNET India/CERT-In officials) for all technical and operational aspects of the equipment and services such as Servers, Router, Switches, Firewall, EMS, DCIM etc. The training may happen for multiple people at multiple times (upto 5 batches). The Contractors has to coordinate with ERNET India/CERT-In to finalize a training calendar, get the same approved and adhere to timelines. The training must take place before the handover of the Milestone-1.

- 1) Training for 50 Persons shall be provided onsite by the Contractor or Contractor's representatives / respective OEMs for a minimum period of 30days for installation and operation of installed equipment(s).
- 2) The training should comprehensively cover all the supplied sub-systems, their integration and operations. Including
 - i. Installation of all hardware and software.
 - ii. General system administration, maintenance & operations.
 - iii. Installation, configuration and administration of all Networking, Firewalls, Servers, AAA Appliance, Load Balancer, NDR, EMS, DCIM, CMS, IT Helpdesk etc.

- iv. Installation & configuration of all software items supplied.
 - v. Performance analysis & tuning.
 - vi. Problem diagnosis, pre-failure alerts, logs management, reports, and problem resolution.
 - vii. LAN, WAN, network and security devices.
 - viii. All supplied software including server & storage management software, EMS, Anti-virus software, etc.
- 3) Comprehensive hardcopy and soft copy training course material must be provided.
 - 4) The documentation including the presentations/write-ups / notes must be arranged and saved in the knowledge repository (Onsite only).
 - 5) Contractor shall also provide training & certification (from respective OEMs/Service Providers) for the following courses :

	Training Detail	No. of Staff
Training & certification	Professional Level Proficiency Certifications equivalent to CCNP, JNCIP for Data Center, Routing and Switching, Security and LPIC1 & LPIC2 for Linux Administration or RHCE.	
	1. Data Center	30
	2. Routing and Switching	35
	3. Security	35
	4. Linux System Administration/RHCE	30

12. Scope of Work for Operation and Maintenance

The Contractor shall carry out operations, maintenance and management of all installed IT components (Hardware and software) immediately after acceptance of each Milestone by ERNET India/CERT-In and also provide Comprehensive On Site maintenance of equipment installed in DC, DR & remote Sites for a period of one year. The minimum specified work to be undertaken by the Contractor for providing operations, maintenance and management of all IT components & comprehensive onsite maintenance during the contract period has been categorized as under:

- 1) Operations, maintenance and management of all IT components (Hardware and software) and related services for the equipment installed as per BoM at DC, DR & Remote sites.
- 2) Comprehensive Onsite Maintenance with spare parts for all equipment's/items mentioned in BOM.
- 3) Operations, maintenance and management of all IT components and related services for the Phase-1 equipment(s). List of available equipment(s) with Make & Model will be provided to prospective Contractors after submission of Non-Disclosure Agreement (NDA). These equipment (s) are under warranty. Warranty/AMC of phase-1 equipments are not under purview of this tender. However, contractor must ensure that due to activities undertaken during the O&M period, warranty of Phase-1 equipments should not become void.

- 4) Keeping the warranty of supplied hardware in this bid & other existing hardware of Phase-1 intact will be the sole responsibility of successful Contractor.
- 5) Maintain helpdesk and do follow-up with other Contractor for existing equipment and bandwidth service providers in case of faults during O&M period.
- 6) Contractor shall carry out Vulnerability assessment (VA) and Penetration Testing (PT) using certified tool through a Third-party certified agency certified by CERT-In of complete IT infrastructure once in a year and shall submit report to ERNET India/CERT-In.
- 7) During the O&M period, the Contractor shall provide all product(s) and documentation updates, patches/fixes, and version upgrades within 15 days of their availability/release and should carry out installation and make operational the same at no additional cost to ERNET India/CERT-In. Contractor must ensure that permission has been taken from ERNET India/CERT-In before any updates, patches/fixes, and version upgrades.
- 8) Generation of analytical reports on daily, weekly, monthly basis and submitting to ERNET India/ CERT-In for reviewing.
- 9) Review meeting shall be held weekly and monthly during O&M period.
- 10) Processes & Guidelines:
 - a. The contractor must create and develop the relevant processes for the project O&M phase and get those approved from ERNET India /Cert-In
 - b. Some of the processes include change in configuration/IP addresses / user management (users/privileges) / WAN network / IPSec tunnels/Local Network/asset locations/link parameters/threshold.
 - c. Contractor must provide the O&M plan including the periodicity of submission of required artefacts / documents.
- 11) **Reports:** Contractor must provide
 - a. Regular weekly & monthly reports for the alarms / incidents reported.
 - b. Regular monthly reports for
 - i. SLA calculations, Inventory and Assets, Availability of Manpower
 - ii. Open / Closed / In Progress Helpdesk tickets, Feedback , Root causes of regular alarms/problems, Improvement areas.
 - iii. Contractor shall undertake proactive monitoring of the entire basic infrastructure and diagnose problems that could arise as part of any component installed in DC, DR and remote locations. Contractor shall maintain a log of all such diagnosis and notify ERNET India/ Cert-In on a monthly basis in the form of a report.
 - iv. Other reports planned and discussed during the course of project.
- 12) Contractor must ensure the following at all times, during implementation:
 - a) Availability - All components must provide adequate redundancy to ensure high availability of the applications, devices and other DC & DR services. Designed IT infra shall have ability to withstand all single point of failure without any service unavailability.
 - b) Lean and Clean Design –SI must follow the recommended measures for a lean and clean design – e.g. structured cabling for the DC & DR infrastructure etc.
 - c) Scalability & Flexibility
- 13) Any other activity which may be mutually decided during the contract period.

The following are the other major activities to be carried out for the equipment/software/services installed or to be installed in DC, DR & Remote Sites during the contract period.

12.1 Asset Management Services

The Contractor shall be required to create and maintain database of all the assets installed/procured/brought by ERNET India/CERT-In in the DC, DR & Remote Sites as per Asset Management policy.

Some of the points are mentioned but not limited to following:

- i. Contractor needs to provide a process for taking in/out of a project asset at a site that should include performing the Asset Tagging for the DC&DR assets and maintaining of asset tags ids per DC & DR assets in DCIM / RF Id Tag solution. The process should include updates in Asset Management Solution.
- ii. The Contractor needs to take an approval for the process established from ERNET India / Cert-In and accordingly create a change management workflow
- iii. Contractor must maintain the asset details of all assets of the project (including the existing & upcoming assets).Old inventory details will be provided by ERNET India. The asset inventory database should have information like make, model, power load, configuration details, serial numbers, EoL, EoS, licensing agreements, warranty/support details, place/location of installation and installation/removal details etc.
- iv. The Contractor shall create and maintain software inventory database with the information such as Licenses, Version Numbers, Support Expiry and Registration details.
- v. The Contractor shall notify atleast 3 months in advance to tendering authority for Hardware and Software warranty/support / EOL contract renewal before.
- vi. Asset Management of any other existing hardware of project shall also be maintained by Contractor.
- vii. Monthly Manual Auditing of DC-DR Assets and crosschecking of same with the Asset details of the system. Documenting and Submitting the reports with gaps found if any.
- viii. Regular reports w.r.t items in staging area, store, racks in DC and DR.
- ix. 100% tracking of all resources of project, ensuring that all items in assets are searchable in asset database by their serial number, IP addresses or other unique fields.
- x. Provisioning of different color labels on to all assets placed in different areas in DC, DR as a staging, store, racks.
- xi. Any other activity which may be mutually decided during the project period.

Note: Please note that Asset management involves management of assets procured through this tender as well as equipments procured through other related tenders as mentioned in the tender document at Section VII, Clause 1.1.

12.2 Preventive Maintenance Services

The Contractor shall ensure preventive maintenance (PM) services for all the IT equipment installed at the DC & DR at least once in every quarter and for Remote Sites once in a year. The preventive maintenance shall include:

- i. Cleaning and removal of dust and dirt of the equipment with appropriate precautions.

- ii. Bidder must perform the PM inline with the OEM standards or as defined by CERT-In/ERNET India.
- iii. Conduct inspection (check for loose contacts in the cable and connections etc.), health checking of all components of the equipment, testing, satisfactory execution of diagnostics and necessary repairing of equipment.
- iv. Contractor shall intimate and take due approval from ERNET India/CERT-In before carrying out preventive maintenance activity.
- v. Proper labelling/ferruling and dressing of cables, Contractor shall provide labelling/ferruling and commercial label printer, consumables including cartridge, label stickers, cable tie etc.
- vi. Any other activity which may be mutually decided during the project period.

12.3 Installation/configuration and reconfiguration/rollback of equipment

The Contractor shall be responsible for installation/configuration/re-configuration/rollback of all the equipment as and when required by ERNET India/CERT-In.

- 1) The Contractor shall maintain a record of hardware and software configurations of all equipment including the details of different policies/services implemented on the devices such as VLAN configurations, access control lists, routing filters, clustering, versions etc. (except OS & other applications along with Database, Storage etc.).
- 2) Contractor shall keep backups of all the versions of equipment configuration.
- 3) Contractor shall adhere to the change management procedures already defined in ERNET India/CERT-In policies to ensure that no unwarranted changes are carried out on the devices.
- 4) Contractor shall do proper version management of all the equipment configurations. All the changes must be formally approved by the ERNET India/ CERT-In designated team leaders and recorded.
- 5) Contractor shall ensure that these configurations are accessible only to the authorized person and must be kept with the ERNET India/ CERT-In and project manager as per Information security policy of ERNET India/ CERT-In.
- 6) Any other activity which may be mutually decided during the project period.

12.4 Network Management Services

The scope of work under network management services would include –

- i. To ensure continuous operation and upkeep of the network Infrastructure at the Data Centres & Remote Sites so that the network is available 24 x7 as per the prescribed SLA.
- ii. Configuration/Reconfiguration/Deployment and Management of various device policies like Security policies, Access policy, IP Policy, routing policy, firewall policies etc. as per ERNET India/ CERT-In requirements.
- iii. Managing accessibility between external links and project infrastructure hosted at the Data Centres in co-ordination with respective vendors.

- iv. Configuration/Reconfiguration/deployment/installation and maintenance of all Network equipment installed or to be installed at the Data Centres & Remote Sites.
- v. Performance tuning to ensure resilient performance, reliability and high availability of the network services. A performance matrix has to be provided by Contractor to the ERNET India/CERT-In on monthly basis and as and when required.
- vi. Coordination with defined agencies for WAN links .
- vii. The Contractor shall also be responsible for integration, management, maintenance, configuration /reconfiguration and commissioning/decommissioning of any additional Internet/Intranet Bandwidth from different ISPs and other department networks which needs to be integrated with DC network during entire contract period.
- viii. The Contractor shall be responsible to monitor the availability of various links and their packet drop, latency and utilization at the DC, DR & remote sites network using EMS. The Contractor shall also maintain logs on the basis of time, interface, IP address, application wise etc. for traffic analysis for the requisite period defined in respective policies.
- ix. Any other activity which may be mutually decided during the project period.

12.5 Server Management Services

The Contractor has to provide these services for supplied servers

- i. Contractor shall manage the server hardware including server hardware installation, POST, administration, hardware performance tuning and upkeep of the server.
- ii. The Contractor shall also undertake installation/re-installation of all the servers in terms of Hardware installation & powered on.
- iii. Contractor shall provide device/peripherals management.
- iv. The Contractor shall be responsible to monitor the availability of various CPU utilization, port status, fan status , latency and utilization at the Data Centres & remote sites servers using EMS/ DCIM. The Contractor shall also maintain logs on the basis of time, interface, IP address, application wise etc. for traffic analysis for the requisite period defined in respective policies.
- v. Collection of sysLogs from all the subsystems, integrated into a Syslog server, sysLog backup as per policy, integration of alerts/alarms / events with EMS.
- vi. Contractor shall be responsible to maintain optimum utilization of all the equipment's w.r.t. keeping close watch on optimum performance of Hardware and implementing necessary measures to rectify the issues using available tools in data centre. A performance matrix has to be provided by Contractor to the ERNET India on monthly basis and as and when required.
- vii. Any other activity which may be mutually decided during the project period.

12.6 Enterprise Management (EMS) & Data Centre Infrastructure Management (DCIM) Services

The objective of these services is to ensure continuous operations and upkeep of the WAN infrastructure at the DC, DR, remote locations including all active and passive components. The scope excludes maintenance of WAN links which shall be the joint

responsibility of MPLS Service Provider and ERNET India. However, for overall functioning of the Infrastructure & to achieve the desired project objectives, at optimum performance within permissible SLAs, the Contractor will be responsible to coordinate with MPLS Service Provider for WAN links related issues for integration amongst DC, DR, remote locations.

The scope of work under EMS & DCIM services would include but not limited to: –

- 1) Operations and maintenance of EMS and DCIM installed with its various modules.
- 2) Supplied solution's upgrades, patch updates etc. for the overall contract period via only non-Internet based mechanisms.
- 3) Provide traffic analysis and service management of Non IT and IT (network and server) infrastructure deployed at different physical locations including DC, DR, Remote locations (described as per scope of work and BoQ), 18 remote locations (being procured as a part of another bid) and also on already existing equipment of phase-1 containing NEs and Servers at DC location & 15 remote locations.
- 4) Providing preventative maintenance plan, asset audit plan, SOP required for change management workflows and take an approval from ERNET India / CertIn for same and perform the maintenance as per plan.
- 5) Provisioning of regular daily/weekly/monthly reports including but not limited to reports related to Equipment Availability, Link Availability Network based reporting between network devices, VLANs created for various co-hosted users including their traffic analysis. Contractor should provide current and historical reports for various statistics monitored.
- 6) Contractor must Maintain End of Life, End of Support, End of Sale for Assets, trigger early actions (in advance of three months) w.r.t it to ERNET India / Cert-In.
- 7) Bi-yearly audits of assets using 2D barcodes and comparing with Asset management module, presentation of discrepancies, updation of SOP if required, correcting the database . In case any additional equipment/tool is required pertaining to 2D bar code audits, Contractor must take them into account.

12.7 Security Administration and Management Services

The objective of this service is to provide a secure environment in compliance to the ERNET India/ CERT-In security policy. This service includes:

- i. Addressing the ongoing needs of security management including, but not limited to, monitoring, configuration/reconfiguration, troubleshooting of various devices/ tools such as firewall, IPS/IDS, through implementation of proper patches, procedures and rules.
- ii. Ensuring that latest patches/ workarounds for identified vulnerabilities are applied immediately. Contractor shall enforce update/upgrade managements.
- iii. Respond to security breaches or other security incidents by taking corrective measures, providing guidelines to users and coordinate with respective OEM in case a new threat is observed to ensure that workaround /patch is made available for the same.
- iv. Protection from viruses / malwares etc. is the responsibility of Contractor for the supplied systems. Contractor must provide antivirus / end point protection with regular updates and take sufficient steps to avoid any kind of attack on supplied systems.

- v. Configuration/reconfiguration, Maintenance and management of security devices, including, but not limited to maintaining firewall services to restrict network protocols and traffic, detecting intrusions or unauthorized access to networks, systems, services, applications or data, firewalls, servers, from viruses.
- vi. Ensuring that the security policy is maintained and updates to the same are made regularly as per ERNET India/ CERT-In Security guidelines.
- vii. Compliance of security regulations defined by Government of India or any other Govt. Authorized agency.
- viii. Report generation

12.8 Disaster Recovery Configuration Services

All the critical applications of DC shall be setup and configured in the Disaster Recovery (DR).

- i. The Contractor shall be responsible for setting up Network services at disaster recovery site for Auto/Manual switch over to run the critical applications from DR in case of any unforeseen disaster at Main DC or as per the directions of ERNET India/ CERT-In.
- ii. Disaster recovery site configuration includes configuration of all IT infrastructures in DC and DR Site and Contractor shall be responsible for configuration, management & Changes of all IT infrastructures i.e. network equipment etc.
- iii. Detailed scope may be worked upon during implementation.

12.9 Network Management Services including Security Incident Lifecycle Management

The objective of this service is to ensure continuous operation and security of the ERNET India/ CERT-In infrastructure at Data Centers & Remote Sites. For overall functioning of the services, the Contractor shall be responsible to coordinate with Bandwidth service Provider team for MPLS link related issues. The services to be provided for Network Management include:

- i. Ensuring that the network is steady and available 24x7x365 as per the prescribed SLAs.
- ii. Attending to and resolving network failures and snags within time limit as defined in SLA.
- iii. Attending to and resolving network security incidents within time limit as defined in SLA.
- iv. Support and maintain the overall network infrastructure Security Components, Switches etc.
- v. Configuration and backup of network & security devices including documentation of all configurations.
- vi. 24x7x365 monitoring of the network to spot the problems immediately.
- vii. Installation and Re-installation of the network devices in the event of crash/failures.
- viii. Tuning of various parameters to optimize performance and to ensure industry standard QoS with customization is being delivered.
- ix. Any other activity which may be mutually decided during the project period.

12.10 Remote site support

Contractor will have to provide support on remote site for supplied hardware.

- i. Contractor team will monitor the Link/Site status from Data Center NoC.
- ii. Any alert raised for WAN link has to be communicated from Monitoring /Helpdesk team.
- iii. Liaisoning with Bandwidth Service Provider to make the link up 24x7x365.
- iv. Contractor has to ensure the standard warranty support from OEM at sites as well including HW SLA defined in SLA annexure.
- v. All configuration management will be done from DC/DR for supplied devices under this contract.
- vi. Any HW support has to be catered by Contractor on call basis.
- vii. OEM support for HW replacement has to be provided till site, predefined from ERNET.
- viii. Any shifting of site till the time of completion of O&M will be done by Contractor, if required.
Further, this is clarified that once equipment are installed and accepted by ERNET India thereafter, Intracity shifting will be the bidder's responsibility and Intercity shifting will be the end user's responsibility.
- ix. Any other activity which may be mutually decided during the project period.

12.11 Vendor Management Services

Contractor shall coordinate with external System Integrator(s) & Service Providers for upkeep of equipment / Network services to meet the SLA

- i. Shall liaison with respective vendors/OEMs, other Contractors, Bandwidth service providers for repairs/replacement of items and/or update/upgrade/troubleshoot the services.
- ii. To perform this activity, the CONTRACTOR shall maintain equipment/service wise database of the various vendors and service providers with details like contact person, telephone numbers, escalation matrix, response time and resolution time commitments, and equipment expiry date of Maintenance Services/Warranty/Software Assurance/Support etc.
- iii. Log and escalate the calls with respective System Integrator(s) /OEM/service provider within 1 hour from occurrence of incident/ problem. Contractor shall also do repetitive pursuance and coordination with them till the equipment repaired/problem is resolved.
- iv. Liaising with existing System Integrator(s) & Service Providers
- v. Report preparation and sharing of same with stakeholders as per the defined periodicity.
- vi. All other tasks as per the Scope of Work and O&M including any other task deemed necessary to carry out the desired work.

12.12 Change management Services

- i. Tracking the changes in hard / soft configurations, changes to applications, changes to policies, users/applying of upgrades / updates / patches, network (WAN/LAN) etc.
- ii. Plan for changes to be made - draw up a task list, decide on responsibilities, coordinate with all the affected parties, establish and maintain communication between parties to identify and mitigate risks, manage the schedule, execute the change, ensure and manage the port change tests and regular updates w.r.t changes should be documented in knowledge bank.

12.13 Help Desk Support

The Contractor shall provide 24 x 7 help desk support from DC to all authorize Users/User departments using the Datacenter network .

- i. The Contractor shall maintain ITIL Compliant helpdesk tool including configuration/ reconfiguration/ upgrade/update.
- ii. Contractor shall log all calls received through any medium viz. telephone/email/in writing/in person, shall generate a ticket mentioning type of problem, Severity level etc. using helpdesk tool and forward the same to concerned team/person
- iii. The request would be made on help desk by the user by dedicated help line number/Specific email account and Contractor shall get approval from the officer in charge of the DC, DR as designated by the ERNET India. The resolution time for such services would be as per SLA. However, the purchaser/authorized entity may scale up the severity level depending upon the requirements.

The indicative lists of such services but not limited to as under –

- a) Change Request for opening/closing of a Port on device
- b) Request for Internet Access as per policy
- c) Change request for Routing Policies
- d) Change Request for Firewall Policy
- e) Request for Installation/Re-Installation of Servers (Hardware only)
- f) Daily/Weekly report generation
- g) SLA report
- h) Any other activity which may be decided during the project period

12.14 Dash boarding and Reporting

SI shall submit the reports on a regular basis in an approved format by ERNET India/CERT-In. The following is only an indicative list of MIS reports that shall be submitted by Contractor to ERNET India/CERT-In and any designated agency by ERNET India/CERT-In. Any other report required in any desired format by ERNET India/CERT-In, the Contractor shall be responsible to share the same as per the frequency desired.

Daily Reports

- 1) Summary of issues / complaints logged at the Help Desk
- 2) Summary of resolved, unresolved and escalated issues / complaints
- 3) Reports for the alarms / incidents reported
- 4) Reports for the alarms / incidents reported
- 5) Log of backups undertaken
- 6) Application monitoring report which will cover underlying infrastructure, application middle ware, Operating System and licenses along with their utilization through an online dashboard

Weekly reports

- 1) Issues / Complaints Analysis report for virus calls, call trend, call history, etc.
- 2) Summary of systems rebooted/VPNs configured / Links.
- 3) Summary of issues / complaints logged with the OEMs.
- 4) Reports for the alarms / incidents reported
- 5) Inventory of spare parts in the DC, DR & remote sites.
- 6) Summary of changes undertaken in the DC, DR & remote sites including major changes like configuration changes, patch upgrades, database reorganization, storage reorganization, etc. and minor changes like log truncation, volume expansion, user creation, user password reset, etc.
- 7) Reports of inventory with serial numbers and other unique parameters within
- 8) Any downtime planned in next 4 weeks.

Monthly reports

- 1) Component wise IT & Non IT infrastructure availability and resource utilization.
- 2) Consolidated SLA / (non)- conformance report.
- 3) Summary of component wise DC, DR & remote sites uptime.
- 4) Summary of changes in the DC, DR & remote sites.
- 5) Logs of preventive / scheduled maintenance undertaken.
- 6) Logs of break-fix maintenance undertaken.
- 7) Reports for the alarms / incidents reported

- 8) SLA calculations, Inventory and Assets, Availability of Manpower.
- 9) Open / Closed / In Progress Helpdesk tickets, Feedback, Root causes of regular alarms/problems, Improvement areas.
- 10) Contractor shall undertake proactive monitoring of the entire basic infrastructure and diagnose problems that could arise as part of any component installed in DC, DR and remote locations. The Contractor shall maintain a log of all such diagnosis and notify ERNET India/ CERT-In on a monthly basis in the form of a report.
- 11) Report Software licenses usage throughout the IT setup so as to effectively manage the risk of unauthorized usage or under-licensing of software installed at the DC, DR & remote sites through an online dashboard.
- 12) VAPT compliance reports if any, updates/upgrades
- 13) Other reports planned and discussed during the course of project.

Quarterly reports

- 1) Consolidated component-wise physical and IT infrastructure availability and resource utilization.
- 2) Summary of all monthly reports
- 3) Quarterly Consolidated SLA reports as per the required templates.
- 4) Any other request on reporting template / parameters as per feedback from ERNET India /Cert-In

Half-Yearly reports

- 1) DC, DR & remote sites Security Audit Report.
- 2) IT infrastructure Upgrade / Obsolescence Report.

Incident Reporting

- 1) Detection of security vulnerability with the available solutions / workarounds for fixing.
- 2) Hacker attacks, Virus attacks, unauthorized access, security threats, etc. – with root cause analysis and plan to fix the problems.
- 3) Software license violations.

Please note:

- MIS and SLA reports shall be provided by Contractor via automated tool in dashboard. The above given reports are indicative, the Contractor may have to provide additional reports as per the requirement of ERNET India/CERT-In.

13. Manpower for Operation & Management at DC , DR and at Delhi

The Contractor will provide different categories of required nos. of manpower at DC & DR as per the details provided in tender document to provide Operation & day to day maintenance services and to meet the desired SLAs during entire contract period. The domain & qualification wise list of minimum Manpower to be deployed under the project is given below table. However, Contractor may deploy additional manpower to meet the desired SLA at no extra cost during entire contract period. Manpower location may also be shifted between DC and DR as per project requirement. Contractor shall ensure the following before assigning Manpower under this project:

- 1) Contractor must ensure that all the manpower deployed for Operation & maintenance should be on Contractor's or OEM payroll.
- 2) Contractor must follow Labour Laws laid by Government of India.
- 3) The manpower deployed by the Contractor shall not install/use any other unauthorized software etc. (except pre-installed licensed software) and shall not misuse the IT systems of ERNET India/CERT-In.
- 4) At times, in case of exigencies of work, the manpower may be required to work beyond office hours, for which no additional payment will be made by ERNET India to the Contractor .
- 5) If the ERNET India notices that the manpower deployed by Contractor has/have been negligent and careless in rendering the said services, the same shall be communicated immediately to the Contractor. The Contractor will take corrective action immediately, to avoid recurrence of such incidents, which may include providing proper substitutes;
- 6) If any, manpower deployed by the Contractor indulges in theft, misconduct or any illegal/irregular activities, the Contractor/appropriate stakeholders will initiate appropriate action against such manpower besides providing suitable substitutes in its place.
- 7) Contractor has to comply with local labour laws (minimum wages) as well as labour laws of government of India/ State Government.
- 8) The Contractor shall employ only such persons as are qualified and skilled for carrying out the assigned jobs as detailed in Manpower requirement.
- 9) The Contractor shall be responsible for the proper behaviour of the manpower deployed and shall exercise proper control over them, and to ensure that their activities shall not in any way be detrimental to ERNET India. The Contractor shall have to withdraw such manpower with immediate effect, if so desired by ERNET India/ CERT-In.
- 10) The Contractor shall issue Identity Cards on its own name to its manpower deployed for rendering the said services, which at ERNET India's option, would be subject to verification at any time. The ERNET India may refuse the entry into its premises to any manpower of the Contractor not bearing such identity card.
- 11) It is understood between the parties hereto that the Contractor alone shall have the right to take disciplinary action against any manpower engaged/ deployed by it, while no right shall vest in any such manpower to raise any dispute and/or claim whatsoever against ERNET India. ERNET India shall under no circumstances be deemed or treated as the Employer in respect of manpower engaged/deployed by the Contractor for any purpose, whatsoever, nor would ERNET India be liable for any claim(s) whatsoever, of any such manpower.
- 12) Contractor will indemnify ERNET India in case of issues related to manpower deployed at user location.

- 13) Further it is clarified that contractor will indemnify ERNET India in case of any loss or damage arising due to action/inaction/absence of the manpower deployed by the Contractor at user location.

The deployed resources shall be required to operate from the Data center mentioned in the Bid. The schedule of the sitting arrangement shall be finalized in consultation with ERNET India. The shift schedule and sitting arrangement may be changed as per the requirement during entire contract period by the User.

13.1 Minimum Manpower to be deployed for one year from the start of Operation and maintenance

Manpower Requirement: The minimum requirement of manpower resources, their qualification and responsibility of each resource is given below. The Contractor has to ensure that appropriate qualified manpower with requisite skill sets is deputed for the project.

The Contractor shall depute the resources as per the requirements for carrying out the O&M Activity and maintaining the SLA. This is minimum indicative list of resources and based on actual requirements, the Contractor may deploy extra manpower to meet the SLA. The ERNET India/CERT-In shall not pay any cost for additional resources required to operate, maintain, monitor & manage the project as per the SLA.

In case deputed employee/staff is not available or is on leave, the Contractor is required to provide the alternative personnel with same or higher technical capabilities of the non-available personnel.

At Data Center (DC) :-

SN	Role	09:30-17:30 hrs	06:00 - 14:00 hrs	14:00 - 22:00 hrs	22:00 - 06:00 hrs	Total
1	Project Manager-	1				1
2	Security Specialist		1	1	1	3
3	Network Specialist		1	1	0	2
4	Network Engineer		1	1	1	3
5	System (Server) Specialist		1	1	1	3
6	System (Server) Engineer		1	1	1	3
7	NMS & DCIM Engineer		1	1	1	3
8	Help Desk Support Staff		1	1	1	3
Total						21

At Disaster Recovery Data Centre (DR):-

SN	Role	09:30-17:30 hrs	06:00 - 14:00 hrs	14:00 - 22:00 hrs	22:00 - 06:00 hrs	Total
1	Security Specialist	1				1
2	Network Specialist		1	1	0	2
3	Network Engineer		1	1	1	3
3	System Specialist		1	1	1	3
4	System (Server) Engineer		1	1	1	3
5	NMS & DCIM Engineer	1				1
8	Help Desk Support Staff	1				1
Total						14

At Shastri Park, Delhi (ERNET/CERT-In premises):-

Sl.No	Manpower Role	Timing (09:00 -18:00)
1	Network Specialist	1
2	NMS/ Help Desk Support	1

Note: During O&M, Remote site equipment(s) will be required to be managed remotely by Contractor's own manpower; unless their physical presence is a necessity.

13.2 Manpower Specification

Minimum Qualification, Relevant Experience & Certifications at DC/DR & Shastri Park, Delhi

Sl.No	Role	Min. Qualification, Relevant Experience & Certifications
1	Project Manager	B.E./B.Tech/MCA 8 Years relevant experience in IT/ITeS (minimum 6 years' experience for managing large data centers) + CCNP-DC/ JNCIA-DC or equivalent Certified
2	Security Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience in IT Network Management + Certification: OEM certified engineer on proposed security equipment Such as JNCIP-

		SEC, Fortigate NSE 4, CCNP Security or equivalent
3	Network Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience in IT Network Management + OEM certified engineer on proposed networking equipment Such as JNCIP, CCNP or equivalent. Must have 5 years of work experience on leaf and spine architecture
4	Network Engineer	B.E./B.Tech/MCA in Computer/IT / Electronics + 4 Years relevant experience in Network Management + OEM certified engineer on proposed networking equipment Such as JNCIP, CCNP or equivalent. Must have 3 years of work experience on leaf and spine architecture
5	System (Server) Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience of different flavors of OS with Storage + Must have 5 year of experience on offered OEM Servers.
6	System (Server) Engineer	B.E./B.Tech/MCA in Computer/IT / Electronics + 5 Years relevant experience of different flavors of OS with Storage + Must have 3 year of experience on offered OEM Servers.
7	EMS & DCIM Engineer	B.E./B.Tech/MCA + 3 Years relevant experience + Proposed EMS certified engineer, if any or Should have CCNA/JNCIA or equivalent certification.
8	Help Desk Support Staff	B.E./B.Tech/ MCA in Computer/IT / Electronics with 3 Year relevant experience.

13.3 Work profile of Manpower to be deployed

Project Manager

- Should be responsible for data center (DC) and DR activities like installations, hosting, upgradations, migration, incident management, change management, performance tuning activities and patching etc.
- Should be responsible for the project management throughout the entire project lifecycle, including project initiation, project delivery, stakeholder management, post implementation review and project close out / handover.
- Should have to work closely with other team members and Shall be responsible for overall work assigned to Contractor for all the data centres and DR
- Should be responsible to implement International Best Practices in relevant area of data centre like Security, DR Implementation etc.
- Should be responsible for delivery of all project deliverables as per bid
- Should provide technical solutions and strategic recommendations to enhance services quality
- Shift Management
- Vendor Management
- Should communicate technical ideas to technical and non-technical stakeholders is critical. Additionally, the ability to document support procedures to ensure that deployed systems are properly maintained and supported.

Security Specialist

- Should be SPOC for all network security activities at data centre and DR like installations, upgradations, migration, incident, performance tuning activities, reporting and patching etc.
- Design, configure, implement and maintain all security platforms and their associated software, such as routers, switches, firewalls, intrusion detection/intrusion prevention etc.
- Design, review and ongoing assessment of firewall, intrusion detection/intrusion prevention, VPN and other network & security component policies.
- Ensure network security best practices are implemented through auditing: router, switch, firewall configurations, change control, and monitoring.
- Coordinate and extend support for Network/Security services offerings in consultation with ERNET India to ensure customer policy and security requirements are met.
- Responding to security breaches or other security incidents and coordinate with respective OEMs. In case of a new threat is observed to ensure that workaround / patch is made available for the same.
- Responsible for periodically reviewing and validating user access rights and privileges.
- Act as a key liaison between departments and other stakeholders.

Network Specialist & Network Engineer

- Should be responsible for all network activities at data centre and DR like installations, upgradations, migration, incident, performance tuning activities, reporting and patching etc.
- Should be well versed in Switching, Routing and network equipment.
- Should have worked on Leaf & Spine Architecture in Data Center
- Should have good knowledge in monitoring network with tools (Cisco IOS, Junos, PRTG, Netflow, etc.)
- Should have worked on large scale data Center network.
- Management of Configuration changes of switches/routers when required & periodic backup of configurations
- Should be able to configure and troubleshooting of Layer2 protocols, such as: VLAN, Private VLANs, VTP, STP, DTP, Trunking, Stacking, Ethernet channel, DOT1Q, ISL, SVI etc.
- Should be able to configure IPSEC tunnel between locations.
- Should be able to configure and troubleshooting of Layer3 Protocols such as: BGP, EIGRP, OSPF, Static Routing, High Availability Protocols (HSRP, VRRP, GLBP), Floating Static Routing, Failover etc.
- Should provide support for IPv4, IPv6, NTP, ACLs, Route-map, Prefix-Lists, PBR, AAA, TACAS, RADIUS, CEF, IPv6 CEF, SLA, TRACK, SNMP, EEM, Syslog, Flow-export, RADIO, EVPN-VXLAN.
- Should be able to configure and troubleshooting of Network Load Balancers Datacentre core switching and routing upgrade & maintenance.
- Router access control management.
- Fault management of routers and switches.
- Corrective actions to resolve faults to ensure high network uptime.
- Troubleshooting and debugging of problems.

- Deploy monitoring tools for identifying problem areas and early rectifications if require.
- Periodic fine-tuning to ensure optimal network availability
- Regular checking for proper functioning of network and assets deployed
- Should be well versed with EMS tools.
- Incident, Change and Configuration Management, IOS Upgradation, change request management.
- Network Specialist at DC will also look into network issues of DR in liaison with his DR team member.

System Specialist & System Engineer

- Should be responsible for all the server activities at data center and DR like installations, performance tuning activities, reporting etc.
- Should work in 24*7 rotational shifts
- Responsible for all server tickets & alert (for Server HW alerts) response/resolution time management
- Manage OEM / Vender ticket for all servers
- Prepares and maintains weekly and monthly server reports
- To ensure that servers, processes and methodologies as specified are followed to sure effective monitoring, control and support of IT Service delivery
- Make escalation to upper level related to all servers
- SLA Management for all OEM/ Vendors
- Server Specialist at DC will also look into server issues of DR in liaison with his DR team member.

EMS/DCIM Engineer

- Responsible for overall establishment, installation and maintenance of EMS/DCIM solution in Data centres and DR
- Provide data, reporting and trends to IT department and others in ad-hoc, weekly, monthly and as needed
- Co-ordinate with internal teams and handle escalations to ensure issues are resolved quickly with least customer downtime.
- Ensuring continuous monitoring and prompt reporting of / from all assets, service(s).
- Managing the help desk team and evaluate performance
- Responsible for installation and management of EMS solution in Data centre
- Addition and deletion of Datacentre assets in EMS tool
- Incorporation of third party MIBs (such as packet brokers) into EMS.
- Develop daily, weekly and monthly reports of EMS tools as per requirement
- Maintain and develop own knowledge and skills to assist with first time fault resolution
- Development of Knowledge base system.

Help Desk Support Staff

- log all calls received through any medium viz. telephone/email/in writing/in person, shall generate a ticket mentioning type of problem, Severity level etc. using helpdesk tool and forward the same to concerned team/person, Project incharge and user.
- Correctly logging incidents and faults, categorizing and prioritizing them in line with team procedures
- Maintain and develop own knowledge and skills to assist with first time fault resolution
- Sharing knowledge with team colleagues

Provide customer feedback to the appropriate internal teams

14. Project Handover Plan

The Contractor shall provide the ERNET India/CERT-In or its nominated Contractor with a recommended Handover plan ("HO Plan") which shall deal with at least the following aspects of Handover:

- i. A detailed program of the transfer process that could be used in conjunction with a Replacement Contractor (if any) including details of the means to be used to ensure continuing provision of the services throughout the transfer process or until the cessation of the services and of the management structure to be used during the transfer;
- ii. Plans for provision of contingent support to ERNET India/ CERT-In, and New Contractor (if any) for a reasonable period after transfer.
- iii. The SI shall ensure that no downtime of services is attributed due to handover activities. The handover should include but not limited to:
 - a) Process, Policies, Passwords & Guidelines
 - b) Inventory & Assets details (IT, Non-IT and Utilities)
 - c) Operations, Maintenance and Management of responsibilities
 - d) Data Privacy & Security responsibilities
- iv. Contractor must ensure to prepare the detailed handover plan and submit along with the Milestone-1. The handover plan will be reviewed by ERNET India / Cert-In and shall be mutually agreed with Contractor, to be termed as accepted. The handover plan must consider the documentation of following aspects (the below is just an indicative list):
 - a) Standard Operating Procedures for various planned processes and operations
 - b) Current Operating policies, Incident Management
 - c) Physical security controls.
 - d) Schedule and scope of various audits
 - e) Low Level Design Document and High Level Design documentation with network topology
 - f) Acceptance Test Plan
 - g) Asset and Inventory Checklist for DC, DR and Remote Location
 - h) Best Practices followed
 - i) Help desk reports
 - j) Knowledge transfer, Asset Transfer, operations transfer during exit
 - k) Any other activity required to execute systematic handover.
- v. The Contractor shall update the Handover Plan regularly in consultation with ERNET India thereafter to ensure that it is kept relevant and up to date.
- vi. In the event of termination or expiry of contract, each Party shall comply with the Handover Plan.
- vii. Handover plan will be initiated a quarter before the expiry of contract.
- viii. ERNET India/CERT-In at its discretion may extend the transition period if deemed necessary.

Section VIII: Service Level Agreement during Operation & Maintenance

1 Service Level during Operation & Maintenance period for Equipment:

A. For Equipment at DC & DR procured via this bid:

- 1) Contractor has to provide uptime of each equipment and its related services @99.5% for the equipment(s) installed at DC & DR including Phase-1 equipment(s). The uptime shall be calculated on monthly periodicity.
- 2) For the equipment supplied via this bid, a penalty @ 0.25 % of the equipment(s) cost per day or part thereof for first 24 hours, will be deducted for downtime beyond permissible limit. In case, DCIM, EMS, etc. goes non-functional, a penalty @0.25% per day or part thereof for first 24 hours for respective component will be applicable.
- 3) In case of downtime caused due to **core networking equipment* failure** supplied by bidder, a penalty of Rs. 1,00,000/- for every six hour or part thereof will be imposed. This penalty will be over and above any other applicable penalties.
- 4) In case fault persists for more than 24 hours then penalty @0.5 % of equipment cost per day or part thereof will be deducted for downtime beyond permissible limit.
- 5) Penalty of Rs.1000 on per day basis will be charged for equipment(s) whose individual line item price could not be derived from the price bid.
- 6) Bidder may keep spare equipment/ parts etc. to keep the services running and minimize the fault duration & penalties.
- 7) No penalty will be imposed for downtime asked by the bidder for preventive maintenance, schedule maintenance, patch upgradation etc. However, any of these activity shall be done only in off peak hours and with due permission from ERNET India/CERT-In.
- 8) In case, SLA breach happens due to the technical dependency on the ERNET India/CERT-In, the penalties would not be applicable on Contractor.
- 9) During O&M, bidder must do preventive maintenance (PM) in every quarter for DC & DR. If PM is missed as per defined frequency, the same should be carried out within next two weeks. Else penalty of Rs. 1,00,000/- per day or part thereof per data centre(DC/DR) for delays will be deducted.

***Core networking equipment:** Spine Switch, Leaf border switch, firewall (all types), WAN router, etc.

B. For Equipment procured at DC via the Phase-1 bid(by CDAC):

- 1) For the services down due to issues other than hardware fault i.e due to Operations and maintenance activities on Phase-I equipment (i.e. equipment installed via CDAC's bid#) at DC, Penalty @ 0.5 % of quarterly payment of OPEX per day or part thereof will be deducted for downtime beyond permissible limit.

C. For equipment at remote sites (other than DC & DR):

- 1) Contractor has to provide monthly uptime of remote site @99%. In case, Data Center (DC and DR) fails to receive data due to reason attrinutable to the bidder, site will be treated as down.
- 2) Penalty @ Rs. 2500/- per day or part thereof will be deducted for downtime beyond permissible limit.
- 3) In case fault pertains more than 24 hours, Penalty @ Rs. 5,000/- per day or part thereof will be deducted for downtime beyond permissible limit.

- 4) Contractor may keep spare units, parts to keep the services running and minimize the fault duration & penalties.
- 5) No penalty will be imposed for downtime asked by the bidder for preventive maintenance, schedule maintenance, patch upgradation etc. However, any of these activity shall be done only in off peak hours and due permission from ERNET India.
- 6) In case, SLA breach happens due to the dependency on the ERNET India/CERT-In, the penalties would not be applicable on Contractor.
- 7) During O&M, bidder must do preventive maintenance at least once every year . Payment for last quarter of the O&M shall be released subject to submission of documentary evidence for carrying out of successful PM.

D. Help Desk support during O&M period for services:

Onsite Technical team will coordinate ERNET INDIA/CERT-In technical team for the resolution of all IT infrastructure related issues / problems. Support desk shall undertake the following activities:

- i. Log issues / complaints related to IT infrastructure at the Data Centre & Remote Sites and issue an unique ID number against the issue/complaint.
- ii. Assign severity level to each issue / complaint so as to maintain categorization and differentiate the criticality of the incident via the priority levels, severity levels and impact levels. Category of Service level will be defined and finalised with successful bidder.
- iii. Track each issue/complaint to resolution.
- iv. Escalate the issues/complaints, to ERNET India officials if necessary as per the escalation matrix defined in discussion with ERNET India.
- v. Analyze the issue/complaint statistics and SLA.
- vi. Should provision for all necessary channels for reporting issues to onsite technical team. The incident reporting channels will be the following:
 - Email
 - SMS
 - Web Based
 - Should implement a call logging system in line with the severity levels as mentioned in the SLA.

E. Help Desk Support Services Level

Response time: is defined as the time between receipt of the incidence (helpdesk call/ receipt of alarm generated by management system) and a support team member begins working on the incidence.

Resolution time: is defined as the total time between receipt of the incidence (helpdesk call/ receipt of alarm generated by management system) and the incidence been resolved.

Service Window:

Working Hours: 24x7 (Monday to Sunday)

Priority Level	Response Time	Resolution time *
High	30 minutes#	Within 2 Hours

Low	60 Minutes\$	Within 4 hours
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*Resolution Time- In case of Equipment fault then penalty will be governed through Service level of Equipment uptime as mentioned in 1.1 & 1.2 of section VIII.

All configuration issues pertaining to Computing & Networking Equipment and Firewall Management will fall in Priority Level High.

\$Other Issues will be treated as Priority Level Low.

S/N	Definition	Measurement Interval	Penalty
1	“Resolution Time” , means time taken by the Bidder staff to troubleshoot and fix the problem from the time the call has been logged at the Helpdesk till the time the problem has been fixed and updated as resolved in the helpdesk.	Quarterly	0.1% of quarterly OPEX* value for every one hour delay (on incremental basis) beyond permissible time for High Priority level 0.05% of quarterly OPEX value for every one hour delay (on incremental basis) beyond permissible time for Low Priority level
2	SLA Report/Document submission	Monthly (on 5 th day of every Month)	0.025% of quarterly OPEX value for per day or part thereof delay (on incremental basis) beyond permissible time
3.	Non Provisioning of Any required document / artifact such as reports etc.	Monthly (on 5 th day of every Month)	Rs.1000 per day delay in submission of desired document / artifact.

Note:- The overall Penalties (for Clause 1-A,B,C,D in Section-VIII) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment of Grand Total Value. In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2 of Section-III

F. Security and Incident Management Service Levels

(There will not be any penalty capping for this section)

S/N	Definition	Measurement Interval	Target	Penalty
-----	------------	----------------------	--------	---------

1	For every Virus attack reported and not resolved within 36 hrs from the time of attack	Quarterly	36 hours	Rs. 50,000 for delay of every 24 hours or its part. If more than three virus attacks are reported in a quarter, then Rs. 1,00,000/- per incident would be deducted as penalty.
	For every instance of Data Theft, the bidder is subject to penalty and/or punishment applicable under the IT act/ ERNET India/CERT-In data theft policy or any other prevailing laws of the State/Country at that point of time, which shall be over and above the stated penalty.	Every instance in the Quarter	At every instance	Rs.5,00,000 per instance.
	For every Intrusion reported by firewall and not resolved within 2 hour from the time of report.	Every instance in the Quarter	Beyond 2 hrs	Rs. 50,000
	Patch Management (including rules updation in Firewalls)	Every instance in the Quarter	Within 2 hrs time from the approved request	No Penalty
			> 3hrs and <=4hrs	Rs.50,000
			Beyond 5hrs for every 3 hrs	Rs.1,00,000

G. Manpower Service Level Agreement:

SLA would be applicable from the Milestone-1 and in operations and maintenance phase of the project. SLA would be applicable on the availability of manpower and the service levels mentioned below:

S. No.	Service level agreement	Penalties for non-compliance
--------	-------------------------	------------------------------

1	Non-deployment of total manpower mentioned in the contract as per the date of joining	Operation and Maintenance billing will be started only after deployment of total Manpower as per contract. Further 0.5% of quarterly OPEX value per day will be deducted from due payments/ performance security for non-deployment of complete manpower.
2	If the employee is found responsible for any theft, loss of material/ articles and damages	Immediate payment in actuals, equivalent to the value of the article theft/lost/damaged. Replacement within 3 day/cancellation of contract as decided by the ERNET India depending on the gravity of the act.
3	If the employee is found responsible for disobedience/ misconduct	Warning/counselling/Immediate replacement of resource within 3 days as decided by ERNET India depending on the gravity of the act
4	If the employee is absent for more than 3 days without informing or taking prior approval or without arranging spare manpower	0.5% of quarterly OPEX value for per day per manpower.
5	If employee is on leave for more than 3 days (Not more than one employee will be allowed on leave at a time)	Contractor shall arrange replacement of manpower during the leave of employee. 0.5% of quarterly OPEX value for per day per manpower, if no manpower arranged during the leave period of employee.
6	If the employee is found responsible for adopting illegal and foul methods or exercising any corrupt practice in collusion with any third party or officials at the workplace	Immediate replacement within 3 days/ cancellation of the contract with cancellation charges @ 5% of the contract value or as decided by ERNET India depending on the gravity of the act
7	Up to 4 replacements Note: The mentioned replacement is applicable on overall Manpower not on individual type.	No penalty
8	More than 4	Rs. 10,000/-per replacement (applicable beyond 4 replacements). No penalty will be imposed if Manpower resign from Contractor organisation or if requested by ERNET India/CERT-In for replacement of manpower due to incompetency.

BIDDING FORMS

Form 1: Bid Form (Covering Letter)

(To be submitted as part of Technical bid, along with supporting documents) (On Bidder's Letter-head)

To

Registrar
ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
Shastri Park, Delhi-110053

Ref: Your Tender Document No. Tend No./ xxxx;

Sir/ Madam

Having examined the abovementioned Tender Document, we, the undersigned, hereby upload our Technical and Financial bid (Price Schedule) for the supply of Equipment(s) and Services in conformity with the said Tender Documents.

1) **Our Credentials:**

We are submitting this bid on our behalf, registered in India under the Indian Companies Act 1956/2013 as amended. Our company law and taxation regulatory requirements and authorization for signatories and related documents are submitted in Form 1.1 (Bidder Information).

2) **Our Eligibility and Qualifications to participate**

We comply with all the eligibility criteria stipulated in this Tender Document, and the relevant declarations are made along with documents in Form 1.2 of this bid-form. We fully meet the qualification criteria stipulated in this Tender Document, and the relevant details are submitted along with documents in Form 4: 'Qualification Criteria – Compliance & Form 4.1- Experience Statement.

3) **Our Bid to supply of Equipment & Services:**

We offer to supply the subject Equipment(s) of requisite quality and within Delivery Schedules in conformity with the Tender Document. The relevant details are submitted in Form 2: 'Bill of Material - Compliance and Form 3: 'Technical Specifications - Compliance.'

4) **Prices:**

We hereby offer to perform the Services at our lowest prices. The prices in this offer have been arrived at independently, without restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to:

- i) those prices; or
- ii) the intention to submit an offer; or
- iii) the methods or factors used to calculate the prices offered.

The prices in this offer have neither been nor shall be knowingly disclosed by us, directly or indirectly, to any other bidder or competitor before bid opening or contract award unless otherwise required by law.

5) **Affirmation to terms and conditions of the Tender Document:**

We have understood the complete terms and conditions of the Tender Document. We accept and comply with these terms and conditions without reservations and deviations.

6) Bid Securing Declaration

We have submitted the Bid Securing Declaration in stipulated format vide Form 7: 'Documents Relating to bid security.'

7) Abiding by the Bid Validity

We agree to keep our bid valid for acceptance for a period upto 75 days, as required in the Tender Document or for a subsequently extended period, if any, agreed to by us and are aware of penalties in this regard stipulated in the Tender Document in case we fail to do so.

8) Non-tempering of Downloaded Tender Document and Uploaded Scanned Copies

We confirm that we have not changed/ edited the contents of the downloaded Tender Document. We realise that any such change noticed at any stage, including after the contract award, shall be liable to punitive action in this regard stipulated in the Tender Document. We also confirm that scanned copies of documents/ affidavits/ undertakings uploaded along with our Technical bid are valid, true, and correct to the best of our knowledge and belief. If any dispute arises related to the validity and truthfulness of such documents/ affidavits/ undertakings, we shall be responsible for the same. Upon accepting our Financial bid, we undertake to submit for scrutiny, on-demand by the ERNET India, originals, and self-certified copies of all such certificates, documents, affidavits/ undertakings.

9) A Binding Contract:

We further confirm that, if our bid is accepted, all such terms and conditions shall continue to be acceptable and applicable to the resultant contract as defined in tender document.

10) Performance Guarantee and Signing the contract

We further confirm that, if our bid is accepted, we shall provide you with performance security of the required amount stipulated in the Tender Document for the due performance of the contract. We are fully aware that in the event of our failure to deposit the required security amount, the ERNET India has the right to avail any or all punitive actions laid down in this regard, stipulated in the Tender Document.

11) Signatories:

We confirm that we are duly authorized to submit this bid and make commitments on behalf of the Bidder. Supporting documents are submitted in Form 1.1 annexed herewith. We acknowledge that our digital/digitized signature is valid and legally binding.

12) Rights of the ERNET India to Reject bid(s):

We further understand that you are not bound to accept the lowest or any bid you may receive against your above-referred Tender Document.

.....
(Signature with date)

.....
(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form 1.1: Bidder Information

(To be submitted as part of Technical bid) (On Company Letter-head)

(Along with supporting documents, if any)

Bidder's Name _____

[Address and Contact Details]

Date.....

Tender Document No. Tend No./ xxxx;

Note: Bidder shall fill in this Form following the instructions indicated below. No alterations to its format shall be permitted, and no substitutions shall be accepted. Bidder shall enclose certified copies of the documentary proof/ evidence to substantiate the corresponding statement wherever necessary and applicable. Bidder's wrong or misleading information then ERNET India may invoke Bid Security Declaration .

(Please tick appropriate boxes or strike out sentences/ phrases not applicable to you)

1) Bidder/ Contractor particulars:

- (a) Name of the Company:
- (b) Corporate Identity No. (CIN):
- (c) GeM Supplier ID
- (d) Place of Registration
- (e) Complete Postal Address:
- (f) Pin code:
- (g) Telephone nos.:
- (h) Mobile Nos.:
- (i) Contact persons/ Designation:
- (j) Email IDs:

Submit documents to demonstrate eligibility as per NIT-Clause 3- Certificate of incorporation/Registration attested by Company Secretary/ Authorized Signatory.

2) Taxation Registrations:

- (a) PAN number:
- (b) GSTIN number:

We solemnly declare that our GST rating on the GST portal/ Govt. official website is not negative/ blacklisted.

Documents to be submitted: Self-attested Copies of PAN card and GSTIN Registration.

3) Authorization of Person(s) signing the bid on behalf of the Bidder

- (a) Full Name: _____
- (b) Designation: _____
- (c) Signing as:

☐ A company. The person signing the bid is the constituted attorney by a resolution passed by the Board of Directors or Power of attorney given on stamp paper by authroise person.

Documents to be submitted: Power of Attorney/ Board Resolution

4) Bidder's Authorized Representative Information

- (a) Name:
- (b) Address:
- (c) Telephone/ Mobile numbers:
- (d) Email Address:

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form 1.2: Eligibility Declarations

(To be submitted as part of Technical bid)

(On Company Letter-head)

(Along with supporting documents, if any)

Tender Document No. Tend No./ xxxx;

Bidder's Name_____

[Address and Contact Details]

Date.....

Note: The list below is indicative only. You may attach more documents as required to confirm your eligibility criteria.

Eligibility Declarations

(Please tick appropriate boxes or cross out any declaration not applicable to the Bidder)

We hereby confirm that we are comply with all the stipulation of NIT-clause 3 and ITB-clause 3.2 and declare as under and shall provide evidence of our continued eligibility to the ERNET India as may be requested:

- 1) **Legal Entity of Bidder:** _____
- 2) We solemnly declare that we :
 - a. are not be insolvent, in receivership, bankrupt or being wound up and not have its business activities suspended by Government.
 - b. Are not stand declared ineligible/ blacklisted/ banned/ debarred by Government .
- 3) The prices quoted should be competitive and without adopting any unfair/ unethical/ anti-competitive means. No attempt should be made to induce any other bidder to submit or not to submit an offer for restricting competition.
- 4) We certify that we fulfil any other additional eligibility condition if prescribed in Tender Document.
- 5) We have gone through F.No.6/18/2019 – PPD dated 23rd July 2020 issued by Department of Public Procurement, Ministry of Finance, Govt. of India and certify as follows:

I hereby certify that the <<<<bidder's name>>>> :

(i) is not from such a country
or
(ii) is from such a country and has been registered with the Competent Authority in India which makes the bidder eligible to participate in this Tender. [Evidence of valid registration by the Competent Authority attached.]

I hereby certify that <<<<<bidder name>>>> fulfils all requirements in this regard and is eligible to be considered.

{Strike out inapplicable clause i.e. clause (i) or (ii)}

6) Make in India Status:

Having read and understood the Public Procurement (Preference to Make in India PPP - MII) Order, 2017 (as amended and revised till date) and related notifications from the relevant Nodal Ministry/ Department, and solemnly declare the following:

a) Self-Certification for the category of suppliers:

(Provide a certificate from statutory auditors/ cost accountant for Class-I or Class-II Local Suppliers). Details of local content and location(s) at which value addition is made are as follows:

Local Content and %age	
Location(s) of value addition	

Therefore, we certify that we qualify for the following category of the supplier (tick the appropriate category):

☐ Class-I Local Supplier/

☐ Class-II Local Supplier/

b) We also declare that.

☐ There is no country whose bidders have been notified as ineligible on a reciprocal basis under this order for the offered Services, or

☐ We do not belong to any Country whose bidders are notified as ineligible on a reciprocal basis under this order for the offered Services.

7) Penalties for false or misleading declarations:

We hereby confirm that the particulars given above are factually correct and nothing is concealed and undertake to advise any future changes to the above details. We understand that that ERNET India may invoke Bid Security Declaration, if any wrong or misleading self-declaration submitted by us.

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form 2: Bill of Material - Compliance

(on Company Official Letter Head)

Bidder's Name_____

[Address and Contact Details]

Date.....

To

Registrar
ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
shastri Park, Delhi-110053

Ref: Tender Document No. Tender No./ xxxx;

Subject: Bill of Material (BoM) Compliance

There are no deviations (null deviations) in Bill of Material mention in Section IV in Tender Document. <<M/s Bidder's Name ->> certify that our proposal includes all the equipment & services specified in tender document.

We understand that the requirement of equipment(s) & services briefed in **Section-IV-Bill of Material**; we confirm that we have undertaken our own assessment for complete implementation of project and accordingly we have considered extra Equipment, software, application and services etc. (if any) will be provided by << M/s Bidder's Name >>>> to complete the project.

This is to certify that our proposed bid included all the Equipment(s) and service mentioned in **Section-IV-Bill of Material** as well as other material or service based on self-assessment to complete the project and meets all the requirements of the tender document including but not limited to Scope of Work (including SLAs), Business Requirements and Functional Specifications/ Requirements.

In case, any equipment or software or services is found non-compliant at any stage during project implementation or after acceptance, it would be replaced with a fully compliant product/ solution at no additional cost to ERNET India/ CERT-In. In case of non-adherence of this activity, ERNET India reserves the right to cancel the contract, in case the said Contract is awarded to us by ERNET India.

We shall comply with Warranty requirements in the Tender Document.

We further confirm that our commercial proposal is for the entire scope of work, comprising all required components and our obligations, for meeting the scope of work.

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form3: Technical Specifications- Compliance

(on Company Official Letter Head)

Bidder's Name_____

[Address and Contact Details]

Date.....

To

Registrar
ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
Shastri Park, Delhi-110053

Ref: Tender Document No. Tender No./ xxxx;

Subject: **Section V- Technical Specification Compliance**

There are no deviations (null deviations) in Technical Specification mention in **Section V- Technical Specification** in Tender Document. <<M/s----->> certify that our proposal fulfil specification of each Equipment & Service specified in tender document.

We understand that the Specification of equipment(s) & services briefed in **Section V- Technical Specification**; we certify that our proposed equipment(s) & services are same or higher than the minimum technical specifications as given in the tender document.

In case, any equipment or software or services is found non-compliant at any stage during project implementation or after acceptance, it would be replaced with a fully compliant product/ solution at no additional cost to ERNET India/ CERT-In. In case of non-adherence of this activity, ERNET India reserves the right to cancel the contract, in case the said Contract is awarded to us by ERNET India.

We further confirm that our commercial proposal is for the entire scope of work, comprising all required components, specifications and our obligations, for meeting the scope of work.

Enclosure: -

- 1. Compliance Statement of Section- V and required and relevant documents like technical data, literature, drawings, datasheets, test Reports/ Certificates and or/ or Type Test Certificates (if applicable/ necessary) with supporting documents, to establish that the Equipment and Services offered in the bid fully conform to the Equipment and Services specified by the ERNET India in the Tender Document along with this compliance.**
- 2. Make and Model of offered equipment(s) is attached along with this form as per for form 3 A.**

Yours faithfully,

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form3A: Unpriced Make & Model Details- Compliance

PART A								
Unpriced Make & Model Details- Compliance								
Sl. No.	ITEM	Make	Model	MAF Submitted (Yes/No)	Compliance of Section-V along with Cross reference submitted (Yes/No)	Datasheet submitted (Yes/No)	Provide Datasheet Website URL	Price Quoted in Financial Bid (Yes /No)
1	Server Category-1							
2A	Server Category-2 with 60 HDD in Each Server or Server Category-2 with 84 HDD in Each DAS							
2B								
3	Server Category-3							
4	Server Category-4							
5	Server Category-5							
6	Server Category-6							
7	Server Category-7							
8	Server Category-9							
9	Server Category-10							
10	Server Category-11							
11	Server Category-13							
12	Server Category-14							
13	Server Category-16							
14	DR Spine Switch							
15	DC Leaf Switch							
16	DR Leaf Switch							
17	DR OOB Core Switch							

18	DC OOB Access Switch							
19	DR OOB Access Switch							
20	DC OOB Core Switch							
21	DR CE Router / Internal WAN Router							
22	DR Border Leaf Switch							
23	DR Internet Router							
24	DR Interconnect Switch - Type 1							
25	DR Interconnect Switch - Type 2							
26	DR WAN Switch							
27	SFPTransceiver-10GBase-SR (For Networking Equipment) *							
28	SFP Transceiver -10GBase-LR (For Networking Equipment)*							
29	QSFP+28 Transceiver-100 GBase-SR4 (For Networking Equipment)*							
30	QSFP+28 Transceiver-100GBase-LR4 (For Networking Equipment)*							
31	Remote Router/ Firewall – 2Gbps (In Remote Sites)							
32	Internet Firewall with IPS							
33	DR Internal Firewall							
34	DR Solution/Application Firewall							
35	AAA Appliance Server							
36	Load balancer							
37	Privileged Access Manager (in HA Mode)							
38	IPS/IDS							
39	SSL VPN Gateway							
40	Active Directory Solution							
41	Console management server							
42	KVM Console							
43	Portable KVM console adapter							

44	Monitoring and management tool for servers							
45	Fireproof Vault (200litre)							
46	Degausser							
47	Data Diode *							
48	Intelligent Cabling (includes all required accessories briefed in specs for 70 Racks in DC and The complete cabling infrastructure including interrack , cable length etc. will be the responsibility of bidder).							
49	Intelligent AIM system Monitor at Rack level (Networking and Server Racks) For monitoring of 70 Racks in DC .							
50	Intelligent AIM system Software for 10k or 15k Ports in DC (refer specs for details)							
51	Intelligent Cabling (includes all required accessories briefed in specs for 50 Racks in DR and the complete cabling infrastructure including interrack , cable length etc. will be the responsibility of bidder) –Specifications similar to s.no. 46							
52	Intelligent AIM System Monitor at Rack level (Networking and Server Racks) For monitoring of 50 Racks in DR . Specifications similar to s.no. 47							
53	Intelligent AIM system Software for 12k Ports in DR-Specifications similar to s.no. 48							
54	Smart Rack *							
55	Non Smart Rack with Redundant IPDU*							
56	65 Inch LED Display							
57	Heavy Duty Workstation							
58	Heavy Duty Mobile Workstation Laptop							

59	Heavy Duty Color Printer							
60	10G SFP SR of appropriate OEM server(s)							
61	10G SFP LR of appropriate OEM server(s)							
62	5% patch cords\$ (DC,DR & Remote)							
63	Layer-3 Access Switch (48 Ports)							
64	Miscellaneous (Optical meter-5 qty., ethernet cable tester-5 qty., cramping tool-10 qty., console cable with USB to serial converter- 30qty, monitor trolley- 4 qty., USB 3.0 to ethernet converter- 10 qty., Media Converter (Fiber to Copper 1G) 20 qty, Visual Fault Locator for Patch Cords 2 qty, Cat 6 Cable (Bundle) 06 qty)							
65	Any other Item							

PART B								
Unpriced Make & Model Details- Compliance								
Sl. No.	ITEM	Make	Model	MAF Submitted (Yes/No)	Compliance of Section-V along with Cross reference submitted (Yes/No)	Datasheet submitted (Yes/No)	Provide Datasheet Website URL	Price Quoted in Financial Bid (Yes /No)
1	Data Center Infrastructure Management (DCIM)							
2	RF Id Based Physical Asset Tracking							
3	Heat Humidity Sensor Solution							
4	RF Id based Physical Asset Tracking Tags							
5	RF Id Rack Identifiers							
6	RF Id Based Heat and Humidity Sensors							
7	Communication Gateways for Communication on RF							
8	Handheld scanner to read barcode / QR codes at DC & DR							
9	Barcode Printer / QR codes with consumables							
10	EMS Solution							
11	IPAM and Switch Port management							

Part C			
Unpriced O&M including Manpower- Compliance			
Sl. No.	ITEM (Operation and Maintenance for DC, DR and Remote Sites)	Compliance as per Section-V (Yes/No)	Price Quoted in Financial Bid (Yes/No)
	Operation and Maintenance for DC, DR and Remote Sites		
1	Operation and Maintenance (O&M) of DC along with deployment of 21 Technical Manpower at DC		
2	Operation and Maintenance of DR along with deployment of 14 Technical Manpower at DR		
3	Operation and Maintenance of 247 Remote Sites (O&M of 247 Remote sites in this tender includes 232 sites to be commissioned via this tender & 15 sites whose hardware is procured via CDAC bid i.e Phase I Stage 1)		
4	Deployment of 2 Technical Manpower for Technical Support at Delhi		

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form4: Qualification Criteria - Compliance

(on Company Official Letter Head)

Bidder's Name_____

[Address and Contact Details]

Date.....

To

Registrar
ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
shastri Park, Delhi-110053

Ref: Tender Document No. Tender No./ xxxx;

Subject: **Section-VI- Qualification Criteria - Compliance**

Note to Bidders: Furnish statements and documents to confirm conformity to Qualification Criteria may be mentioned/ attached here. You may attach documents as required for qualification criteria. Add additional details not covered elsewhere in your bid in this regard. Non-submission or incomplete submission of documents may lead to rejection of the bid as nonresponsive.

Documents Attached supporting the compliance to qualification criteria in Section-VI:

Sr	Document Attached, duly filled, signed, and copies self-attested
1	
2	
3	
..	

Yours faithfully,

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form5: Terms & Conditions- Compliance

(on Company Official Letter Head)

Bidder's Name_____

[Address and Contact Details]

Date.....

To

Registrar

ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
shastri Park, Delhi-110053

Ref: Tender Document No. Tender No./ xxxx;

Subject: **Terms & Conditions- Compliance**

- 1) With reference to our Bid submitted against the above referred Tender no....., we hereby confirm that we comply with all terms, conditions and specifications of the Tender Documents read in conjunction with Amendment(s)/Corrigendum(s) / Clarification(s) (if any) issued by ERNET India prior to last date of submission of bids and the same has been taken into consideration while submitting our bid and we declare that we have not taken any deviation in this regard.
- 2) We further confirm that any deviation, variation or additional conditions etc. or any mention, contrary to Bidding Documents and its Amendment(s)/Corrigendum(s) / Clarification(s) (if any) as mentioned at 1.0 above found anywhere in our bid, implicit or explicit, shall stand unconditionally withdrawn, without any cost implication whatsoever to ERNET India.

Yours faithfully,

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form 6: Check-List for Bidders

(To be submitted as part of Technical bid)

(on Company Letter-head)

Bidder's Name _____

[Address and Contact Details]

Date.....

Tender Document No. Tend No./ xxxx;

Note to Bidders: This check-list is merely to help the bidders to prepare their bids, it does not override or modify the requirement of the tender. Bidders must do their own due diligence also.

S.No.	Documents submitted, duly filled, signed	Yes/ No/ NA
1.	Form 1. Bid Form (to serve as covering letter and declarations applicable for both the Technical bid and Financial bid)	
2.	Form 1.1: Bidder Information along with following Document in 2.a, 2.b and 2.c	
	2.a) Self-attested copy of Registration certificates etc. of the company.	
	2.b) Self-attested copy of PAN & GSTIN Registration.	
3.	Self-attested copy of Power of Attorney/Board Resolution etc. authorizing signatories on stamp paper to sign the bid.	
4.	Form 1.2: Eligibility Declarations, along with supporting documents in 3.a	
	3.a) Self-attested copy of Registration certificate for bidders from restricted neighbouring countries, if any	
5.	Form 2: Bill of Material – Compliance	
6.	Form 3: Technical Specifications – Compliance of Section-V	
	6.a) Relevant documents - technical data, literature, datasheets, drawings, cross reference to each individual points of the specification and other relevant proposal/bid documents.	
	6.b) Form 3.A: Unpriced Make & Model Details- Compliance	
7.	Form 4: Qualification Criteria – Compliance Documents Attached supporting the compliance to qualification criteria of Bidder and its OEM	
	7.a) Valid ISO 9001:2015, ISO 27001:2013 Certificates as defined in section –VI {Clause A. (1)}	
	7.b) Annual financial turnover and networth as defined in section –VI {Clause A. (3)}	
	7.c) Experience of successful implementation of similar project(s) as defined in section –VI {Clause A. (4)}	
	7.d) Experience of successful implementation as defined in section –VI {Clause A. (5)}	
	7.e) Experience of successful implementation of Supply & Installation at 100 locations as defined in section –VI {Clause A. (6)}	

	7.f) Undertaking for Own office at following cities as defined in section – VI {Clause A. (7)}	
	7.g) OEM Authorisation Form (MAF) for each product quoted in the bid as defined in section –VI {Clause A. (8)}	
	7.h) Dedicated/Toll free no. for service support as defined in section – VI{Clause A. (9)}	
	7.i) Malicious Code Certificate as defined in section –VI {Clause A. (10)}	
	7.j) OEM <i>Self-certification of TAC availability and Dedicated/Toll free number as per Section-VI Clause B.(1)</i>	
	7.k) Minimum annual average financial for OEM of equipment as per <i>Section-VI Clause B.(2)</i>	
	7.l) Certificate from practicing Chartered Accountant w.r.t positive net-worth as per <i>Section-VI Clause B.(3)</i>	
	7.m) OEM's Self Declaration for not debarred/blacklisted/suspended by Government <i>Section-VI Clause B.(4)</i>	
	7.n) Relevant documents of OEM for Product/Software Solution Supply and installation as per <i>as per Section-VI Clause B.(5)</i>	
	7.o) OEM's Website URL for offered equipment(s) in Form 3.1 <i>as per Section-VI Clause B.(6)</i>	
	7.p) Malicious Code Certification by OEM as defined in section –VI Clause B.(7)	
8.	Form 5: Terms and Condition compliance	
9.	Form 6: This Checklist	
10.	Form 7: Documents relating to Bid Security	
11.	Form 8: Duly signed Integrity Pact	
12.	Form 9: Make In India Certificate	
13.	Form 10: Non-Disclosure Agreement	
14.	Form 11: Land Border Related Declaration	
15.	Form 12: Price Schedule {Financial Bid(BOQ)} as per Tender Document Upload it on GeM at " upload Financial Document " tab on GeM Portal.	
16.	Any other requirements, if stipulated in Tender Document or if considered relevant by the Bidder	

Yours faithfully,

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form 7: Documents relating to Bid Security.

Note: To be submitted as part of Technical bid, along with supporting documents

Bid Securing Declaration

(on Company Letter-head)

Bidder's Name_____

[Address and Contact Details]

Date.....

To

Registrar

ERNET India, 5th Floor,

Block-I, A Wing, DMRC IT Park,

shastri Park, Delhi-110053

Ref: Tender Document No. Tend No./ xxxx;

Sir/ Madam

We, the undersigned, solemnly declare that:

We understand that according to the conditions of this Tender Document, the bid must be supported by a Bid Securing Declaration in lieu of Bid Security.

We unconditionally accept the conditions of this Bid Securing Declaration. We understand that we shall stand automatically suspended from being eligible for bidding in any tender in Procuring Organisation for 2 years from the date of opening of this bid if we breach our obligation(s) under the tender conditions if we:

- 1) withdraw/ amend/ impair/ derogate, in any respect, from our bid, within the bid validity; or
- 2) being notified within the bid validity of the acceptance of our bid by the ERNET India:

refused to or failed to produce the original documents for scrutiny or the required Performance Security within the stipulated time under the conditions of the Tender Document.

We know that this bid-Securing Declaration shall expire if the contract is not awarded to us, upon:

- 1) receipt by us of your notification
 - (a) of cancellation of the entire tender process or rejection of all bids or
 - (b) of the name of the successful bidder or
- 2) forty-five days after the expiration of the bid validity or any extension to it.

Yours faithfully,

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder and seal of company]

Form8: Integrity Pact

ERNET India hereinafter referred to as "ERNET"

And

-----[bidder (s) participating in this tender] hereinafter referred to as "The Bidder/Contractor"

Preamble

ERNET India invites online bids (e-tender for) for: **"Selection of System Integrator for setting up of ICT Infrastructure at Data Centres and Remote Sites for CERT-In and Operation & Maintenance"**

ERNET India values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relations with its Bidder(s) and /or Contractor(s).

In order to achieve these goals, ERNET will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for Compliance with the principles mentioned above.

Section 1- Commitments of ERNET

1. ERNET commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - a. No employee of ERNET, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - b. ERNET will during the tender process treat all Bidder(s) with equity and reason. ERNET will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder (s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the process or the contract execution.
 - c. ERNET India will exclude from the process all known prejudiced persons.
2. If ERNET India obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, ERNET India will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2- Commitments of the Bidder(s) / Contractor(s)

1. The Bidder(s) / Contractor(s) commit himself to take all measures necessary to prevent corruption. The bidder commits himself to observe the following principles during his participation in the tender process and during the contract execution:
 - a. The Bidder(s) / contractor(s) will not, directly or through any other persons or firm, offer promise or give to any of ERNET's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage or during the execution of the contract.

- b. The Bidder(s) / Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
 - c. The Bidder(s) / Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s) / Contractors will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by ERNET as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
 - d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly, the bidder(s)/contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s) / Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" as annexed and marked as Annexure.
 - e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
2. The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3: Disqualification from tender process and exclusion from future contracts

- If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, ERNET is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the Government/ERNET India's procedure on banning of the business dealings/bidders/contractors, etc.

Section 4: Compensation for Damages

- a. If ERNET India has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, ERNET is entitled to enforce Bid Security Declaration.
- b. If ERNET India has terminated the contract according to section 3, or if ERNET is entitled to terminated the contract according to section 3, ERNET shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value and/or the amount equivalent to Performance Security or from any due payment to the bidder.

Section 5: Previous Transgression

- a. The Bidder declares that no previous transgressions occurred in the last three years with any other company in any country conforming to the anti-corruption approach or with any other public sector enterprise in India that could justify his exclusion from the tender process.
- b. If the bidder makes incorrect statement on this subject, he can be disqualified from the tender process for action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6: Equal treatment of all Bidders/Contractors/Subcontractors

- a. The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to ERNET before contract signing.
- b. ERNET India will enter into agreements with identical conditions as this one with all bidders, contractors and subcontractors.
- c. ERNET India will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7: Criminal charges against violation Bidder(s)/ Contractor(s)/Sub contractor(s)

If ERNET India obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if ERNET has substantive suspicion in this regard, ERNET will inform the same to the Chief Vigilance Officer.

Section 8: Independent External Monitor/Monitors

1. ERNET India appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Director General, ERNET.
3. The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all project documentation of ERNET including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) with confidentiality.
4. ERNET will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between ERNET and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of ERNET and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
6. The Monitor will submit a written report to the Director General, ERNET within 8 to 10 weeks from the date of reference or intimation to him by ERNET and, should the occasion arise, submit proposals for correcting problematic situations.
7. Monitor shall be entitled to compensation on the same terms as being extended to / provided to Director level in the ERNET India or as decided by Director General of ERNET India.
8. If the Monitor has reported to the Director General ERNET, a substantiated suspicion of an offence under relevant IPC/PC Act, and the Director General ERNET has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
9. The word 'Monitor' would include both singular and plural

Section 9 - Pact Duration

1. This pact begins when both parties have legally signed it. It expires for the Contractor 10 months after the last payment under the contract or after 10 months from the expiry of Rate Contract (RC) whichever ever be later and for all other Bidders 12 months from the contract has been awarded.
2. If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Director General of ERNET.

Section 10 - Other provisions

1. This agreement is subject to Indian Law, Place of performance and jurisdiction is the Registered Office of ERNET, i.e. New Delhi.
2. Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
3. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
4. Issues like Warranty/ Guarantee etc., shall be outside the purview of IEMs

(For & on behalf of ERNET India)
(Office Seal)

(For & on behalf of Bidder)
(Office Seal)

Place-----

Date-----

Witness 1: (Name & Address)_____

Witness 2: (Name & Address)_____

Form 9 : Make in India Certificate

To Whom So Ever It May Concern

Date:

Sub:- Make in India Certificate in respect of << Bidder's Name>> for the GeM Bid No for "Selection of System Integrator for Supply and Setting up of ICT Infrastructure at Data Centers and Remote Sites and Operation & Maintenance"

This is to certify that M/s<<Bidder's Name>>..... having its Registered Address at -----
----- complies with Letter no P45021/2/2017- (BE-II) dated 15.06.2017 Public Procurement (Preference to Make in India) Order 2017" (MII) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section) as revised and amended time to time and also clarifications, guidines and FAQ issued by DPIIT in this respect from time to time.

Accordingly, we Statutory Auditor/ Cost Auditor of M/s<<Bidder's Name>>..... (A "**Class-.... Local Supplier**") hereby certify that the Local content as defined under the PPP-MII, in the Goods/Equiment(s)/Service(s)/Works to be supplied by the "**Class-.... Local Supplier**" for "**Selection of System Integrator for Supply and Setting up of ICT Infrastructure at Data Centers and Remote Sites and Operation & Maintenance**" is more than%.

The definition and calculation of local content is in accordance with Letter no P45021/2/2017- (BE-II) dated 15.06.2017 Public Procurement (Preference to Make in India) Order 2017" (MII) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section) as revised and amended time to time and also clarifications, guidines and FAQ issued by DPIIT in this respect from time to time.

Seal and signature of the Statutory Auditor/ Cost Auditor

(Name of the Statutory Auditor/ Cost Auditor)

Place:

Membership No

Date:

Firm Registration No

UDIN:

Form 10: Non-Disclosure Agreement (To be submitted on Non-Judicial Stamp Paper of Rs 100/-)

This Agreement is made as on the _____, between **ERNET India, an autonomous society under the administrative control of Ministry of Electronics and Information Technology, Government of India** called as “**ERNET India**” through its Director General which expression shall unless repugnant to the subject or the context mean and include its successors, nominees or assigns.

and

<<< **Contractor Name**>>> called as “-----” through its ----- which expression shall unless repugnant to the subject or the context mean and include its successors, nominees or assigns.

ERNET India and <<Contractor Name>> are sometimes referred to herein individually as “Party” and collectively as “Parties”.

Tender No. “Selection of System Integrator for setting up of ICT Infrastructure at Data Centers and Remote Sites for CERT-In and Operation & Maintenance” and Contract no..... (hereinafter referred as “Project”). ERNET India and <<Contractor Name>> have entered into a contract to deliver this project (if selected/ selected), Now, both the parties enter into this agreement and agree that information provided and available with each party

in respect of this project is to be used only for the specific project purpose and parties are required to protect such confidential information from unauthorized use and disclosure.

In consideration of the other party’s disclosure of such information, each party agrees as follows:

1. This Agreement will apply to all confidential and proprietary information disclosed, owned or collected by one party to the other party, including information generated under this project, which the disclosing party identifies in writing or otherwise as confidential to the receiving party (“**Confidential information**”). Information consists of certain specifications, designs, plans, drawings and /or technical information, software, data etc, and all copies and derivatives containing such information, that may be disclosed to one another for and during the purpose, which a party considers proprietary or confidential (“**Information**”). Information may be in any form or medium, tangible or intangible, and may be communicated/disclosed in writing, orally, or through visual observation or by any other means to one party (hereinafter referred to as the receiving party) by the other party (hereinafter referred to as one disclosing party). Information shall be subject to this Agreement, if it is in tangible form, only if clearly marked as proprietary or confidential as the case may be, when disclosed to the receiving party or, if not in tangible form, its

proprietary nature must first be announced, and it must be reduced to writing and furnished to the receiving party.

2. ERNET India and <<Contractor Name>>hereby agree that during and after the Agreement Period:
 - a) The receiving party shall use Information only for the Purpose, shall hold Information in confidence using the same degree of care as it normally exercises to protect its own proprietary information, but not less than reasonable care, taking into account the nature of the Information, and shall grant access to Information only to its employees who have a need to know, but only to the extent necessary to carry out the business purpose of this project as defined, shall cause its employees, outsourced agencies, vendors, implementation partners and contract employees to comply with the provisions of this Agreement applicable to the receiving party, shall reproduce Information only to the extent essential for fulfilling the purpose, and shall prevent disclosure of information to third parties.
 - b) Upon the disclosing party's request, the receiving party shall either return to the disclosing party all Information or shall certify to the disclosing party that all media containing Information have been destroyed.
3. The foregoing restrictions on each party's use or disclosure of Information shall not apply to Information that the receiving party can demonstrate which:-
 - a) was independently developed by or for the receiving party without reference to the Information, or was received without restrictions; or
 - b) has become generally available to the public without breach of confidentiality obligations of the receiving party; or
 - c) was in the receiving party's possession without restriction or was known by the receiving party without restriction in vogue at the time of disclosure; or
 - d) is the subject of a subpoena or other legal or administrative stipulated requirement demand for disclosure; provided, however that the receiving party has given the disclosing party prompt notice of such requirement for disclosure and the receiving party reasonably cooperates with the disclosing party's efforts to secure and appropriate protective order; or
 - e) is disclosed with the prior written consent of the disclosing party; or
 - f) was in its possession or known to it by being in its use or being recorded in its files or computers or other recording media prior to receipt from the disclosing party and was not previously acquired by the receiving party from the disclosing party under an obligation of confidence; or
 - g) the receiving party obtains or has available from a source other than the disclosing party without breach by the receiving party or such source of any obligation of confidentiality or non-use towards the disclosing party.
4. Each party agrees not to remove any of the other party's Confidential Information from the premises and sites of the disclosing party without the disclosing party's prior written approval. Each party agrees to exercise extreme care in protecting the confidentiality of any confidential information which is removed, only with the disclosing party's prior written approval, from the disclosing party's premises and sites. Each party agrees to comply with any and all terms and conditions the disclosing party's may impose upon any

such approved removal, such as conditions that the removed confidential information and all copies must be returned by a certain date, and that no copies are to be made off of the premises.

5. Upon the disclosing party's request, the receiving party will promptly return to the disclosing party all tangible items containing or consisting of the disclosing party's confidential information all copies thereof.
6. Each party recognizes and agrees that all of the disclosing party's confidential information is owned solely by the disclosing party (or its licensors) and that the unauthorized disclosure or use of such confidential information would cause irreparable harm and significant injury, the degree of which may be difficult to ascertain. Accordingly, each party agrees that the disclosing party will have the right to obtain an immediate injunction enjoining any breach of this agreement, as well as the right to pursue any and all other rights and remedies available at law or in equity or may seek the intervention of Director General, ERNET India for such a breach.
7. Access to information hereunder shall not preclude an individual who has seen such information for the purpose of this agreement from working on future projects for the receiving party which relate to similar subject matters provided that such individual does not make reference to the information and does not copy the substance of the information during the confidentiality period thereafter as required by applicable law. Furthermore nothing contained herein shall be construed as imposing any restriction on the receiving party's disclosure or use of any general learning, skills or know how developed by the receiving party's personnel under this agreement, if such disclosure and use would be regarded by a person of ordinary skill in the relevant area as not constituting a disclosure or use of the information.
8. As between the parties, all information shall remain the property of the disclosing party. By disclosing information or executing this agreement, the disclosing party does not grant any license, explicitly or implicitly, under any trademark, patent, copyright, mask work protection rights, trade secret or any other intellectual property right. THE DISCLOSING PARTY DISCLAIMS ALL WARRANTIES REGARDING THE INFORMATION, INCLUDING ALL WARRANTIES WITH RESPECT TO INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS AND ALL WARRANTIES AS TO THE ACCURACY OR UTILITY OF SUCH INFORMATION. Execution of this agreement and the disclosure of information pursuant to this agreement does not constitute or imply any commitment, promise, or inducement by either party to make any purchase, or sale or to enter into any additional agreement of any kind.
9. Either party's failure to enforce any provision, right or remedy under this agreement shall not constitute a waiver of such provision, right or remedy.
10. This Agreement will be construed in, interpreted and applied in accordance with the laws of India.
11. That in case of any dispute or differences, breach & violation relating to the terms of this agreement, the said matter or dispute, difference shall be referred to Director General, ERNET India for his decision in this regard. The decision of the Director General, ERNET India will be final and binding on both the parties.
12. This Agreement constitutes the entire agreement of the parties with respect to the parties respective obligations in connection with Information disclosed hereunder and supersedes all prior oral and written agreements and discussions with respect thereto.

13. The parties can amend or modify this agreement only by a writing duly executed by their respective authorized representatives. Neither party shall assign this Agreement without first securing the other Party's written consent.

14. This Agreement will remain in effect during the currency of agreement & shall survive even after expiry of the agreement or project.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by Their duly authorized officers or representatives.

For and on behalf of
ERNET India
Ministry of Electronics and
Information Technology,
Government of India.

For and on behalf of
<< Contractor Name >>

Name: Sh. Arun Kumar Singh
Designation: Registrar
ERNET India, Delhi

<< Authorized to sign from Contractor Name >>
Designation:
Address:

FORMATS

Format 1.1: Bank Guarantee Format for Performance Security

MODEL BANK GUARANTEE FORMAT FOR PERFORMANCE SECURITY

(To be stamped in accordance with stamp Act)

(The non-judicial stamp paper should be in the name of issuing Bank)

B.G. NO. _____
Date of issue _____
Amount (Rs.) _____
Valid upto _____
Claim Amount upto _____

To,
Registrar
ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
shastri Park, Delhi-110053

Dear Sirs,

In consideration of the ERNET India, Ministry of Electronics & Information Technology (hereinafter referred as the '**Owner**', which expression shall unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s. _____ (name, constitution and address) (herein referred to as the '**Contractor**', which expression shall unless repugnant to the context of meaning thereof, include its successors, administrator, executors and assigns) a Purchase Order No. _____ dated _____ valued at _____ (hereinafter referred to as Contract) and the Contractor having agreed to provide a Bank Guarantee towards Performance of the entire Contract equivalent to Rs. _____ (amount of BG) (i.e. _____ per cent of the said value of the Contract) to the Owner.

We _____ (name of the Bank) having its Registered Office at _____ and Corporate/Head Office at _____ (hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context or meaning thereof, include the successors, administrators, executors and assigns) do hereby guarantee and undertake to pay at any time up to _____ (day/month/year including claim period) an amount not exceeding Rs. _____, within ten (10) calendar days from the date of receipt by us on first written demand by Owner; through hand delivery or registered A.D. Post or by speed post or by courier, stating that "Contractor" has failed to perform its obligations under the Contract. Aforesaid payment will be made without any demur, reservation, contest, recourse or protest and/or without any reference to the Contractor. Any such demand made by the owner the Bank shall be conclusive and binding notwithstanding any difference between the Owner and Contractor or any dispute pending before any court, tribunal or any authority.

The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Owner and further agrees that the guarantee herein contained shall continue to be enforceable till the Owner discharges this guarantee. The owner shall have the fullest liberty, without affecting in any way the liability of the Bank under this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce

or to forebear to enforce any covenants, contained or implied, in the Contract between the Owner and the Contractor or any other course of or remedy or security available to the Owner. The Bank shall not be relieved of its obligations under these presents by any exercise by the owner or by any other matters or thing whatsoever which under law would, but for this provision, have the affect of relieving the Bank. The Bank also agrees that the Owner at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Owner may have in relation to the Contractors liabilities.

This Guarantee can be invoked in one or more trenches and in such a case Owner will not be required to submit the original Guarantee along with submission of claim.

Notwithstanding anything mentioned herein above our liability under this guarantee is restricted to Rs._____ and it shall remain in force up to and including _____ shall be extended from time to time for such period as may be desired by the Contractor on whose behalf this guarantee has been issued.

WITNESS

Signature_____

Name_____

BANK

Signature_____

Name _____

(Bank's Rubber Stamp)

Seal, name & address of the Bank and address of the Branch

Designation with Bank Stamp

Format 1.2: No Claim Certificate

(Refer Clause 12.3.1 of GCC)

(On company Letter-head)

Contractor's Name _____

[Address and Contact Details]

Contractor's Reference No. _____ Date.....

To

Registrar
ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
Shastri Park, Delhi-110053

No Claim Certificate

Sub: Contract/ Agreement no. ----- dated -----

We have received the sum of Rs. (Rupees _____ only) as final settlement due to us for the above mentioned contract agreement.

We have received all the amounts payable to us with this payment and have no outstanding dispute of any description whatsoever regarding the amounts worked out as payable to us and received by us.

We hereby unconditionally and without any reservation whatsoever, certify that we shall have no further claim whatsoever, of any description, on any account, against the ERNET India, under contract above. We shall continue to be bound by the terms and conditions of the contract agreement regarding its performance.

Yours faithfully,

Signatures of contractor or
officer authorised to sign the contract documents.
on behalf of the contractor

(company Seal)

Date: _____

Place: _____

Form 11 : Land Border Related Declaration by OEM

(on Company Letter-head)

To be Issued by OEMs

[Address and Contact Details]

Date.....

To

Registrar & CPO
ERNET India, 5th Floor,
Block-I, A Wing, DMRC IT Park,
Shastri Park, Delhi-110053

Ref: Tender Document No. Tender No./ xxxx;

We have gone through F.No.6/18/2019 – PPD dated 23rd July 2020 (& its amendments) issued by Department of Public Procurement, Ministry of Finance, Govt. of India and certify as follows:

I hereby certify that the <<<<bidder's name>>>> :

(i) is not from such a country

or

(ii) is from such a country and has been registered with the Competent Authority in India which makes the bidder eligible to participate in this Tender. [Evidence of valid registration by the Competent Authority attached.]

I hereby certify that <<<<<bidder name>>>> fulfils all requirements in this regard and is eligible to be considered.

{Strike out inapplicable clause i.e. clause (i) or (ii)}

Yours faithfully,

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of [name & address of Bidder/ OEM and seal of company]

Form 12 Financial Bid (BoQ)

Financial Bid (BoQ) (This duly filled sheet must be uploaded under "upload Financial Document" tab on GeM Portal.)										
Bidder Name										
Tender No										
Part A (CAPEX – I)										
Sl. No.	ITEM		Equipment Quantity	Unit of Measurement	Make & Model	Unit Price in INR	Rate of GST in %	Amount of GST in INR	Total unit Price with GST in INR	Total Price with GST in INR
			(A)	(B)		(C)	(D)	(E)	F (=C+E)	G= (AxF)
1	Server Category-1		165	no.						
2A	Bidder must quote either 2A or 2 B	Server Category-2 with 60 HDD in Each Server	400	no.						
2B		Server Category-2 with 84 HDD in Each DAS	285	no.						
3	Server Category-3		30	no.						
4	Server Category-4		30	no.						
5	Server Category-5		15	no.						
6	Server Category-6		200	no.						
7	Server Category-7		6	no.						
8	Server Category-9		20	no.						
9	Server Category-10		16	no.						
10	Server Category-11		12	no.						

11	Server Category-13	8	no.						
12	Server Category-14	2	no.						
13	Server Category-16	2	no.						
14	DR Spine Switch	2	no.						
15	DC Leaf Switch	140	no.						
16	DR Leaf Switch	100	no.						
17	DR OOB Core Switch	2	no.						
18	DC OOB Access Switch	80	no.						
19	DR OOB Access Switch	60	no.						
20	DC OOB Core Switch	2	no.						
21	DR CE Router / Internal WAN Router	2	no.						
22	DR Border Leaf Switch	2	no.						
23	DR Internet Router	2	no.						
24	DR Interconnect Switch - Type 1	2	no.						
25	DR Interconnect Switch - Type 2	2	no.						
26	DR WAN Switch	2	no.						
27	SFPTransceiver-10GBase-SR (For Networking Equipment) *	6900	no.						
28	SFP Transceiver -10GBase-LR (For Networking Equipment)*	110	no.						
29	QSFP+28 Transceiver-100 GBase-SR4 (For Networking Equipment)*	1150	no.						
30	QSFP+28 Transceiver-100GBase-LR4 (For Networking Equipment)*	10	no.						
31	Remote Router/ Firewall – 2Gbps (In Remote Sites)	240	no.						
32	Internet Firewall with IPS	2	no.						
33	DR Internal Firewall	2	no.						
34	DR Solution/Application Firewall	2	no.						
35	AAA Appliance Server	2	no.						
36	Load balancer	2	no.						

37	Privileged Access Manager (in HA Mode)	2	no.						
38	IPS/IDS	4	no.						
39	SSL VPN Gateway	4	no.						
40	Active Directory Solution	4	no.						
41	Console management server	4	no.						
42	KVM Console	61	no.						
43	Portable KVM console adapter	15	no.						
44	Monitoring and management tool for servers	2	no.						
45	Fireproof Vault (200litre)	4	no.						
46	Degausser	5	no.						
47	Data Diode *	5	no.						
48	Intelligent Cabling (includes all required accessories briefed in specs for 70 Racks in DC and The complete cabling infrastructure including interrack , cable length etc. will be the responsibility of bidder).	1	lot						
49	Intelligent AIM system Monitor at Rack level (Networking and Server Racks) For monitoring of 70 Racks in DC .	1	lot						
50	Intelligent AIM system Software for 10k or 15k Ports in DC (refer specs for details)	1	no.						
51	Intelligent Cabling (includes all required accessories briefed in specs for 50 Racks in DR and the complete cabling infrastructure including interrack , cable length etc. will be the responsibility of bidder) -Specifications similar to s.no. 46	1	lot						
52	Intelligent AIM System Monitor at Rack level (Networking and Server Racks) For monitoring of 50 Racks in DR .	1	lot						

	Specifications similar to s.no. 47								
53	Intelligent AIM system Software for 12k Ports in DR-Specifications similar to s.no. 48	1	no.						
54	Smart Rack *	5	no.						
55	Non Smart Rack with Redundant IPDU*	5	no.						
56	65 Inch LED Display	2	no.						
57	Heavy Duty Workstation	35	no.						
58	Heavy Duty Mobile Workstation Laptop	30	no.						
59	Heavy Duty Color Printer	4	no.						
60	10G SFP SR of appropriate OEM server(s)	100	no.						
61	10G SFP LR of appropriate OEM server(s)	40	no.						
62	5% patch cords\$ (DC,DR & Remote)	1	lot						
63	Layer-3 Access Switch (48 Ports)	20	no.						
64	Miscellaneous (Optical meter-5 qty., ethernet cable tester-5 qty., cramping tool-10 qty., console cable with USB to serial converter- 30qty, monitor trolley- 4 qty., USB 3.0 to ethernet converter-10 qty., Media Converter (Fiber to Copper 1G) 20 qty, Visual Fault Locator for Patch Cords 2 qty, Cat 6 Cable (Bundle) 06 qty)	2	lot						
65	Any other Item								
Sub Total Value of Part A (CAPEX -I)									

Part B (CAPEX – II)									
Sl. No.	ITEM	Equipment / Solution Quantity	Unit of Measurement	Make & Model	Unit Price in INR	Rate of GST in %	Amount of GST in INR	Total unit Price with GST in INR	Total Price with GST in INR
		(A)	(B)		(C)	(D)	(E)	F (=C+E)	G= (AxF)
1.a	Data Center Infrastructure Management (DCIM), RLPAT Solution & Heat Humidity Sensor Solution Supply, Installation , Commissioning & Testing (SITC) of following: i) DCIM, ii) RLPAT Solution and iii) Heat-Humidity Sensor Solution with respective hardware (servers) in a High Availability mode & overall integration as per scope of work & technical specs. Perpetual Licenses for above solutions for : Number of Racks at DC = 100 Number of Racks at DR = 50 Total IT active devices at DC = 1450 , Total IT active devices at DR = 350 * Note: SI must refer to scope of work & technical specs & accordingly provide one instance of solution at DR.	2 (in HA at DC & DR)	set (each instance to have local HA mode with hardware redundancy as per specs)						

1.b	RF Id based Physical Asset Tracking Tags with one on each IT Element (Network/servers) at DC & DR as per scope of work & technical specs.	1800	no.						
1.c	RF Id Rack Identifiers as a part of Physical RF Id based Asset Tracking Solution at DC & DR .	150	no.						
1.d	RF Id Based Heat and Humidity Sensors for Racks at DC & DR as per scope of work & technical specs. Note: should include sensors tags for Phase-1 equipment at DC as well.	450	no.						
1.e	1. Communication Gateways for Communication on RF with Asset and Heat-Humidity tags & on ethernet/WiFi with respective Software Solution at DC and DR (Based on number of Asset and Heat- Humidity sensors provided.) 2.Compatible Handheld scanner to read barcode / QR codes at DC & DR 3. Barcode Printer / QR codes with consumables(3Yrs Duration) at DC & DR.	2	no.						

1.f	<p>EMS Solution (SITC of EMS (fault, performance , configuration , change , event ,traffic, asset, SLA management, IT helpdesk / service desk and IPAM functionality along with respective hardware (servers)) in High Availability mode & including the overall integration as per scope of work & technical specs.) Note : Solution must maintain historical data for 1 year, has an integrated syslog to acts as a sysLog aggregator. Total IT Elements = 2800 ; For 50 Concurrent Users, For monitoring of MPLS Link of 250 locations * SI must refer to scope of work & technical specs & accordingly provide one instance of solution at DR .</p>	2(in HA at DC & DR)	set (each instance to have local HA mode with hardware redundancy as per specs)						
2	Additional EMS License Price for 50 IT devices	1	lot						
3	Additional IT Helpdesk/EMS License for 5 concurrent users	1	lot						
4	Additional DCIM User License price for 5 concurrent users	1	lot						
5	Additional DCIM License price for 5 Racks	1	lot						
Sub Total Value of Part B (CAPEX -II)									

Part- C (OPEX)						
Sl. No.	ITEM	Unit	Unit Price on Yearly basis in INR	Rate of GST in %	Amount of GST in INR	Total Yearly Price with GST in INR
		A	B	C	D	E= A X (B+D)
1	Operation and Maintenance (O&M) of DC along with deployment of 21 Technical Manpower at DC	1				
2	Operation and Maintenance of DR along with deployment of 14 Technical Manpower at DR	1				
3	Operation and Maintenance of Remote Sites; (O&M of 247 Remote sites in this tender includes 232 sites to be commissioned via this tender & 15 sites whose hardware is procured via CDAC bid i.e Phase I Stage 1)	247				
4	Deployment of 2 Technical Manpower for Technical Support at Delhi	1				
Sub Total Value of Part C (Total OPEX Value)						

Summary of Price:

S/N	Description	Total Price Including GST in INR
1	Sub Total Value of part A (CAPEX - I)	
2	Sub Total Value of Part B (CAPEX - II)	
3	Sub Total Value of Part C (OPEX)	
	Grand Total Value (A+B+C)	

Note:- Unit Price in Part A,B and C includes- Equipment (Hardware, Software, Solution etc.) Cost including warranty, insurance, Installation, training, commissioning, integration and testing Charges and any other financial implication/Charges)

(Signature with date)

.....

(Name and designation)

Duly authorized to sign bid for and on behalf of.....

[name & address of Bidder and seal of company]

Dated.....

Place.....

Annexure-A: ERNET India's Clarification/Corrigendum/Addendum/Response

Annexure-A

(ERNET India's Clarification/Corrigendum/Addendum/Response)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
1	135	37. Privileged Access Manager	A)The Solution Should be On-Premise and hardware-based appliance and configurable in HA mode.	<p>As per our recent past experience, we have seen RFP's from Govt. and PSUs agencies like NIC, NTPC, UIDAI, GAIL, NATGRID where the requirement of dedicated hardware was supplied by the bidder and PAM solution was supplied by the PAM OEM. Expecting a appliance based solution will only favour a OEM.</p> <p>We understand that, this RFP has scope of supplying new servers in the data center. Bidder can supply with dedicated hardware to form an appliance for the proposed solution. We request you to please modify the clause as mentioned below.</p> <p>"A)The software solution should be On-Premise and deployed on bidder supplier dedicated hardware and configurable in HA mode.</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
2	135	37. Privileged Access Manager		We understand that, ERNET is looking for a Class-I local supplier. Request you to add a clause for Class-I supplier for aforementioned solution. "OEM of Privileged Access Manager should be Class-1 Local Supplier"	Bid will be evaluated as per Section (II) Clause -4 (Prefrential Polcies) and its sub sections.
3	143	37. Privileged Access Manager	Solution must be ISO/IEC 27002 compliant (or) Equivalent	This point is repetative, request you to remove this or add pervious point "OEM should be ISO/IEC 27001/27002/27034 compliant (or) Equivalent"	Kindly refer revised Specification in Annexure-B
4	143	37. Privileged Access Manager	Number of named user - 50	We understand that ERNET has considered 10000 target devices for future sizing. We suggest that 50 user would be less to monitor 10000 devices. Request you to increase number of users to 150 to cover future scope.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
5	143	37. Privileged Access Manager	The solution should have End Point Privilege Management and Threat Analytics	The solution should have End Point Privilege Management and Threat Analytics	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
6	254	B.Original Equipment Manufacturer (OEM)'s Criteria	Item : Privileged Access ManagerOEM should have supplied and installed a minimum of - 1000Unit - Node,User	We suggest that an OEM should have a large scale implementation experience. We request you to modify the clause as mentioned below:"Item : Privileged Access ManagerOEM should have supplied and installed a minimum of - 2000Unit - User"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
7		37. Privileged Access Manager		<p>As per our past experience, we have seen that organisation need an out of the box file and secrets mangement vault in a PAM solution, which is missing in the RFP. We request to accept and add below mentioned points.</p> <p>File/Secret Management Vault - The solutions should have the capability to vault personal secrets and organizational secrets with the added capability of creating a team-based structure for sharing -The solution should be able to create teams such that the organizational secrets are always available no matter who the creator or owner is.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
9	Page no. 132	36. Load balancer	Load Balancing requirements	Must support layer4 and layer 7 load balancing for well-known protocols	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
10	Page no. 133	36. Load balancer	SSL Offloading Requirements	Must support Elliptic Curve Diffie-Helman ciphers	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
11	Page no. 150	39. SSL VPN Gateway	Point No. 15	Should have IPV6 support with IPv6 to IP4 and IPv4 to IPv6 translation and full IPv6 support. Also should have IPV6 support with DNS 6 to DNS 4 based health check for intelligent traffic routing and failover.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
12	Page No. 149	39. SSL VPN Gateway	Point No. 8	The appliance should support 45 Gbps of compression throughput. This capability shall be compatible with most modern browsers, requiring no additional software. Proposed appliance should support Desktop over VPN feature to provide access to desktop from remote for WFH purpose.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
21	97	14. DR Spine Switchb. Qos	d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP,8GB Buffer/equivalent per line card, 802.1Qbb,8 queues/port, WRR	d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP, 160 MB Buffer/equivalent per line card, 802.1Qbb,8 queues/port, WRR	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
22	98	14. DR Spine Switch b. Security Feature	b. Port, VLAN & Routed ACL, 16K ACL Entries /extended ACL /terms/Traffic Policy ACL IP Prefixes ,GRE (Must Support 1000 or Higher GRE Tunnels & 1000 VXLAN Tunnels)	b. Port, VLAN & Routed ACL, 4K ACL Entries /extended ACL /terms/Traffic Policy ACL IP Prefixes ,GRE (Must Support 1000 or Higher GRE Tunnels or 1000 VXLAN Tunnels)	Kindly refer revised Specification in Annexure-B
23	100	15. DC Leaf Switch Feature Support	All the leaf switches (planned for DC & DR) should have license to integrate with Spine switch and Fabric Manager. All the features mentioned above should be available from day one	All the leaf switches (planned for DC & DR) should have license to integrate with same OEM proposed Spine switch and Fabric Manager. All the features mentioned above should be available from day one	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
24	102	17. DR OOB Core Switch	No .of 100G QSFP+ Port : 4 or higher	Requesting to modify the clause as below: No .of 100G QSFP+ Port : 4 or higher Justification: Please modify for wider participation	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
25	102	17. DR OOB Core Switch	a. Advance Layer-3 Protocol : EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/ Multihoming (No proprietary solutions are to be deployed)	Requesting to modify the clause as below: EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/Multihoming (No proprietary solutions are to be deployed) Justification: Requesting to include Multi-Homing in a BGP EVPN VXLAN Fabric for wider participation.	Kindly refer revised Specification in Annexure-B
26	102	17. DR OOB Core Switch	d QoS: WRED,SPQ, SDWRR / WRR, 32MB Buffer,802.1Qbb, 802.1Qaz, 8queues /port, Remark of bridged packets	Requesting to modify the clause as below:d. QoS: WRED,SPQ, SDWRR / WRR, 32MB Buffer, 8queues /port Justification:Requesting to remove 802.1Qbb, 802.1Qaz and Remark of bridged packet, since this being a OOB switch, believe the expectation is to run IP based network only utilizing the same. Also similar features are not being asked for in DC/DR OOB Access Switch.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
27	103	18. DC OOB Access Switch	Number of 40QSFP+ Port (Uplink) : 2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers	<p>Please modify the clause as below:</p> <p>Request to modify the clause as Number of 40G QSFP+ or dedicated Stacking Port: To provide minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers</p> <p>Justification: From the detail of the clause, we understand that these ports will be required for stacking purpose. Requesting to remove the word uplink or make it optional.</p>	Kindly refer revised Specification in Annexure-B
28	103	18. DC OOB Access Switch	Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps): 336 or higher	<p>Please modify the clause as below: Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps): 176Gbps (without stacking bandwidth)</p> <p>Justification: Requesting to kindly mention the capacity including/excluding the stacking bandwidth.</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
29	105	19. DR OOB Access Switch	Number of 40GQSFP+ Port (Uplink) : 2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers	Please modify the clause as below:Request to modify the clause as Number of 40G QSFP+ or dedicated Stacking Port: To provide minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceiversJustification:From the detail of the clause, we understand that these ports will be required for stacking purpose. Requesting to remove the word uplink or make it optional.	Kindly refer revised Specification in Annexure-B
30	105	19. DR OOB Access Switch	Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps): 336 or higher	Please modify the clause as below: Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps): 176Gbps (without stacking bandwidth) Justification: Requesting to kindly mention the capacity including/excluding the stacking bandwidth.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
31	107	20. DC OOB Core Switch	a. Advance Layer-3 Protocol : EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/Multihoming (No proprietary solutions are to be deployed)	<p>Requesting to modify the clause as below:</p> <p>EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/Multihoming (No proprietary solutions are to be deployed)</p> <p>Justification: Requesting to include Multi-Homing in a BGP EVPN VXLAN Fabric for wider participation.</p>	Kindly refer revised Specification in Annexure-B
32	107	20. DC OOB Core Switch	d QoS: WRED,SPQ, SDWRR / WRR, 32MB Buffer,802.1Qbb, 802.1Qaz, 8queues /port, Remarking of bridged packets	<p>Requesting to modify the clause as below:d. QoS: WRED,SPQ, SDWRR / WRR, 32MB Buffer, 8queues /port</p> <p>Justification:Requesting to remove 802.1Qbb, 802.1Qaz and Remarking of bridged packet, since this being a OOB switch, believe the expectation is to run IP based network only utilizing the same. Also similar features are not being asked for in DC/DR OOB Access Switch.</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
33	108	21 . DR CE Router/ Internal WAN Router	Port population : Should be supplied with 12 numbers of 100G QSFP28 ports with non-blocking architecture and wire-speed from day 1	<p>Requesting to modify the clause as below:</p> <p>Should be supplied with 12 numbers of 100G QSFP28 ports on a single appliance or with 6 numbers of 100G QSFP28 ports each on 2 appliance solution with non-blocking architecture from day 1</p> <p>Justification: We understand that the redundant routers are required in the design , hence requesting to modify 6 x 100G ports per router for wider participation.</p>	Kindly refer revised Specification in Annexure-B
34	111	23. DR Internet Router	Port population: Should be supplied on day 1 with 4 x 1000Base-LX Single Mode SFP transceivers, 4 x 10/100/1000Base-T Interface Ports and 4 x 10G Base SR Transceivers. Should be scalable to support additional 4 X 40G	<p>Requesting to modify the clause as below:</p> <p>Request to rephrase the clause as rephrase the clause as Should be supplied on day 1 with 4 x 1000Base-LX Single Mode SFP transceivers, 4 x 10/100/1000Base-T Interface Ports and 4 x 10G Base SR Transceivers. Should be scalable to support 4 X 40G</p> <p>Justification: Requesting to remove "additional" before 4 x 40G</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
35	111	23. DR Internet Router	Switching Capacity (Non-Blocking) (Gbps): 256 or higher	<p>Requesting to modify the clause as below: Switching Capacity (Non-Blocking) (Gbps): 190 or higher</p> <p>Justification: Please modify for wider participation</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
36	115	26. DR WAN Switch	a. Advance Layer-3 Protocol : EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/ Multihoming (No proprietary solutions are to be deployed)	<p>Requesting to modify the clause as below:EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/Multihoming (No proprietary solutions are to be deployed)Justification:Requesting to include Multi-Homing in a BGP EVPN VXLAN Fabric for wider participation.</p>	Kindly refer revised Specification in Annexure-B
37	115	26. DR WAN Switch	d QoS: WRED,SPQ,SDWRR/ WRR, 32MB Buffer, 802.1Qbb, 802.1Qaz, 8queues /port, Remarking of bridged packets	<p>Requesting to modify the clause as below:</p> <p>d. QoS: WRED,SPQ, SDWRR / WRR, 32MB Buffer, 8queues /port</p> <p>Justification: Requesting to remove 802.1Qbb, 802.1Qaz and Remarking of bridged packet, since this being a OOB switch, believe the expectation is to run IP based network only utilizing the same. Also similar features are not being</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
				asked for in DC/DR OOB Access Switch.	
38	118	31. Remote Router/ Firewall – 2Gbps (In Remote Sites)	Port Population: Should be supplied on day 1 with 12 x Gigabit Ethernet (10/100/1000 Base T) ports, 2 X 1000Base-LX Single Mode SFP transceivers and 2x 10G Base SR Transceivers . All mentioned SFP should be populated from day one (1).	Request to please modify the clause as "Should be supplied on day 1 with 12 x Gigabit Ethernet (10/100/1000 Base T) LAN ports, 2 X 1000Base-LX Single Mode SFP transceivers and 2 x 10G Base SR Transceivers Justification: We understand that 12 x Gigabit Ethernet (10/100/1000 Base T) ports are LAN ports, requesting to modify the clause for more clarity.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
39	194	63. Layer 3 Access Switch (48 Ports)	Number of 40GQSFP+ Port (Uplink) : 2 or higher with minimum 40Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1	Please modify the clause as below:Request to modify the clause as Number of 40G QSFP+ or dedicated Stacking Port: To provide minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceiversJustification:From the detail of the clause, we understand that these ports will be required for stacking purpose. Requesting to remove the word uplink or make it optional.	Kindly refer revised Specification in Annexure-B
40	194	63. Layer 3 Access Switch (48 Ports)	Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps): 336 or higher	Please modify the clause as below: Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps): 176Gbps (without stacking bandwidth) Justification: Requesting to kindly mention the capacity including/excluding the stacking bandwidth.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
41	149	SSL VPN Gateway	The appliance should be dedicated SSL VPN Gateway and not a part of UTM/ firewall/ NGFW/ ADC device It should have should have 1x1GbE port for management and 8x10GbE SFP+ ports with its transceivers.	Request to modify the clause "The appliance should be dedicated SSL VPN Gateway It should have should have 1x1GbE port for management and 12 x10GbE SFP+ with its transceivers along with 2 x 10 Gig High availability port "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
42	149	SSL VPN Gateway	The appliance should have multicore CPU, 64GB RAM, 4TB HDD and dual power supply.	Request to modify the clause "The appliance should have multicore CPU, 256 GB RAM, 480GB HDD and dual power supply"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
43	149	SSL VPN Gateway	The solution Should have dedicated hardware SSL card and should support 45 Gbps of SSL Throughput	Request to modify the clause"The solution should support minimum 25 Gbps of SSL Throughput and Layer 7 new sessions per second of 600K and max Layer 7 concurrent session of 20 million "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
44	149	SSL VPN Gateway	The appliance should support 45 Gbps of compression throughput. This capability shall be compatible with most modern browsers, requiring no additional software. Proposed appliance should support Desktop over VPN feature to provide access to desktop from remote for WFH purpose.	Request to modify the clause "SSL VPN solution should have capability with most modern browsers, requiring no additional software and should be able to work on Desktop windows , MAC OS , Andriod , Iphone "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
45	150	SSL VPN Gateway	The solution should support desktop publishing on IOS and Android phones along with device ID based authorization. The solution should support enterprise App-store for android and IOS phones. Should also support SAML, Hardware binding and AAA support along with SSO. Solution must support machine authentication based on combination of HDD ID, CPU info and OS related parameters, mac address to provide secure access to corporate resources.s.	Request to modify the clause"The solution should support desktop publishing on IOS and Android phones along with device ID based authorization. The solution should support enterprise App-store for android and IOS phones. Should also support SAML, Hardware binding and AAA support along with SSO. VPN client software must support host based check such as patch , mobile device , antimalware, Disk encryption , certificate , firewall software check "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
46	150	SSL VPN Gateway	Should have IPV6 support with IPv6 to IP4 and IPv4 to IPv6 translation and full IPv6 support. Also should have IPV6 support with DNS 6 to DNS 4 based health check for intelligent traffic routing and failover	Request to modify the clause"Should have IPV6 support with IPv6 to IP4 and full IPv6 support. Also should have IPV6 support with DNS 6 to DNS 4 based health check for intelligent traffic routing and failover"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
47	125	DR Internal Firewall	Throughput (Real World/Prod Performance) (All Features enabled)(Gbps) : 234 Gbps or Higher	Request to modify the clause"NGFW Firewall throughput of 70 Gbps with http (layer 7) packet size 64 KB transaction size "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
48	125	DR Internal Firewall	Concurrent Session/Concurrent Connection : 55 Million Layer 4 sessions or 25 Million Layer 7 sessions	Request to modify the clause"Concurrent Session/Concurrent Connection 55 Million Layer 4 sessions or 20 Million Layer 7 sessions"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
49	125	DR Internal Firewall	IPsec Throughput (Gbps) : 150 Gbps (Packet size:1400Bytes) or Higher	Request to modify the clause"IPsec Throughput (Gbps) : 150 Gbps (Packet size:1400Bytes) or minimum 17 Gbps with 64KB HTTP packet size"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
50	125	DR Internal Firewall	Port population Should be supplied on day1 with 8x10GBase-SR Transceivers and 12 x100G Base-SR4 Transceivers	Request to modify the clause"Should be supplied on day1 with 12 x10GBase-SR Transceivers and 2 x100G Base-SR4 Transceivers"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
51	125	DR Internal Firewall	Tunnels IPSEC VPN (Site to site), Hub and Spoke , Group VPN / GDOI/Equivalent	Request to modify the clause"Tunnels IPSEC VPN (Site to site), Hub and Spoke "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
52	125	DR Internal Firewall	Certification Common Criteria/Indian Common Criteria Certification Scheme(IC3S)	Request to modify the clause"Certification Common Criteria/Indian Common Criteria Certification Scheme(IC3S) or equivalent"	Kindly refer revised Specification in Annexure-B
53	126	DR Solution/Applica tion Firewall	Throughput (Real World/Prod Performance) (All Features enabled)(Gbps) 60 Gbps OR HIGHER	Request to modify the clause"Throughput (Real World/Prod Performance) (All Features enabled)(Gbps) Minimum 60 Gbps with 1024 Bytes or Minimum 25 Gbps with 64KB HTTP "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
54	127	DR Solution/Applica tion Firewall	IPsec Throughput 50 Gbps or higher	Request to modify the clause"IPSEC throughput of 50 Gbps or minimum 20 Gbps with 64 KB HTTP transcation size "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
55	127	DR Solution/Application Firewall	Concurrent Session/Concurrent Connection Minimum 40 Million Layer 4 sessions or minimum 20 Million Layer 7 sessions	Request to modify the clause "Concurrent Session/Concurrent Connection Minimum 40 Million Layer 4 sessions or minimum 3.5 Million Layer 7 sessions"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
56	127	DR Solution/Application Firewall	New session/Connection per second Minimum 380K Layer 4 sessions or minimum 200K Layer 7 sessions	Request to modify the clause "New session/Connection per second Minimum 380K Layer 4 sessions or minimum 250K Layer 7 sessions"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
57	127	DR Solution/Application Firewall	Port Population The Firewall should have minimum 16 X 10GSFP+, 3X40G QSFP and 2X100G QFSP 28. All the ports shall be fully Populated with respective Transceivers	Request to modify the clause "The Firewall should have minimum 12 X 10GSFP+, 4 x 40/100 and 4 x 25 Gig populated with respective SR transceivers"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
58	127	DR Solution/Application Firewall	Tunnels IPSEC VPN (Site to site), Hub and Spoke , Group VPN / GDOI	Request to modify the clause "Tunnels IPSEC VPN (Site to site), Hub and Spoke	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
65	131	Section V: Technical Specifications 36. Load balancer General Specifications	Must display a visual representation of authentication in the GUI and Local authentication should be supported	Visual representation of authentication is not required, authentication functionality should be supported on proposed appliance. Suggested Clause: Local authentication should be supported	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
66	131	Section V: Technical Specifications 36. Load balancer General Specifications	Must support automated backup of configuration to an external location	Appliance should support configuration backup. Suggested Clause: Must support backup of configuration to an external location	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
67	131	Section V: Technical Specifications 36. Load balancer General Specifications	Must support multiple configuration files with at least 2 bootable partitions for better availability and easy upgrade / fallback	Appliance should support mutiple bootable partitions to install different OS version for better availability and easy upgrade / fallback. Suggested Clause: Must support multiple bootable partitions for better availability and easy upgrade / fallback	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
68	132	Section V: Technical Specifications36. Load balancerGeneral Specifications	The proposed solution should support Virtualization. Should be licensed for minimum 15 Virtual System/Virtual Domains from day one	Virtual System/Virtual Domain is a legacy method where resources will be shared across different segments whereas, Virtualization is a next generation features that virtualizes the device resources—including CPU, memory, network, operating system, configuration and acceleration resources to provide complete separate environment from applications and management perspective. Even if one virtual instance is rebooted it will not impact the other instances running on the same hardware. Third party system should not be used to virtualized solution. Suggested Clause : The proposed solution should support Virtualization. Each instance should have option to use different configuration, management, operating system and resources. Should be licensed for minimum 5 Virtual Instances from day one and scalable upto 20 Virtual Instances. Appliance should have capability to use in standalone as well as virtualized mode.The Hypervisor used to virtualize the hardware should be a specialized purpose build hypervisor and NOT a	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
				commercially available hypervisor (like XEN, VMware, KVM etc.) Dedicated RJ45 Console Port should be available on proposed appliance.	

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69	133	Section V: Technical Specifications 36. Load balancer SSL Offloading Requirements	Must support client certificate verification, CRL's (HTTP, FTP, LDAP) and OSCP protocol	Certificate Verification should be part of dedicated solution, It should not be part of load balancer. Suggested Clause: Delete the clause	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
70	134	Section V: Technical Specifications 36. Load balancer Security and Application Acceleration	Must support Geo-IP security for DDoS mitigation	DDoS mitigation solution should be transparent in nature whereas load balancer installed in layer-3 mode. Hence, dedicated solution should be considered for DDoS mitigation. Suggested Clause: Must support Geo-IP and Reputation based security	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
71	144	Section V: Technical Specifications 38. IPS/IDS A. Platform Requirement 2.	Monitoring Interface should be able to operate at layer 2.	<p>There should be dedicated appliance should be considered for IPS/IDS, it should be transparent in nature. NOT a part of Router or Firewall or UTM Solution, or any StateFul appliance. There should not be any limitation on handling attack sessions. There should be dedicated redundant port for management and reporting.</p> <p>Suggested Clause: The Proposed appliance should be a dedicated transparent appliance (NOT a part of Router or Firewall or UTM Solution, or any StateFul Device). It should have capability to handle unlimited attack concurrent sessions. 2x1G RJ45 dedicated management port should also be available on proposed hardware.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
72	144	Section V: Technical Specifications 38. IPS/IDS A. Platform Requirement 5.	Solution must support SSL throughput of 5 Gbps from day 1.	<p>SSL CPS should also be considered while sizing solution.</p> <p>Suggested Clause: Solution must support SSL throughput of 5 Gbps or, 90000 SSL-CPS on 2K key from day 1.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
73	144	Section V: Technical Specifications38. IPS/IDSA. Platform Requirement6.	The appliance should have below port density:-1. Fixed 8 - 1G copper ports with/without fail open2. 4 - 10G SFP+ ports with/without internal fail open3. Fixed 2 - 10G SFP+ ports4 All the ports shall be fully populated with its transceivers only.	As appliances has been asked in HA, failopen is not required. Failopen can't ensure detection and mitigation round the clock. Appliance should also have sufficient port for current and future requirements. Suggested Clause:The appliance should have below port density:-1. 8 - 1G copper ports2. 8 - 10G SFP+ ports3. All the ports shall be fully populated with its transceivers (Break-Out should not be used to accomodate ports)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
74	145	Section V: Technical Specifications 38. IPS/IDS B. Detection Technology 11.	Should have capability for Host quarantine and rate limiting	Host Quarantine is a part of Endpoint protection which should be considered as a dedicated solution, it can't be combined with IPS as IPS is for network prevention. Suggested Clause: The Proposed Solution Should have capability of rate limiting	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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75	145	Section V: Technical Specifications 38. IPS/IDS B. Detection Technology 12.	IPS must support high availability in Active-active and active-passive mode with stateful failover and not only limited to transparent mode.	IPS should always be considered to be deployed in transparent mode. If appliance will be deployed in routing mode, appliance itself will become bottleneck in case of attacks. Suggested Clause: Solution should support high availability and should be deployed in transparent mode.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
76	146	Section V: Technical Specifications 38. IPS/IDS B. Detection Technology 14.	NIPS should support provide advanced botnet protection using following detection methods:- ■ DNS sink holing ■ Heuristic bot detection ■ Command and control database	Every OEM uses different method to detect and mitigate bot based attacks.Mitigation should be asked. Suggested Clause: NIPS should provide advanced botnet protection	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
77	147	Section V: Technical Specifications38. IPS/IDSC. Advanced Prevention and Response 8.	IPS must provide communication fabric based integration with multiple other existing solution. IPS must have the capability to share threat intelligence with other solutions enabling security intelligence and adaptive security	Threat intelligence should be used for real time detection and mitigation from latest threats. Suggested Clause:Solution should provide intelligence feeds for effective mitigation from latest threats	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
78	147	Section V: Technical Specifications 38. IPS/IDS C. Advanced Prevention and Response 9.	IPS must have inbuilt network behavioural analysis engine to provide additional context using network flows.	Behavioural analysis is used to differentiate legitimate vs mallicious traffic, network flow is not relevant for such fuctionality. It is also used to detect and mitigate most Sophisticated attacks Suggested Clause: IPS must have inbuilt network behavioural analysis engine. IPS should also provide protection against Zero Day attacks with Automatic Real Time Signature generation within 30 seconds without human intervention	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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79	147	Section V: Technical Specifications 38. IPS/IDS C. Advanced Prevention and Response 10.	NIPS should support High Availability. It should support stateful HA such that state information is shared between the HA appliance. In case one of the appliances fails state is maintained.	IPS should always be considered to be deployed in transparent mode. Suggested Clause: Solution should support high availability	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
80	147	Section V: Technical Specifications 38. IPS/IDS C. Advanced Prevention and Response 11.	NIPS should support Active -Active high availability. The HA should be out of the box solution and should not require any third party or additional software for the same	IPS should always be considered to be deployed in transparent mode. If appliance will be deployed in routing mode, appliance itself will become bottleneck in case of attacks. Suggested Clause: Solution should support high availability and should be deployed in transparent mode.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
81	147	Section V: Technical Specifications 38. IPS/IDSC. Advanced Prevention and Response 12.	NIPS should be able to perform entire packet capture of the traffic and sent to the manager for analysis	Solution should have capability to perform packet capture for analysis. Suggested Clause: NIPS should be able to perform packet capture of the traffic	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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82	148	Section V: Technical Specifications 38. IPS/IDS D. Management 4.	Management console should have the ability to allow access to specific hosts by enabling GUI Access and defining the list of authorized hosts/networks	Management console should be accessible via GUI & CLI. Role based accesss should be supported to restrict administrative previledge. Suggested Clause: Management should accessible via CLI and GUI. RBAC should also be supported.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
83	148	Section V: Technical Specifications 38. IPS/IDS D. Management 5.	NIPS Management console should support high availability which should have Automated failover and fail-back	Management is used for management and reporting, HA is not relevant for such solution. Each site should have capability to manage all appliances. Suggested Clause: Management should be installed at each site with all IPS device management	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
84	148	Section V: Technical Specifications 38. IPS/IDS D. Management 6.	NIPS solution should provide Intelligent security management:- ■ Intelligent alert correlation and prioritization ■ Robust malware investigation dashboards ■ Preconfigured investigation workflows	Solution should provide real time and historical reporting along with forensics for granular analysis. Suggested Clause: NIPS solution should provide reporting and forensics.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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			■ Scalable web-based management		
86	167	Section V: Technical Specifications / i. Fiber Patch cord assembly OM5 MPO to MPO, Male/Female	Flame Test Method :- IEC 60332-3/IEC 60332-1, IEC 60754-2, IEC 61034-2, IEEE-383,	IEEE383 required for the nuclear power plant / industrial application. And not for the controlled environment like DC. Hence request to remove this point or made it optional.	Kindly refer revised Specification in Annexure-B
87	170	Section V: Technical Specifications / v. Intelligent fiber panel- MPO type, OM5	Patch cord compatibility :- Intelligent patch panel shall provide a button and an LED indicator at every panel port to enable easy tracing and identification of patch connections in the telecom room.	button is to provide tracing and identification functionality; the same functionality can be achieved by a single button on panels and LEDs on every panel port. Please include else this is OEM specific.	Kindly refer revised Specification in Annexure-B

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88	170	Section V: Technical Specifications / v. Intelligent fiber panel- MPO type, OM5	Patch cord/wire manager :- Panel shall have inbuilt rear cable manager and from patch cord manager including visible label plate	The intelligent panels require free access to panel front for patching changes and Led guided tracking functionality using button and LEDs. Hence separate patchcord manager is preferred. Please consider the request to include the same.	Kindly refer revised Specification in Annexure-B
89	173	Section V: Technical Specifications / iii. Fiber Modular Cassette OM4 MPO – LC	Approximate dimension :- 25mm (H) X 95mm (W) X 115mm (D)	This is OEM specific; the cassettes dimensions will change depending on the product specification/ Trays.	Kindly refer revised Specification in Annexure-B
90	178	Section V: Technical Specifications / 49. & 52 Intelligent AIM system Monitor	AIM System Monitor should be fully Integratable with existing AIM system software at DC for seamless operation.	Existing / New AIM System Monitor should be fully Integratable with existing / new AIM system software at DC for seamless operation	Kindly refer revised Specification in Annexure-B
91	178	Section V: Technical Specifications / 49. & 52 Intelligent AIM system Monitor	AIM monitor display system should have the capacity to monitor at least two RACKs	Bidder shall configure one AIM system monitor to monitor a minimum of two server racks to a maximum of 8 Server racks , as per system capability	Kindly refer revised Specification in Annexure-B

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92	265	Section VII: Scope of Work / 8.1.2 / Integration with existing AIM at DC	The Automated Infrastructure Management (AIM) solution proposed by Contractor for the 70 S/R shall seamlessly integrate and shall be interoperable with the existing AIM solution and work as a single entity. All 70 S/R shall be intelligent enabled where all the connectivity within the rack shall also be monitored via the AIM system. The AIM solution shall monitor the complete connectivity between N/R racks and S/R racks; therefore, the software shall provide the complete end to end circuit trace (including the active equipment port) between N/W and S/R on the same window and shall also appear	This is specific to an OEM.Request to amend the AIM solution shall monitor the complete connectivity between N/R racks and S/R racks; therefore, the software shall provide the complete end to end circuit trace (including the active equipment port) between N/W and S/R on the same window and shall also appear <u>on the rack controller or portable display or web client of the software when prompted physically from the rack or software interface.</u>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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			on the rack controller when prompted physically from the rack.		

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93	265	Section VII: Scope of Work / 8.1.2 / Integration with existing AIM at DC	(2) The integration of existing and new AIM with EMS for the Alarms or any other events	Please confirm that Integration will be developed with existing AIM software of the previous vendor and not to their hardware directly. For the integration administrative rights, Database access, Proper documentation, release notes, SDK license, APIs of existing AIM should be arranged by the customer from the previous vendor	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
94	265	Section VII: Scope of Work / 8.1.2 / Integration with existing AIM at DC	In case Contractor proposes cabling from existing OEM in this bid, the Contractor may use existing AIM Hardware and Software with extra licenses as required, provided there are no constraints on performance. In case of any scalability/performance issues envisaged with existing AIM Hardware and/or Software, the Contractor may provide the relevant and appropriate AIM Hardware and / or	Kindly confirm , as per the clause In case contractor proposes cabling from a new OEM , can they provide relevant hardware and software with required licenses of a new AIM system.	Bidder may bring a new Intelligent cabling OEM with relevant hardware and software , licenses and complete cabling infrastructure subject to integration with existing (networking and servers infrastructure) without any service break.

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			software with required licenses.		
95	265	Section VII: Scope of Work / 8.1.2 / Integration with existing AIM at DC	In General, it's bidder responsibility to provide additional licenses, hardware, software etc. in existing AIM solution for integration with New AIM	Kindly confirm , as per the clause In case contractor proposes cabling from a new OEM , can they provide relevant hardware and software with required licenses of a new AIM system.	Bidder may bring a new Intelligent cabling OEM with relevant hardware and software , licenses and complete cabling infrastructure subject to integration with existing (networking and servers infrastructure) without any service break.

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96	215	PART B (7. EMS Solution) Technical Specifications Point No. 4	The proposed solution should include hardware(s) and software(s) (including web application stack, database, any servers etc. required for accomplishing the scope of work and requirements) with operating system(s). Bidders must keep in mind the future and scalability of requirements (mentioned in these specs) before deciding for a hardware configuration. 1. Also, the sizing of the computing in the proposed hardware should be sufficient enough to cater to futuristic projection of IT/Non-IT equipment mentioned in this bid. 2. Moreover, the specifications of the proposed computing	Please Clarify that the Hardware sizing for EMS software need to be done considering total 2800 IT Elements or considering max scalable capacity (i.e. 1000IT & 10000 Non IT Elements) from day one.	The hardware sizing needs to be done considering the max scalable capacity sought in specifications primarily point number 4 ,5, 6 of General Requirements along with other specifications of EMS Technical Specifications from Day#1 .Also, refer to revised technical specifications of EMS point #6 in Annexure-B

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			<p>hardware must be chosen so as to ensure that only 70% of the CPU and RAM are utilized at any point in time. In case a higher CPU / RAM than this defined threshold is observed for more than an aggregated 60 minutes per day, the bidder shall upgrade/replace (with higher specifications) the hardware within 31 working days. Otherwise, equipment will be considered down and SLA/Penalty will be applicable. 3. The specifications of the proposed computing hardware and overall solution must be sufficient enough to handle infrastructure of such 3 additional data centres (i.e. 3 times the</p>		

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			sought items of BoM).4. The proposed solution (hardware + software) must be scalable in future. The application should be 64-Bit Application and run on 64-bit architecture.However, it may be noted by bidder before proposing the solution that no server or any other hardware is allowed to kept at remote locations for monitoring or management i.e. w.r.t EMS.Also, refer to revised EMS Specifications Point #6		

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97	216	PART B (7. EMS Solution) Technical Specifications Point No. 5	The overall solution should be provided in High Availability mode. There should be seamless automatic successful switchover/handover (in failure cases) between the two instances. Each instance of applications / modules should execute at different physical servers. The servers should be of industry standard and data center compatible. Each instance should be able to manage & monitor complete infrastructure at DC, DR & Remote Locations. SI must ensure the automatic sync of all relevant data amongst the different data bases of the instances. There shouldn't be any data	Please clarify that the HA is required at DC Location separately and DR location separately OR Separate installation at DC and DR will be considered as HA.	Two instances are sought to form a HA as per the design considered. One Instance at DC and Another at DR & Each Instance to have local HA(s) . Additionally, refer# EMS Technical Specifications for more detailed understanding. <i>Also, refer the Note#2 of General Requirements of EMS Technical Specifications point#5 i.e. Bidder may propose an alternate design / solution in combination full-filling the sought requirements, if required. SI may add any other third party components (such as a backup solution etc.) to achieve this requirement.</i>

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			<p>loss during or after completion of sync. The SI must budget to provide the relevant hardware / software (if any) which can sync EMS & its module's data from DC to DR and vice versa (DR to DC sync is applicable in special cases when DC or DC's connectivity with MPLS Network went down and comes back). The software must only sync the delta (i.e. changed part) every time to maintain whole database sync. It must be noted that HA is provided on two instances running on different physical servers, SI must ensure :</p> <ul style="list-style-type: none"> • To provide another third instance at DR, which may remain passive (or active) until complete 		

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			<p>DC is down and/or DC disconnects from the MPLS network and/or as per any other similar/ required scenario. • When the link between DC to MPLS network or DC and DR goes down & a DC instance is still in active state monitoring the DC equipment, the instance at DR must began to monitor and manage DR infrastructure and remote locations. • Also, when the link between DR to MPLS network or DC and DR goes down & DC instance is still in active state monitoring DC equipment and remote locations, the instance at DR must began to monitor and manage DR infrastructure. • The data (such as alarms or</p>		

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			<p>application data etc.) received/generated at DR must be synced with DC instance, when DC-DR link comes back or DC/DR join back the MPLS network. Also on such occasions, whenever the DC and DR instance are running actively at same point of time, overall solution should not require any additional licenses. Sufficient licenses for the solution should be provisioned to handle such scenarios i.e. ensuring DC and DR instance can run without the need for any extra license. • SI must create Standard operating procedure document for (if required) replicating the data (from all of the supplied modules) from DC to DR on</p>		

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			<p>regular basis with a periodicity allowed to be defined (between 30min to 5 days).</p> <p>Note1: Each instance of the application provided e.g. One instance of the EMS solution while working in HA mode (as an example) should be able to manage and monitor the 100% of the infrastructure (mentioned above i.e. all Infra at DC, DR & remote locations and already existing phase-1 infra and its remote locations, etc. as per scope of work) irrespective of its location of execution on a physical server .Note 2: Bidder may propose an alternate design / solution in combination full-filling the sought</p>		

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			requirements, if required. SI may add any other third party components(such as a backup solution etc.) to achieve this requirement.Also, refer to revised EMS Specifications Point #6		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
98	217	PART B (7. EMS Solution) Technical Specifications Point No. 6	The proposed software and hardware should be scalable to accommodate network growth of upto 10,000 IT Devices (~2500 Networking Devices , ~7500 Servers, etc.) and 10,000 non-IT devices. The hardware (servers/ databases/ respective storage and computing) planned to be supplied with the EMS solution should be capable to handle the data from these many number of IT and Non IT devices (including their alarms, backups, configurations etc. for duration of contract without any upgrade).The solution should allow 50 simultaneous (concurrent) users while performing the CPU & RAM intensive operations and a	Please Clarify that the Software & Hardware sizing for EMS software need to be done considering total 2800 IT Elements or considering max scalable capacity (i.e. 1000IT & 10000 Non IT Elements) from day one.	The hardware sizing needs to be done considering the max scalable capacity sought in specifications primarily point number 4 ,5, 6 of General Requirements along with other specifications of EMS Technical Specifications from Day#1 .Also, refer to revised Technical specifications of EMS point#6 in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			capability to support futuristic scalability requirements.Also, refer to revised EMS Specifications Point #6		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
99	218	PART B (7. EMS Solution) Technical Specifications Point No.11	The solution should be accessible via the intranet and internet in the secured manner. However, the solution i.e. any of the modules should not connect to Internet for accomplishing any required features asked in this solution e.g. fetching geo-maps for any functionality, and not even for the updates / upgrades etc. It should have in-built or capability to use custom maps as background and the updates/upgrades of the solution should be possible via non-internet mechanisms.Solution be bundled with Data base /Data store encryption for Documents encryption and decryption using AES 256 bit cipher.The	Please clarify that the required Threat Protection module is must be from EMS OEM or third party Software can also be provided.	The Bidder is allowed to include the third party software as well for these sought features.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>solution should only be accessed by secure browser supporting SSL 128 bit and SSL 256 bit encryption ciphers and without SSL there should be restriction/ control on the solution so as to prevent malware attacks, virus attacks, browser based attacks, ransomware attacks. The encryption should be performed via an industry standard ciphering algorithm. The solution must have in-built AES 256bit encryption for monitoring data and session within the platform.</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
100	219	PART B (7. EMS Solution) Technical Specifications Point No.15	The solution should work without any agent installation for most (90%+) of the use-cases/requirements mentioned in this document, however specific uses-cases that are not supported without agent , are allowed by using agent-based deployment. All the uses-cases/updates should be fulfilled without any requirement of internet connection. The agent or agent-less communication should be secured.	Please clarify that the solution should be agentless or agentless for most (90%+) of the use cases whereas in the same specification list point No. 31 that (There should not be any agent on the managed node, and the overall solution must provide the system performance data).	Solution supplied should function in agent & agentless mode simultaneously. However, there are certain use cases/requirements(~10% of total use cases sought in EMS requirements) pertaining to servers which may not be possible in agentless deployment , and hence in such cases agent based deployment may be required and certain customizations(for such 10% of total use cases sought in EMS requirements) in agent/solution may be required to suffice the complete requirement/use case. Also, refer Annexure-B , for revised Point 31 of EMS Specs .

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
101	219	PART B (7. EMS Solution) Technical Specifications Point No.16	Should integrate with a proposed Automated Infrastructure management(AIM) solution (Comprising of Intelligent Cabling Management and other features) using REST APIs / SNMP so as the alarms,events can be monitored & managed from EMS. Bidder must also integrate with an already existing (Phase-1) AIM solution at DC (refer Scope of work for details). Integration should be on API level/SNMP without any requirement of installing any 3rd party software.	Details to be shared for the existing AIM Solution.	Please refer to Section VII: Scope of Work , 1.1 Other Tenders Floated for the Project , Refer Bid# GEM/2021/B/1539956

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
102	246	PART B (7. EMS Solution) Technical Specifications Point No.258	<p>The applications (solution) per hardware should be installed as follows and must work in High Availability Mode:The bidder may also suggest the optimized solution for effective/smooth execution of modules/application. However , it will be decision of ERNET India will be final in this regard.Server#One to host apps : DCIM+RLPAT Solution+ Solution for Heat and Humidity Sensors.Server#Two to host apps : EMS(including its all components such as Network Device Management, Device Configuration Management, Network Performance</p>	Kindly Coonfirm if the EMS Soluins has to be deployed by direct OEM team or can be done by third party.	Please refer to Section VII: Scope of Work ,"General Activities to be performed byContractor for the project" Pt#12.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			Management , IPAM, Switch Port Management, Change Management, Network Asset Management etc.) , Automated Infrastructure Management etc. The AIM is also allowed to be installed on a separate server as well.Server#Three to host apps : IT Helpdesk Tool.Server#Four to host apps : AAA Server.Server#Five to host apps : Active Directory (with DNS , DHCP etc.) - may be combined in Server # Four in a VM based configuration.A replica of above is to be provided at DR.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
103	98	14. DR Spine Switch/b. Security Feature	b. Port, VLAN & Routed ACL, 16K ACL Entries /extended ACL/ terms /Traffic Policy ACL IP Prefixes ,GRE (Must Support 1000 or Higher GRE Tunnels & 1000 VXLAN Tunnels)	<p>The word "terms" used is ambiguous and gives no clarity, please remove the same from clause. As segmentation is more relevant for a DC environment, please allow it as an option along with ACL requirement. Also as GRE tunnels are rarely used inside a spine switch, please make it optional with VXLAN tunnels. The clause is requested to be modified as below:"b. Port, VLAN & Routed ACL, 16K ACL Entries /extended ACL/terms/Traffic Policy ACL IP Prefixes/group based segmentation entries ,GRE (Must Support 1000 or Higher GRE Tunnels or 1000 VXLAN Tunnels)"</p> <p>Group based segmentation is a technique to apply ACL to provide traffic filtering. Group based segmentation uses groups and then applies access control between groups which simplifies the access control management when compared with line-by-line approach of the ACL. Group based segmentation also provides a higher scale when compared to ACL asked in RFP. Request you to allow the change. b. Port, VLAN & Routed ACL, 16K ACL Entries /extended ACL/terms/Traffic Policy ACL IP</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
				Prefixes/ group based segmentation entries ,GRE (Must Support 1000 or Higher GRE Tunnels or 1000 VXLAN Tunnels)"	

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
104	98	14. DR Spine Switch / Number of 100G QSFP28 Port	120 or higher (expandable up to 240 ports)	As per DR the total number of switches which will connect to Spine Switch is lesser than 120 Qty, so adding a Chassis with 240 ports will only increase the Cost, so request you to please change this clause as per below "120 or higher"	Kindly refer revised Specification in Annexure-B
105	98	14. DR Spine Switch/Number of 100G QSFP28 Port / No. of Interface Slots	8 or higher	As per DR the total number of switches which will connect to Spine Switch is very lesser, so adding a 8 Slot Chassis will only increase the Cost, so request you to please change this clause as per below "4 or higher"	Kindly refer revised Specification in Annexure-B
106	99	14. DR Spine Switch/Management Solution	Datacentre Fabric Management solution that supports unified management to fabric including spine and leaf switches with Zero Touch provisioning of all DC Fabric Nodes.	The clause provides the specification of the DR Spine, so request to change the clause as " DR Fabric Management solution that supports unified management to fabric including spine and leaf switches with Zero Touch provisioning of all DR Fabric Nodes." for more clarity.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
107	99	14. DR Spine Switch/Management Solution	Fabric Management solutions should provide Advanced telemetry that can collect streaming telemetry data from switches and monitor and get alerts on data transfers across a fabric.	Request to change the clause as "Fabric Management solutions should provide Advanced telemetry that can collect streaming telemetry data from all DR switches and monitor and get alerts on data transfers across a fabric." for more clarity.	Kindly refer revised Specification in Annexure-B
108	99	14. DR Spine Switch/Management Solution	Should support creation of Service Level Agreements in one central location and alert any time there is a deviation from defined properties.	Request to change the clause as "Should support creation of Service Level Agreements/ custom events to create SLA (Issue reporting to issue resolution time) in one central location for all DR switches and alert any time there is a deviation from defined properties." for more clarity.	Kindly refer revised Specification in Annexure-B
109	99	14. DR Spine Switch/Management Solution	Should have ability to check the compliance of devices and services across the entire fabric.	Request to change the clause as "Should have ability to check the compliance of devices and services across the entire fabric in the DR. " for more clarity.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
110	99	14. DR Spine Switch/Management Solution	Hardware and software (Compute & Storage) required for Fabric Manager & Element Managers shall be provided from day 1	Element manager is part of the EMS solution, so please remove it from Spine management solution. Request to change the clause as "Hardware and software (Compute & Storage) required for Fabric Manager & Element Managers shall be provided from day 1" for more clarity and wider OEM participation.	Kindly refer revised Specification in Annexure-B
111	99	14. DR Spine Switch/Management Solution	Should support 900K IPv4 Routes, 900K IPv6 Routes , 100K IPv4/v6 Multicast Routes.	As the spine works as underlay and does not require high number of routes. Please reduce the routes asked, with no functional deterioration and change the clause as "Should support 256K IPv4 Routes, 128K IPv6 Routes , 100K IPv4/v6 Multicast Routes." This will have cost reduction as the current specs asked are oversized in nature and will not be used spine works as underlay and does not require high number of routes.	Kindly refer revised Specification in Annexure-B
112	100	15. DC Leaf Switch/No. of 100G QSFP+ Port	4 or higher	Two ports are enough to provide redundancy and load sharing towards the spine. Please reduce the number of ports to " 2 or higher " for a more cost effective solution with no compromise on network bandwidth/throughput.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
113	101	16. DR Leaf Switch/No .of 100G QSFP+ Port	4 or higher	Two ports are enough to provide redundancy and load sharing towards the spine. Please reduce the number of ports to " 2 or higher " for a more cost effective solution with no compromise on network bandwidth/throughput.	Kindly refer revised Specification in Annexure-B
114	100	15. DC Leaf Switch/Switching Capacity (Non-Blocking) (Gbps)	1280 or higher	With 2x100G ports the equivalent capacity asked should be " 880 or higher ". So please change the clause accordingly.	Kindly refer revised Specification in Annexure-B
115	101	16. DR Leaf Switch/Switching Capacity (Non-Blocking) (Gbps)	1280 or higher	With 2x100G ports the equivalent capacity asked should be " 880 or higher ". So please change the clause accordingly.	Kindly refer revised Specification in Annexure-B
116	100	15. DC Leaf Switch/d. QoS	d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb,802.1Qaz,8queues/port, Remarking of bridged packets	As there is not SAN/FCoE traffi in the same network, please remove the " 802.1Qaz " from the clause for wider OEM participation and change the clause as "d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb, 802.1Qaz ,8queues/port, Remarking of bridged packets" Request to make the chnage as This will allow us to participate.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
117	101	16. DR Leaf Switch/d. QoS	d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb, 802.1Qaz ,8queues/port, Remarking of bridged packets	As there is not SAN/FCoE traffi in the same network, please remove the " 802.1Qaz " from the clause for wider OEM participation and change the clause as "d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb, 802.1Qaz ,8queues/port, Remarking of bridged packets" Request to make the chnage as This will allow us to participate.	Kindly refer revised Specification in Annexure-B
118	102	17. DR OOB Core Switch/No of 10G SFP/SFP+ Ports	Minimum 48 Nos	As the number of OOB access switches in BoQ is 60, so need to increase the number of ports in the Core switch to accommodate the switches. Request to change the clause as " Minimum 80 Nos " where 60 will be used on day 1 and 20 can be kept for furure extension.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
119	102	17. DR OOB Core Switch/Switchin g Capacity (Non-Blocking) (Gbps)	2160 or higher	Kindly change the requirement according the change in the number of ports as " 2640 or higher " As per the calculation of number of ports.	Kindly refer revised Specification in Annexure-B
120	103	18. DC OOB Access Switch/Number of 10G SFP+ Port(Uplink)	4 or higher	For a switch with 48x1G ports, 2 ports of 10G ports are enough to provide sufficient upink bandwidth and redundancy towards two core switches as asked in the RFP. Request to change the clause as " 2 or higher "	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
121	105	19. DR OOB Access Switch/Number of 10G SFP+ Port(Uplink)	4 or higher	For a switch with 48x1G ports, 2 ports of 10G ports are enough to provide sufficient uplink bandwidth and redundancy towards two core switches as asked in the RFP. Request to change the clause as " 2 or higher "	Kindly refer revised Specification in Annexure-B
122	194	63. Layer 3 Access Switch (48 Ports)/Number of 10G SFP+ Port(Uplink)	4 or higher	For a switch with 48x1G ports, 2 ports of 10G ports are enough to provide sufficient uplink bandwidth and redundancy. So, please change the clause as " 2 or higher "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
123	103	18. DC OOB Access Switch/Number of 40GQSFP+ Port (Uplink)	2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers	Please remove/modify port speed of uplinks and the clause may be changed as below"63. Layer 3 Access Switch (48 Ports)/Number of stacking/uplink Port "Stacking/MLAG of 20Gbps is more than sufficient for the switch requirement. Request to change the clause as "2 or higher with minimum 20Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers/cables" 20 GBPs is considered with 2 Nos of 10G SFP+ uplink ports request given in query above.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
124	105	19. DR OOB Access Switch/Number of 40GQSFP+ Port (Uplink)	2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers	<p>Please remove/modify port speed of uplinks and the clause may be changed as below "63. Layer 3 Access Switch (48 Ports)/Number of stacking/uplink Port "</p> <p>Stacking/MLAG of 20Gbps is more than sufficient for the switch requirement. Request to change the clause as "2 or higher with minimum 20Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers/cables" 20 GBPs is considered with 2 Nos of 10G SFP+ uplink ports request given in query above.</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
125	194	63. Layer 3 Access Switch (48 Ports)/Number of 40GQSFP+ Port (Uplink)	2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers	<p>Please remove/modify port speed of uplinks and the clause may be changed as below "63. Layer 3 Access Switch (48 Ports)/Number of stacking/uplink Port "</p> <p>Stacking/MLAG of 20Gps is more than sufficient for the switch requirement. Request to change the clause as "2 or higher with minimum 20Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers/cables" 20 GBPs is considered with 2 Nos of 10G SFP+ uplink ports request given in query above.</p>	Kindly refer revised Specification in Annexure-B
126	103	18. DC OOB Access Switch/Switching Capacity /Forwarding Bandwidth(Non-Blocking) (Gbps)	336 or higher	Kindly change the clause as per the changes asked in the uplinks/stacking/MLAG ports as " 176Gbps or higher"	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
127	105	19. DR OOB Access Switch/Switching Capacity /Forwarding Bandwidth (Non-Blocking) (Gbps)	336 or higher	Kindly change the clause as per the changes asked in the uplinks/stacking/MLAG ports as " 176Gbps or higher"	Kindly refer revised Specification in Annexure-B
128	194	63. Layer 3 Access Switch (48 Ports)/Switching Capacity /Forwarding Bandwidth (NonBlocking) (Gbps)	336 or higher	Kindly change the clause as per the changes asked in the uplinks/stacking/MLAG ports as " 176Gbps or higher"	Kindly refer revised Specification in Annexure-B
129	103	18. DC OOB Access Switch/Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP	VxLAN+EVPN are latest protocols that are commonly used in network equipments to achieve higher flexibility and resiliency at network layer. So, please include it in protocols as per the change suggested below " VRF Lite, VRF, VRRP, VxLan+EVPN "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
130	105	19. DR OOB Access Switch/Switching Capacity /Premium Layer-3 Protocol	VRF Lite, VRF, VRRP	VxLAN+EVPN are latest protocols that are commonly used in network equipments to achieve higher flexibility and resiliency at network layer. So, please include it in protocols as per the change suggested below	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
		support		" VRF Lite, VRF, VRRP, VxLan+EVPN "	
131	194	63. Layer 3 Access Switch (48 Ports)/Switching Capacity /Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP	VxLAN+EVPN are latest protocols that are commonly used in network equipments to achieve higher flexibility and resiliency at network layer. So, please include it in protocols as per the change suggested below " VRF Lite, VRF, VRRP, VxLan+EVPN "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
132	108	21. DR CE Router/ Internal WAN Router/Routing Engine	The Router should be populated with redundant Routing Card/Engines and/or should have multi processors	Please change the clause as " The Router should be populated with redundant Routing Card/Engines and/or should have multi-core processors ". These router are already asked 2 in qty in HA mode so redundancy is taken care of already through HA mode. Relaxing this point will allow us to participate in the RFP.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
133	108	21. DR CE Router/ Internal WAN Router/Port population	Should be supplied with 12 numbers of 100G QSFP28 ports with nonblocking architecture and wire-speed from day 1	A router with two ports of 100G connecting to the internal network and additional six ports connecting to WAN can cater a big sized network. So, please change the clause as "Should be supplied with 6 numbers of 100G QSFP28 ports with nonblocking architecture and wire-speed from day 1" for more cost effective and workable solution.	Kindly refer revised Specification in Annexure-B
134	118	31. Remote Router/ Firewall – 2Gbps (In Remote Sites) Option I/RoutingProtocols from day-1	ospf,bgp,mpls,rsvp,ldp, l3vpn,l2vpn,mpls-te	Segment routing is newer and preferred technology than rsvp, so please make rsvp optional to segment routing as mentioned in the clause below "ospf,bgp,mpls,rsvp/ segment routing ,ldp,l3vpn,l2vpn,mpls-te"	Kindly refer revised Specification in Annexure-B
135	119	31. Remote Router/ Firewall – 2Gbps (In Remote Sites) - Option II/RoutingProtocols from day-1	ospf,bgp,mpls,rsvp,ldp, l3vpn,l2vpn,mpls-te	Segment routing is newer and preferred technology than rsvp, so please make rsvp optional to segment routing as mentioned in the clause below "ospf,bgp,mpls,rsvp/ segment routing ,ldp,l3vpn,l2vpn,mpls-te"	Kindly refer revised Specification in Annexure-B
136	118	31. Remote Router/ Firewall – 2Gbps (In Remote Sites) Option I/Security	Stateful firewall, distributed dos , ipv6 , nat, 802.1x	Please change the clause as " Stateful firewall, DoS/distributed-dos , ipv6 , nat, 802.1x" for wider OEM participation.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
		Protocol			
137	120	31. Remote Router/ Firewall – 2Gbps (In Remote Sites) - Option II/Remote Firewall (In Remote Sites)/Security Protocol	Stateful firewall, distributed dos , ipv6 , nat, 802.1x	Please change the clause as " Stateful firewall, DoS/distributed-dos , ipv6 , nat, 802.1x" for wider OEM participation.	Kindly refer revised Specification in Annexure-B
138	253	B.Original Equipment Manufacturer (OEM)'s Criteria	The OEMs of Server, Networking equipment(s), firewalls & Intelligent Cabling should have Positive Net Worth as on 31/03/2022. A certificate from a practicing Chartered Accountant (with UDIN of the CA) on its letter head confirming positive net- worth has to be provided along with the bid.	The OEMs of Server, Networking equipment(s), firewalls & Intelligent Cabling should have Positive Net Worth as on 31/03/2022. A certificate from a practicing Chartered Accountant (with UDIN of the CA) on its letter head confirming positive net-worth has to be provided along with the bid or last FY audited financials should be publicly listed and should be available in public domain for download.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
139	254	B.Original Equipment Manufacturer (OEM)'s Criteria	a. In DC, all Networking equipment(s) should be from same OEM. Name of such equipment(s) are Leaf Switch and OOB Switch.	<p>Please change the clause as below to clarify the ambiguity that the proposed devices need not necessarily be from the incumbent OEM</p> <p>"a. In DC, all the new proposed Networking equipment(s) should be from same OEM. Name of such equipment(s) are Leaf Switch and OOB Switch. These new leaf switches should be seamlessly integrated by existing/new /new management and Automation Solution."</p>	<p>Clause may be read as: In DC, all the new proposed Networking equipment(s) should be from same OEM. Name of such equipment(s) are Leaf Switch and OOB Switch, Core Switch.</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
140	264	8. Role and Responsibilities of Contractor i.r.o Integration of DCequipment(s) with Phase-1 IT equipment(s):	3) The existing Data center is under implementation with open standards Leaf and Spine architecture. The Additional Leaf Switch procured through this tender must be fullyintegrated with existing Spine Switch of phase-1 to make it a part of existing DC Fabric. These new leaf switches should be seamlessly managed by existing controller. This is to ensure that the New and existing networking environment of Data Center works as a single unit and can be used seamlessly.	For new OEMs to participate in the RFP and for better multi-OEM support, the clause is suggested to be modified as below"3) The existing Data center is under implementation with open standard (VxLAN-EVPN) Leaf and Spine architecture. The Additional Leaf Switch procured through this tender must be integrated either with existing Spine Switch of phase-1 or new spines in HA with adequate numbers of 100G ports that has to be provided . These new leaf switches should be seamlessly integrated by existing/ new /new management and Automation Solution. The new management plane solution if proposed preferrably should be open source solution with premium support has to be provided with licenses to manage existing and new switches from single or multiple OEMs. The proposed product must have detailed plugins available for the existing and new switches and should have wider OEM integration support for future scalability and should not require any agent to be installed in the switches."	<p>Clause may be read as:3) Option1: The existing Data center is under implementation with open standards Leaf and Spine architecture. The Additional Leaf Switch procured through this tender must be fully integrated with existing Spine Switch of phase-1 to make it a part of existing DC Fabric. These new leaf switches should be seamlessly managed by existing controller. This is to ensure that the New and existing networking environment of Data Center works as a single unit and can be used seamlessly.</p> <p>OR</p> <p>Option2: The existing Data center is under implementation with open standards Leaf and Spine architecture. In Case, OEM differs from Existing OEM, Bidder/Contractor may offer its new spine switches (in HA mode) from other OEM to create point of delivery (PoD) for 70 Racks with minimum of 180 interfaces of 100 G (loaded with 160 no. of QSFP28 transrecievers in each spine switch). These new 70 rack spine should be integrated with existing 30 rack spine(existing PoD) on Control and Data Plane. Both PoDs (Old and new) will be managed through individual OEM's fabric managers independently. (Any additional hardware(s), software(s) and license(s) required for integration of the Option2 architecture with existing PoD will be borne by bidder. General specifications of new spine will be</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
					<p>similar to DR Spine switch specs with throughput according to 180 nos. of 100G port)</p> <p>OR</p> <p>Option3: The existing Data center is under implementation with open standards Leaf and Spine architecture. In Case, OEM differs from Existing OEM, and bidder/New OEM does not offer its new spine switch to create point of delivery (PoD) for 70 Racks then New OEM (other than existing OEM) may also bring a industry recognised standard management tool for seamless integration (at Data, Control and Management plane) to integrate existing spine and leaf switches with new leaf procured through this tender. ERNET India will do a PoC of this concept and all resources for PoC to be arranged by Bidder itself.(Any additional hardware(s), software(s) and inbuilt perpetual license(s) required for seamless integration of the Option3 architecture with existing architecture will be borne by bidder)</p>

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141	264	8. Role and Responsibilities of Contractor i.r.o Integration of DCequipment(s) with Phase-1 IT equipment(s):	4) The Integration of the existing DC with extension of leaf switches is very critical. The existing DC will be made up soon and the extension of the OOB and leaf's Switches should not affect the existing DC architecture, traffic flow, performance, resiliency, overlay, underlay etc. The Contractor needs to perform PoC (proof of concept) as per requirement in existing DC to confirm single fabric unified architecture along with security and Routing functionality desired.	For new OEMs to participate in the RFP and for better multi-OEM support, the clause is suggested to be modified as below"3) The existing Data center is under implementation with open standard (VxLAN-EVPN) Leaf and Spine architecture. The Additional Leaf Switch procured through this tender must be integrated either with existing Spine Switch of phase-1 or new spines in HA with adequate numbers of 100G ports that has to be provided. These new leaf switches should be seamlessly integrated by existing/ new /new management and Automation Solution. The new management plane solution if proposed preferably should be open source solution with premium support has to be provided with licenses to manage existing and new switches from single or multiple OEMs. The proposed product must have detailed plugins available for the existing and new switches and should have wider OEM integration support for future scalability and should not require any agent to be installed in the switches."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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142	253	B.Original Equipment Manufacturer (OEM)'s Criteria	The product (same or similar type as per BoM) offered by OEM should have been supplied and installed (as listed below in last five years) to any Central/State Government/ Govt. undertakings / UT's/ Autonomous Bodies/Public Listed Companies in India from 01/03/2018 to 28/02/2023. Copies of relevant documents in this regard should be submitted to the satisfaction of ERNET India.	The product (same or similar type as per BoM) offered by OEM should have been supplied and installed (as listed below in last six years) to any Central/State Government/ Govt. undertakings / UT's/ Autonomous Bodies/Public Listed Companies in India from 01/03/2017 to 28/02/2023. Copies of relevant documents in this regard should be submitted to the satisfaction of ERNET India.	Clause may be read as: The product (same or similar type as per BoM) offered by OEM should have been supplied and installed (as listed below in last six years) to any Central/State Government/ Govt. undertakings / UT's/ Autonomous Bodies/Public Listed Companies in India from 01/03/2017 to 28/02/2023. Copies of relevant documents in this regard should be submitted to the satisfaction of ERNET India.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
143	45	12) SLA during warranty period and penalties thereof:	viii. The overall Penalties for non-adherence with the SLA of warranty support (during 2nd & 3rd year of warranty period) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment (CAPEX). In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2.	We request to cap the maximum penalty to 5% of the respective quarterly payment for relevant component/software as 25% is very high.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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144	48	6. Timeline for Delivery, Installation, testing, commissioning & Acceptance:	Delivery, Installation, Testing & Commissioning of EMS & DCIM Solution(H/w and S/w) for DC & their integration with DC, existing Phase-1 Hardware and remote sites of previous milestone(s). Offering of this infrastructure under Milestone-2 for AT to ERNET India as per ATP .	Kindly confirm whether these existing devices are part of the 10000 devices for which the system has to be sized. We also request to share the details of existing equipment(server,network switches,routes etc.) for proper sizing.	Yes For the existing hardware refer to Clause1.1 "Other Tenders Floated for the Project" - Section VII: Scope of Work
145	212	1. Data Center Infrastructure Management (DCIM), RF Id Based Rack Level Live Physical Asset Tracking & Heat Humidity Sensor Solution	3. The specifications of the proposed computing hardware and overall solution must be sufficient enough to handle infrastructure of such 3 additional data centres (i.e. 3 times the sought items of BoM).	Kindly confirm whether the additional 03 datacenters(03 times the items sought items of BoM) are part of the 10000 devices to be monitored.	Kindly refer revised Specification in Annexure-B. This 10,000 is now revised to 5,000 Yes , 5,000 covers the additional 3 data center requirements Also, refer to revised Technical specifications of EMS point#6

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146	216	7. EMS Solution	5. The overall solution should be provided in High Availability mode. There should be seamless automatic successful switchover/handover (in failure cases) between the two instances. Each instance of applications / modules should execute at different physical servers. The servers should be of industry standard and data center compatible. Each instance should be able to manage & monitor complete infrastructure at DC, DR & Remote Locations. • To provide another third instance at DR, which may remain passive (or active) until complete DC is down and/or DC disconnects from the	We understand that the HA is required at DC as well DR site i.e 02 instances in HA at DC and 02 instances in HA at DR, kindly confirm. We also understand that the 01 instances at DC shall be able to monitor the whole infra at DC & remote locations in case of HA instance goes down, similarly the 01 instances at DR will monitor DR infra normally in case of HA instance goes down. Also the DR instance will monitor complete infra in case of Disaster or failure of complete DC, Kindly confirm	Two instances are sought to form a HA as per the design considered. One Instance at DC and Another at DR & Each Instance to have local HA(s) . Pls refer to the details carefully for further for HA requirements.

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			MPLS network and/or as per any other similar/ required scenario.		

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147	222	7. EMS Solution	32. Users must be able to choose the thresholds (high and low) for when an alarm and/or warning will activate, along with the points for the severity level. Users must be able to acknowledge and filter alarms. Alarms should have a way to prioritize more important alarms. The solution shall include an alarm history page where all system alarms are stored. Users should be able to search for previous alarms by site, device, or point.should be able to manage and display alarms/events/alerts, store them and should allow creation of new alarms/events/alerts from scratch with customizable threshold limits.The	Since alarms are based upon the evnets generated at devices and not created manually, creating the alarms/events/alerts from scratch here means that in case of change in threshold the alarms/events/alerts are now created based upon the threshold, kindly confirm and ammend the clause as "Should be able to manage and display alarms/events/alerts, store them and with customizable threshold limits"	Creating the alarms/ events/ alerts from scratch here means that in case of change in threshold the alarms/events/alerts are now created based upon the new thresholds. Refer to the revised Clause 32 of EMS Specifications in Annexure-B.

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			threshold may be applied to any valid parameters which are being monitored per device .		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
148	224	7. EMS Solution	51. Should provide Risk Visibility Dashboards of network infrastructure	We understand that the risk visibility dashboard of NMS should provide details of server OS versions, network switch/router versions & configuration which is not as per defined policy.	Risks Dashboards in this context refer to risks arising out of high disk space usage in servers, high memory utilization, processes, CPU Utilization (load/usage) than configured or any risk due to configured security policies (including but not limited to risks arising due to mismatch between Firmware/OS versions on servers / switches / routers , configuration mismatches or any other risks visualized by the EMS .

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
149	287	1. Service Level during Operation & Maintenance period for Equipment:A. For Equipment at DC & DR procured via this bid:	2) For the equipment supplied via this bid, a penalty @ 0.25 % of the equipment(s) cost per day or part thereof for first 24 hours, will be deducted for downtime beyond permissible limit. In case, DCIM, EMS, etc. goes non-functional, a penalty @0.25% per day or part thereof for first 24 hours for respective component will be applicable.4) In case fault persists for more than 24 hours then penalty @0.5 % of equipment cost per day or part thereof will be deducted for downtime beyond permissible limit.5) Penalty of Rs.1000 on per day basis will be charged for equipment(s) whose individual line item price could not be	We understand that as per standards, the penalty for software shall not be applicable for issues like standby/HA down/DR Node Issues/updates/upgrades/bug fixes/minor issues and shall be applicable only in case of complete functionality down, kindly confirm.Also the Penalty for equipment/application/software shall be applicable after 24 Hours, kindly confirmWe also understand that the issues in application/software due to underlying hardware/network/systems shall be excluded from penalty.Kindly also confirm that the penalty shall be applicable to relevant application/software cost for DC only (in case DR is functional then only for DR Cost)We request that the SLA penalty of 0.25% of cost per day be reduced to 0.10% of relevant equipment/software cost.Also the penalty clauses on page 287 are not matching with clauses on page 44/45, we request to kindly consider the above requests and ammend the clauses on page 287 as well accordingly.	SLA O&M Clause 1.A.2 of Section VIII:may be read as For the equipment supplied via this bid, a penalty @ 0.25 % of the equipment(s) cost per day or part thereof for first 24 hours, will be deducted for downtime beyond permissible limit. In case, EMS & DCIM Solution, etc. goes non-functional fully, a penalty(this is applicable for O&M as well as warranty i.e. Section III: General Conditions of Contract(GCC) / 6.4 Warranty6.4.12.iv) @0.10% per day or part thereof for first 24 hours for respective component's total respective solution cost will be applicable for downtime beyond permissible limit. In case fault persists for more than 24 hours then penalty @0.2 % for respective component's total respective solution cost per day or part thereof will be deducted for downtime beyond permissible limit. Page#287 is about SLA in O&M period, Page #44 is about SLA during warranty period(year 2,3)

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			derived from the price bid.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
150	73,75, 78,79, 81, 82, 84, 85, 87, 89, 91, 92, 94	Server (Category- 1,2,3,4,5,6,7,9,10, 11,13, 14, 16) :	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity , Write Intensive, Read (1+ GB/s) Write(500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size	Boot Storage subsystem with Redundant HW RAID 1 having 2 no:s x Enterprise SATA SSD/ M.2 NVMe SSD, Each SSD spec: 400GB Capacity , Read Intensive.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
151	73	Server (Category-1)	12+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology , SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache , 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Storage: 12 no:s x 18 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
152	74	Server (Category-1)	Redundant, maximum 1200 W	Redundant, maximum 1600 W	Kindly refer revised Specification in Annexure-B
153	75	Server (Category-2)	Storage in up to 5U server : 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Storage in up to 5U server: 60 no:s x 18 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
154	75	Server (Category-2)	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60 no:s of HDDs, where all available HDDs in the server should be configurable under a single virtual partition with RAID	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2 GB cache or better, battery or flash backed protection, for the 60 no:s of HDDs, all available HDDs in the server should be configurable under a single pool.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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			5,6,50,60		
155	75, 86, 88	Server (Category-2,9, 10)	Redundant, maximum consumable 2100 W	Redundant, maximum 3200 W	Kindly refer revised Specification in Annexure-B
156	75, 86, 88	Server (Category-2,9, 10)	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
157	78, 93	Server (Category-3, 14)	4+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Storage: 4 no:s x 18 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
158	78, 79, 90, 93	Server (Category-3,4, 11, 14)	Enterprise NVMe drive for caching: Capacity: 3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with	Cache Drive Type: Enterprise NVMe drive for caching: Capacity: 3.2 TB , 3 DWPD	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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			queue depth 1) Endurance 3 DWPD		
159	79, 81	Server (Category-4, 5)	2 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Storage: 2 no:s x 18 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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160	82	Server (Category-6)	2 x 8+ TB Enterprise Drives (Each HDD spec: SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Storage: 2 no:s x 8 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
161	84	Server (Category-7)	16 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Note : Single DAS (upto 5U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.	Storage: 16 no:s x 18 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".Note : Single DAS (upto 5U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
162	84, 90, 93	Server (Category-7, 11, 14)	Redundant ,Maximum consumable 1100 W	Redundant ,Maximum 1600 W	Kindly refer revised Specification in Annexure-B
163	84, 86, 88, 90	Server (Category-7,9, 10, 11)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)	10G ports should be fully populated with required SR Transceivers.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
164	85	Server (Category-9, 10)	Maximum up to 2U Rack Mountable	Maximum up to 5U Rack Mountable	Accepted. Kindly refer revised Specification in Annexure-B

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165	85, 88	Server (Category-9, 10)	60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) Note: Single DAS (upto 5U)expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead. IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Storage: 60 no:s x 18 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".Single DAS (upto 5U)expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
166	86, 88	Server (Category-9, 10)	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60+ no:s of HDDs	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2 GB cache or better, battery or flash backed protection, for the 60 no:s of HDDs.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
167	89	Server (Category-11)	Storage: 8 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Storage: 8 no:s x 18 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5".	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
168	91	Server (Category-13) :	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make), 2 no:s x dual 100G QSFP28 , PCIe 4.0 (NIC: Dual port 100G. Mellanox MCX516A-CDAT ConnectX-5 Ex / Intel E810-2CQDA2)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make), 2 no:s x dual 100G QSFP28 (Make: Mellanox / Intel)	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
169	94	Server (Category-16) :	12+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.	Storage: 8 no:s x 20 TB Enterprise Drives, SAS 12 Gb/s, 7200 RPM, 3.5". Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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216	125	33. DR Internal Firewall IPsec Throughput (Gbps)	150 Gbps (Packetsize:1400Bytes) or Higher	Most of the leading OEMs do provide packetsize for IPsec throughput because through put depends on various factors. To allow wider participation, we would request amdned the clause as "IPsec VPN with AES-GCM-256 at 150 Gbps or Higher"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
217	121	32. Internet Firewall with IPS	2.1 Firewall should support at least 100 Gbps of throughput on 64 byte packets or NGFW throughput of atleast 60Gbps on 64 KB HTTP/appmix . The firewall performance should not degrade while IPv6 is enabled in future	The clause mentioned here needs to be amended to allow other OEMs to participate. We would request to amend the clause to have through put 30 gbps on 64 KB HTTP/appmix.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
218	123	32. Internet Firewall with IPS	6.4 b) SMTP, SMTPS	We understand that the scanning of traffic for malware is required, however, mail traffic to be scanned has to be a separate dedicated solution for anti-virus and anti-spam. The reason is that threats which are in mail traffic will degrade the performance of the firewall as it has to not only open the packet but also any attachments within that email. It is there fore requested to remove the clause.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
219	123	32. Internet Firewall with IPS	6.6 d) IMAP, IMAPS	We understand that the scanning of traffic for malware is required, however, mail traffic to be scanned has to be a separate dedicated solution for anti-virus and anti-spam. The reason is that threats which are in mail traffic will degrade the performance of the firewall as it has to not only open the packet but also any attachments within that email. It is there fore requested to remove the clause.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
220	123	32. Internet Firewall with IPS	6.7 e) FTP, FTPS	Usually firewalls are to create a network segmentation by creating rules to provide segregation. For file transfer protocols clause seems to be specific to OEMs. We request you to remove the clause.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
221	121	32. Internet Firewall with IPS	Firewall should support at least 100 Gbps of throughput on 64 byte packets or NGFW throughput of atleast 60Gbps on 64 KB HTTP/appmix . The firewall performance should not degrade while IPv6 is enabled in future	The requested clause seems contradicting to the clause 2.4,2.6 which is lower in requirement. We would request to amend the clause to change 64 byte packet size to 1518 byte.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
222	122	32. Internet Firewall with IPS	3.7 Firewall solution should support DNS64 & DHCPv6	DNS64 is not a firewall function , OEM specific request you to remove the same	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
223	121	32. Internet Firewall with IPS	1.5 All the features asked should support from day one and should be from same OEM. Any open source and third party solution is not accepted	Most of Firewall OEMs have threat feeds from different threat feed providers. This not only allows to enhance the security but also helps in mitigating the risk. This clause with its current form limits the OEMs participation. We would request you to amend the clause "All the features asked should support from day one. Any open source and third party solution is not accepted"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
224	121	32. Internet Firewall with IPS	2.1 Firewall should support at least 100 Gbps of throughput on 64 byte packets or NGFW throughput of atleast 60Gbps on 64 KB HTTP/appmix . The firewall performance should not degrade while IPv6 is enabled in future	The clause mentioned here needs to be amended to allow other OEMs to participate. We would request to amend the clause to have through put 30 gbps on 64 KB HTTP/appmix.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
225	125	33. DR Internal Firewall Throughput (Real World/Prod Performance) (All Features enabled)(Gbps)	234 Gbps or higher	In the previous corrigendum (point no. 598 page 556) , the throughput was considered as "for pure firewall throughput". We understand that it still stands correct and we should consider that pure firewall throughput only.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
226	125	33. DR Internal Firewall Port population	Should be supplied on day1 with 8x10GBase-SR Transceivers and 12 x100G Base-SR4 Transceivers	OEM specific chasis. Please mention the exact required interfaces as the mentioned ones are too high and limiting the participation. We would request you to amend the clause to "Should be supplied on day1 with 8x10GBase-SR Transceivers and 6 x100G Base-SR4 Transceivers"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
227	125	33. DR Internal Firewall IPsec Throughput (Gbps)	150 Gbps (Packet size:1400Bytes) or Higher	Most of the leading OEMs do provide packet size for IPsec throughput because throughput depends on various factors. To allow wider participation, we would request amend the clause as "150 Gbps or Higher"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
228	126	33. DR Internal Firewall Redundant FAN	Redundant FAN for fully loaded chassis from day 1	Most of the OEMs do not provide chassis based solution. It seems OEM specific. We would request that to amend the clause for wider participation as "Redundant FAN and power supply from day 1"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
229	126	33. DR Internal Firewall Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1	Most of the OEMs do not provide chassis based solution. It seems OEM specific. We would request that to amend the clause for wider participation as "Redundant FAN and power supply from day 1"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
230	121	32. Internet Firewall with IPS	3.1 Firewall should provide application detection for DNS, FTP, HTTP, SMTP,ESMTP, LDAP, MGCP, RTSP, SIP, SCCP, SQLNET, TFTP, H.323, SNMP	In today's environment, ESMTP is an obsolete protocol and is not used in NGFW. Request you to amend the clause as "3.1 Firewall should provide application detection for DNS, FTP, HTTP, SMTP, LDAP, MGCP, RTSP, SIP, SCCP, SQLNET, TFTP, H.323, SNMP"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
231	153	45 Data Diode	Additonal Clause recommended	<p>Traditional diode misses some of the important pillars of the cross domain solution for secure data transfer between two critical networks1. Protocol Break helps protects receiving server from protocol based vulnerabilities in layers 1-72. Directional flow controls helps prevents exfiltration of data when importing or malware attacks when exporting3. Transformation helps to simplifies data to enable it to be reliably verified4. Verification Verifies syntax and semantics of the data to ensure it is correct5. Inspection , Validation including Masking or redaction of critical data6. Sanatization Removes or modifies data to make it appropriate for release7. Ensures the principles behave as expected and cannot be modified or bypassed8. Anti malware scanning9. Many applications which requires any authentication back are not supported by traditional diodes, It also supports not only file transfer but can work accross web services.10. Release control : Ensures data is appropriate for release and only authorised transfers occur</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
236	99	14. DR Spine Switch/d. QoS	d. Virtual output Queue VoQ)/ Egress QoS , WRED,LLQ,PTP,8GB Buffer/ equivalent per line card, 802.1Qbb,8 queues/port, WRR	1. Egress QoS is not equivalent of VOQ, so please remove it from the clause or change it to " equivalent " 2. The word "equivalent" is not appropriate in the clause, as the line card either will have buffer of 8GB or will not. Please remove the "equivalent" option from clause for exact requirement.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
237	99	14. DR Spine Switch/d. QoS	d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP, 8GB Buffer/ equivalent per line card, 802.1Qbb, 8 queues/port, WRR	The word "equivalent" is not appropriate in the clause, as the line card either will have buffer of 8GB or will not. As 8 GB buffer is relevant for specific product category, which is not required in the current requirement. So, request to relax the requirement and change the clause as"d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP, 64MB Buffer per line card, 802.1Qbb,8 queues/port, WRR"	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
238	99	14. DR Spine Switch/d. QoS	d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP, 8GB Buffer/ equivalent per line card, 802.1Qbb, 8 queues/port, WRR	<p>The word "equivalent" is not appropriate in the clause, as the line card either will have buffer of 8GB or will not. As 8 GB buffer is relevant for specific product category, which is not required in the current requirement. So, request to relax the requirement and change the clause as</p> <p>"d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP,64MB Buffer per line card, 802.1Qbb,8 queues/port, WRR"</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
279	165	Network-1,100G Network:	<p>g) Each Leaf switch will have 24X 10G on fiber, to connect server/storage</p> <p>h) 2 X 16 LC Duplex connections will be extended to each Server/Storage via fiber shelf to enable intelligent solution.</p>	<p>Please clarify if only 32 (2 x 16) ports of the 48 (2 x 24) ports will be used? Will 16 ports from the leaf switch extend to the adjacent rack or will they remain in the same rack?</p> <p>As per our understanding, If there are 2 x 24 port leaf switch in each rack then there is no need to extend to the adjacent rack. The server/storage devices can be connected from both leaf switches to provide redundancy, therefore no need to connect adjacent racks to adjacent leaf switches.</p>	2 X 16 LC Duplex connections will be extended to each Server/Storage via fiber shelf to enable intelligent solution. 16 ports from the leaf switch extend to same rack

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
280	165	Network-2,10G Network:	f) Edge switch will have 2X 10G LC connectivity from core switch (Primary & Secondary) Total 2X 10G connections	The clause is not clear, if 2 x 10G LC connectivity from core switch (Primary & Secondary) then total should be 4 x 10G connections. Please clarify?We believe the total connections should be 4 nos. and not 2 nos., if 2 connections are coming from each core switch then the total will be 4 nos. (2 nos. from primary and 2 nos. from secondary).	There is only one edge in each rack. 2 no of 10 G will be connected to Core Switch es (one with each core switch)
281	265	8.1.2 Integration with existing AIM at DC	Integration with existing AIM at DC:	Please share a list of products with make and model implemented in Phase 1 This is required so that integration with phase 1 can be accessed and factored in the offer.	Kindly refer section -VII point 1.1
282	264	8.1.1 Integration with existing Passive Structure Cabling at DC:	The passive structured cabling design that is to be deployed in the additional 70 S/R will follow the same design that has been planned to implement in the 30 S/R for the existing data center.	Please share the layout of the data center with the Network Racks and Server Racks clearly marked. This is so that the length of the trunk cables and whether space is available in the existing Network Racks can be determined and calculated.	Kindly refer section -VII point 1.1

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283	160	e) Intelligent fiber panel- MPO type, OM5	LC Port capacity: Intelligent pre-terminated fiber shelves shall be available in 1U sliding configuration to support up to 48 - duplex LC ports or 2U sliding configuration to support up to 144 - duplex LC ports	LC Port capacity: Intelligent pre-terminated fiber shelves shall be available in 1U sliding/fixed configuration to support up to 48 - duplex LC ports or 2U sliding configuration to support up to 144 - duplex LC ports. Since the 1U panels will be placed in the Server Racks, and the density of the panels is lower compared to 2U panels a fixed type shelf will be sufficient. Kindly allow fixed 1U panel types also.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
284	Page 29	Form 9: Make in India Certificate [To be certified by statutory auditor or cost auditor of the company providing local content details as per Form 9].	SI No.9)	It is requested for the following change. Undertaking for form 9 to be submitted with bid submission and form 9 certified by statutory auditor to be submitted within 7 days after bid submission.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
285	Page 39	Performance Bond/ Security	a. Insurance Surety Bonds/ Account Payee Demand Draft/Fixed Deposit Receipt from a Commercial bank/Bank Guarantee from a Commercial bank or online Paymentb. Bank Guarantee should be issued by a scheduled commercial bank in India, in the prescribed form provided in Format 1.1.	It is requested for the following change.a. Insurance Surety Bonds/ Account Payee Demand Draft/Fixed Deposit Receipt from a Commercial bank/Bank Guarantee from a Commercial/ nationalized bank or online Paymentb. Bank Guarantee should be issued by a scheduled commercial / nationalized bank in India, in the prescribed form provided in Format 1.1.	The Clause may be Read as : a. Insurance Surety Bonds/ Account Payee Demand Draft/Fixed Deposit Receipt from a Scheduled Commercial bank(which includes Nationalized Banks)/Bank Guarantee from a Commercial bank or online Paymentb. Bank Guarantee should be issued by a scheduled commercial bank in India(Which includes Nationalized banks), in the prescribed form provided in Format 1.1.
286	Page 309	Form 6, Check-List for Bidders, Sl No. 7.a)	Valid ISO 9001:2015, ISO 27001:2013 Certificates as defined in section –VI {Clause A. (1)}	Page No.251 of RFP, Under Bidders Qualification Criteria, there is no criteria for ISO certificates, but in form 6 - check list, it is asked for ISO certificates documents submitted. It is requested for clarification of correctness.	From Checklist, it may be treated as deleted

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
287	Page No. 325	Form 11 : Land Border Related Declaration by OEM	Form 11 : To be Issued by OEMs	<p>It is requested for clarification of the following:- I hereby certify that the <<<<bidder's name>>>> :</p> <p>I hereby certify that <<<<<bidder name>>>> fulfils all requirements in this regard and is eligible to be considered.</p> <p>This form 11 is it required to be submitted by both Bidder and OEM, or whether OEM only.</p>	Form 11 to be issued by OEM) <<< bidder's name >> may be read as <<< OEM Name>>>
306	135	37. Privileged Access Manager	Generic	<p>1.Number of Privileged users 2.Number of target IT assets / devices to be integrated 3.Number of instances (Primary, HA, DR, etc) 4.Contract and warranty tenure</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
382	16	4	Only Class-I and Class-II local Suppliers shall be eligible to participate in this bid. Local content percentage for qualifying as Class-I and Class-II local Suppliers shall be calculated and declared by the respective bidders on the basis of Letter no P45021/2/2017- (BE-II) dated 15.06.2017 Public Procurement (Preference to Make in India) Order 2017" (MII) of Department for Promotion of Industry and Internal Trade, (DPIIT - Public Procurement Section); as revised and amended time to time and also clarifications and FAQ issued by DPIIT in this respect from time to time.	Kindly remove the MII clause. Global competitors should be allowed to participate in such upscale projects for which we hold the capability to perform efficiently and serve better.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
383	48	9.3	Timeline for Delivery, Installation, testing, commissioning & Acceptance	Kindly increase the delivery timeline to 6 months.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
384	18	5.3. point 2)	Bidder/Contractor undertakes that in case of non-compliance by the Bidder(s) of the GST provisions which results in blockage/reversal of any input tax credit to ERNET India, Bidder/Contractor shall be liable to indemnify the ERNET India any such loss of input credit including interest, penalty and all incidental expenses incurred by ERNET India. Such indemnification may also be by way of invocation of any security deposit, deduction from any payment that ERNET India has to make to the Bidder/Contractor,	ERNET should intimate any discrepancy in case of non compliance of GST provisions before two months from statutory timeline allowed under GST for amendments. Without informing discrepancy the amount shall not be recovered	It is clarified that ERNET India will intimate the contractor before making any recovery in this regard.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			as per the discretion of the ERNET India.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
385	19	5.3. point 5)	Along with the invoice; Bidder/Contractor would be required to submit relevant documentary evidence to the effect that invoice submitted was issued either through e-Invoice system of GST or has been updated on GSTN portal using Invoice Furnishing Facility (IFF).	GSTR 1 filing screenshot would be provided as documentary evidence	Along with the invoice; Bidder/Contractor would be required to submit relevant documentary evidence to the effect that invoice submitted was issued either through e-Invoice system of GST or has been updated on GSTN portal using Invoice Furnishing Facility (IFF) or any other documentary proof which clearly shows that GST complinace for the invoice submitted has been done. All these documents should be submitted to the satisfaction of ERNET India.
386	19	5.3. point 6)	In case, in future any GST liability is required to be borne by ERNET India; which was the responsibility of the Bidder/Contractor, then the same shall be claimed from the Bidder/Contractor by way of raising debit notes.	ERNET should intimate any such GST liability before raising any debit note in this regard	It is clarified that ERNET India will give prior intimation to the contractor in this regard.

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387	19	5.3. point 7)	ERNET India reserves the right to ask the Bidder/Contractor to submit relevant documents to ensure that they are GST compliant and in such a case Bidder/Contractor shall forthwith provide all such documents as may be required by ERNET India.	Relevant documents as prescribed under GST legislation would be shared subject to necessary internal approvals.	It is clarified that it would be bidder's/contractors responsibility to submit such documents which addresses the concerns of the ERNET India to the satisfaction of ERNET India.
388	162	Section V: Technical Specifications	45 - Fireproof Vault - UL certificate required	Request to kindly change the clause for a healthy competition.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
389	26	12.1.1.	<p>Right to Vary Quantities:</p> <p>ERNET India reserves the right to decrease the quantity to be ordered up to 25 percent of final bid value at the time of placement of contract. The ERNET India also reserves the right to increase the ordered quantity by up to 25% of the final bid value at the time of placement of contract or within one (1) year period from the issuance of the contract. It may be noted by the bidder that the prices of SFPs and Patch cords quoted in the bid shall remain valid for the complete duration of contract period. Successful Bidder/ Contractor is bound to accept the orders</p>	<p>Right to Vary Quantities:</p> <p>ERNET India reserves the right to decrease the quantity to be ordered up to 25 percent of final bid value at the time of placement of contract. The ERNET India also reserves the right to increase the ordered quantity by up to 25% of the final bid value at the time of placement of contract or within one (1) year period from the issuance of the contract. It may be noted by the bidder that the prices of SFPs and Patch cords quoted in the bid shall remain valid for the complete duration of contract period. Successful Bidder/ Contractor is bound to accept the orders accordingly failing which; ERNET India may declare this as an event of default and consequences for event of default will be applicable.</p>	<p>Clause may be read as: Right to Vary Quantities:</p> <p>ERNET India reserves the right to decrease the quantity to be ordered up to 25 percent of final bid value at the time of placement of contract. The ERNET India also reserves the right to increase the ordered quantity by up to 25% of the final bid value at the time of placement of contract or within one (1) year period from the issuance of the contract. It may be noted by the bidder that the <i>finally accepted prices</i> of SFPs and Patch cords shall remain valid for the complete duration of contract period. Successful Bidder/ Contractor is bound to accept the orders accordingly failing which; ERNET India may declare this as an event of default and consequences for event of default will be applicable.</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			accordingly failing which; ERNET India may declare this as an event of default and consequences for event of default will be applicable.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
390	35	5.5	Indemnities for breach of IPR Rights or from other issues: 1) the contractor shall indemnify and hold harmless, free of costs, the ERNET India and its employees and officers from and against all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which may arise in respect of the Equipment provided by the contractor under this Contract, as a result of any infringement or alleged infringement of any patent, utility model, registered design, copyright, or other Intellectual	Indemnities for breach of IPR Rights or from other issues: 1) the contractor shall indemnify and hold harmless, free of costs, the ERNET India and its employees and officers from and against all direct suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which may arise in respect of the Equipment provided by the contractor under this Contract, as a result of any infringement or alleged infringement of any patent, utility model, registered design, copyright, or other Intellectual Proprietary Rights (IPR) or trademarks, registered or otherwise existing on the date of the contract arising out of or in connection with:	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			Proprietary Rights (IPR) or trademarks, registered or otherwise existing on the date of the contract arising out of or in connection with:		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
391			4) The Contractor shall be solely responsible for any damage, loss or injury which may occur to any property or to any person by or arising out the execution of the works or temporary works or in carrying out of the contract otherwise than due to the matters referred to in this agreement hereinbefore . The contractor would ensure for observance of all labour and other laws applicable in the matter and shall indemnify and keep indemnified the ERNET India, end users/ its customers against the effect of nonobservance of any such laws.	4) The Contractor shall be solely responsible for any direct damage, loss or injury which may occur to any property or to any person by or arising out the execution of the works or temporary works or in carrying out of the contract otherwise than due to the matters referred to in this agreement hereinbefore . The contractor would ensure for observance of all labour and other laws applicable in the matter and shall indemnify and keep indemnified the ERNET India, end users/ its customers against the effect of nonobservance of any such laws.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
392	41	6.4 (11)	<p>Warranty</p> <p>11) The Contractor shall arrange for free Onsite comprehensive maintenance for a period of warranty from the date/dates of acceptance of the project milestone wise with regard to rectification/removal of defects if any observed during this period. If the Contractor does not arrange to rectify the defects observed during the maintenance period within a reasonable time (10 days). the ERNET/End user shall be at liberty to get such defects rectified at the cost and risk of the Contractor in addition to levying of penalties.</p>	<p>11) The Contractor shall arrange for free Onsite comprehensive maintenance for a period of warranty from the date/dates of acceptance of the project milestone wise with regard to rectification/removal of defects if any observed during this period. If the Contractor does not arrange to rectify the defects observed during the maintenance period within a reasonable time (10 days). the ERNET/End user shall be at liberty to get such defects rectified at the cost and risk of the Contractor in addition to levying of penalties. In no event should such cost or liability of the Contractor will exceed the amount or value of the defected portion of Contract.</p>	<p>No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
393	46	9.5	2) Liquidated Damages (LD):If the Contractor fails to meet the prescribed timelines for respective milestones due to any reason whatsoever then in such a case ERNET India would be entitled to impose the Liquidated Damages for the delay @ 0.5 % of the Contract value of the respective milestone per week or part of the week of delayed period. Overall Liquidated Damages shall be restricted to 10% of the total contract value. While calculating LD; GST will be excluded from the value on which LD is calculated; thereafter GST will be charged on the LD value as per S.No. 4 clause 5.3 of Section II of this document. . In	2) Liquidated Damages (LD):If the Contractor fails to complete delivery, installation, testing, commissioning, training, acceptance etc. of equipment(s) as per timelines specified in the contract, then in such a case ERNET India would be entitled to impose the Liquidated Damages for the delay @ 0.5% of the value of the delayed deliverables value of total equipment(s) at non-commissioned sites per week or part of the week of delayed period. Liquidated Damages shall not exceed 10% of the value of the delayed deliverables total contract value . In case, delay beyond 20 weeks, ERNET India may initiate termination for default and take remedial action(s) accordingly as per GCC Clause 12.1.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			case, delay beyond 20 weeks, ERNET India may initiate termination for default and take remedial action(s) accordingly as per GCC Clause 12.1.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
394	55	12.1.2	Notice for Default: As soon as a breach of contract is noticed, a show-cause 'Notice of Default' shall be issued to the contractor, giving two weeks ' notice, reserving the right to invoke contractual remedies. After such a show-cause notice, all payments to the contractor would be temporarily withheld to safeguard needed recoveries that may become due on invoking contractual remedies.	Notice for Default: As soon as a breach of contract is noticed, a show-cause 'Notice of Default' shall be issued to the contractor, giving thirty (30) days two-weeks ' notice, reserving the right to invoke contractual remedies. After such a show-cause notice, all payments to the contractor would be temporarily withheld to safeguard needed recoveries that may become due on invoking contractual remedies.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
395	55	12.1.3	<p>1) Notice for Termination for Default:</p> <p>In the event of unsatisfactory resolution of 'Notice of Default' within two weeks of its issue as per sub-clause above, the ERNET India, if so decided, shall by written Notice of Termination for Default sent to the contractor, terminate the contract in whole or in part, without compensation to the contractor.</p>	<p>1) Notice for Termination for Default:</p> <p>In the event of unsatisfactory resolution of 'Notice of Default' within thirty (30) days two weeks of its issue as per sub-clause above, the ERNET India, if so decided, shall by written Notice of Termination for Default sent to the contractor, terminate the contract in whole or in part, without compensation to the contractor.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
396	55	12.1.4	If there is an unsatisfactory resolution of the issues raised in the 'Notice of Default' within the period specified in the notice, then ERNET India may take any one; or more of the following contractual remedies. 1) Temporary withhold payments due to the contractor till recoveries due to invocation of other contractual remedies are complete. 2) Recover liquidated damages for delays. 3) Encash and/ or Forfeit performance or other contractual securities. 4) Debar the contractor from participation in future procurements as follows:ERNET India may debar the contractor or any of its	If there is an unsatisfactory resolution of the issues raised in the 'Notice of Default' within the period specified in the notice, then ERNET India may take any one; or more of the following contractual remedies. 1) Temporary withhold payments due to the contractor till recoveries due to invocation of other contractual remedies are complete. 2) Recover liquidated damages for delays. 3) Encash and/ or Forfeit performance or other contractual securities. 4) Debar the contractor from participation in future procurements as follows:5) ERNET India may debar the contractor or any of its successors from participating in any Tender Process undertaken by it for a period not exceeding two years commencing from the date of debarment. Terminate contract for default, fully or partially including its right for Risk and Cost Procurement as per following sub-clause. 6) Risk and Cost Procurement: In addition to termination for default, the ERNET India shall be entitled, and it shall be lawful on its part, to procure Equipment and services similar to those terminated, with such terms and	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>successors from participating in any Tender Process undertaken by all its procuring entities for a period not exceeding two years commencing from the date of debarment</p> <p>5) ERNET India may debar the contractor or any of its successors from participating in any Tender Process undertaken by it for a period not exceeding two years commencing from the date of debarment. Terminate contract for default, fully or partially including its right for Risk-and-Cost Procurement as per following sub-clause.</p> <p>6) Risk and Cost Procurement: In addition to termination for default, the ERNET</p>	<p>conditions and in such manner as it deems fit at the "Risk and Cost" of the contractor. Such 'Risk and Cost Procurement' will be contracted within nine months from the breach of Contract. The Contractor shall be liable for any direct loss which the ERNET India may sustain on that account provided the procurement, or, if there is an agreement to procure, such agreement is made. The Contractor shall not be entitled to any gain on such procurement, and the manner and method of such procurement shall be in the entire discretion of the ERNET India. It shall not be necessary for the ERNET India to notify the contractor of such procurement and in no event should such cost or liability of the supplier will exceed the amount or value of the incomplete portion of Contract cancelled by Purchaser exercising its right under this clause. It shall, however, be at the discretion of the ERNET India to collect or not the security deposit from the firm/ firms on whom the contract is placed at the risk and cost of the defaulted firm.</p>	

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>India shall be entitled, and it shall be lawful on its part, to procure Equipment and services similar to those terminated, with such terms and conditions and in such manner as it deems fit at the "Risk and Cost" of the contractor. Such 'Risk and Cost Procurement' will be contracted within nine months from the breach of Contract. The Contractor shall be liable for any loss which the ERNET India may sustain on that account provided the procurement, or, if there is an agreement to procure, such agreement is made. The Contractor shall not be entitled to any gain on such procurement, and the manner and method of</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			such procurement shall be in the entire discretion of the ERNET India. It shall not be necessary for the ERNET India to notify the contractor of such procurement. It shall, however, be at the discretion of the ERNET India to collect or not the security deposit from the firm/ firms on whom the contract is placed at the risk and cost of the defaulted firm.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
397	56	12.1.5	Limitation of Liability: Except in cases of criminal negligence or wilful misconduct, the aggregate liability of the contractor to the ERNET India, whether under the contract, in tort or otherwise, shall not exceed the total Contract value, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the contractor to indemnify the ERNET India concerning IPR infringement.	Limitation of Liability: Except in cases of criminal negligence or wilful misconduct, the aggregate liability of the contractor to the ERNET India, whether under the contract, in tort or otherwise, shall be limited to the applicable purchase order /invoice / statement of work not exceed the total Contract value , provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the contractor to indemnify the ERNET India concerning IPR infringement.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
398	56	12.2	<p>12.2.1 Notice for Determination of Contract:</p> <p>1) The ERNET India reserves the right to terminate the contract, in whole or in part for its (the ERNET India's) convenience, by serving written 'Notice for Determination of Contract' on the contractor at any time during the currency of the contract. The notice shall specify that the termination is for the convenience of the ERNET India of the contract. The notice shall also indicate inter-alia, the extent to which the contractor's performance under the contract is terminated, and the date with effect from which such termination shall become effective.</p>	<p>12.2.1 Notice for Determination of Contract:</p> <p>1) The ERNET India reserves the right to terminate the contract, in whole or in part for its (the ERNET India's) convenience, by serving written 'Notice for Determination of Contract' on the contractor by giving sixty (60) days prior written notice at any time during the currency of the contract. The notice shall specify that the termination is for the convenience of the ERNET India of the contract. The notice shall also indicate inter-alia, the extent to which the contractor's performance under the contract is terminated, and the date with effect from which such termination shall become effective.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
399	56	12.2.2	** Termination right was not provided to Contractor in case of material breach by ERNET. We suggest incorporation of said clause.**	Termination for Material Breach: In the event ERNET materially breaches any term of the Contract, which breach is not cured within 30 thirty (30) days after written notice specifying the breach is given to the ERNET, Contractor may (i) terminate the Contract by giving written notice to the other party and (ii) pursue any and all remedies available subject to the provisions of the Contract.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
400	56	12.2.3	**Termination right was not provided to Contractor in case ERNET goes insolvent/bankrupt. We suggest incorporation of said clause.**	Termination for Insolvency: Contractor may terminate this Contract immediately with notice to the ERNET if, ERNET becomes insolvent or bankrupt, makes a general assignment for the benefit of, or enters into any arrangement with, creditors, files a voluntary petition under any bankruptcy, insolvency, or similar law, or has proceedings initiated under any such laws.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
401	53	6.B	In respect of DC and DR equipment (s), 50% of the total value of equipment(s) delivered at DC and similarly 50% of the total value of equipment(s) delivered at DR shall be released on 100% of delivery of all equipment(s) in good condition based on the respective milestone(s) and after successful Rack mounted, Power on Self-Test (PoST) by the Contractor.	Please amend the clause to: In respect of DC and DR equipment (s), 75% of the total value of equipment(s) delivered at DC and similarly 75% of the total value of equipment(s) delivered at DR shall be released on 100% of delivery of all equipment(s) in good condition based on the respective milestone(s)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
402	54	6.C	Further, ERNET India would consider releasing below additional payment if contractor opts for the same and submits written request in this regard:i. Additional 15% payment (over & above the 50% payment specified in clause B. above) towards value of supplied equipment(s) at DC and/or DR respectively subject to the condition that:1. All the equipment(s) required to complete the Milestone-1 have been supplied at DC for becoming eligible to claim the payment of additional 15% for DC. Similarly, all the equipment(s) required to complete the Milestone- 7 have been supplied at DR for becoming eligible to	Please amend the clause to:Further, ERNET India would release below additional payment if contractor opts for the same and submits written request in this regard:i. Additional 15% payment (over & above the 75% payment specified in clause B. above) towards value of supplied equipment(s) at DC and/or DR respectively subject to the condition that:1. All the equipment(s) required to complete the Milestone-1 have been supplied at DC for becoming eligible to claim the payment of additional 15% for DC. Similarly, all the equipment(s) required to complete the Milestone- 7 have been supplied at DR for becoming eligible to claim the payment of additional 15% for DR.2. Two separate Bank Guarantees (BGs) equivalent to 15% of the value of supplied equipment(s) at DC and DR; valid for a minimum period of 6 months (with a claim period of additional 3 months) is submitted. BG must be extendable further as per communication of the final date of acceptance of respective milestone (Milestone-1 for DC and Milestone- 7 for DR) by ERNET India.3. ERNET India will release the BGs after	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			claim the payment of additional 15% for DR.2. Two separate Bank Guarantees (BGs) equivalent to 15% of the value of supplied equipment(s) at DC and DR; valid for a minimum period of 6 months (with a claim period of additional 3 months) is submitted. BG must be extendable further as per communication of the final date of acceptance of respective milestone (Milestone-1 for DC and Milestone- 7 for DR) by ERNET India.3. ERNET India will consider releasing the BGs after successful acceptance of Milestone-1 and Milestone-7 respectively.4. Bank Guarantee formats to be signed by the	successful acceptance of Milestone-1 and Milestone-7 respectively.4. Bank Guarantee formats to be signed by the contractor in this respect will be given to contractor at the time of exercising this option.5. BG would be taken to secure the payment of additional 15% released to the contractor and the same would be liable to be invoked in case of defaults and breach of contract as stipulated at Section III: General Conditions of Contract(GCC) Clause 12.1.Note: For removal of doubts it is clarified that the contractor would have the option to claim an additional 15% payment (as specified above) in respect of DC or DR or both and accordingly would need to submit separate BGs for release of respective additional payment. Based on the fact that whether additional payment is claimed or not, the balance payment of 10% or 25% (as the case may be) will be released as per clause d and e below.	

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>contractor in this respect will be given to contractor at the time of exercising this option.5. BG would be taken to secure the payment of additional 15% released to the contractor and the same would be liable to be invoked in case of defaults and breach of contract as stipulated at Section III: General Conditions of Contract(GCC) Clause 12.1.Note: For removal of doubts it is clarified that the contractor would have the option to claim an additional 15% payment (as specified above) in respect of DC or DR or both and accordingly would need to submit separate BGs for release of respective additional payment. Based on the fact that</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			whether additional payment is claimed or not, the balance payment of 20% or 35% (as the case may be) will be released as per clause d and e below.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
403	55	6.D	In respect of equipment (s) at DC and DR, in case contractor exercises the option of 'additional 15% payment', the additional 20% of the total value of items will be made after successful installation, integration, commissioning and acceptance as per the respective milestone(s).	Please amend the clause to: In respect of equipment (s) at DC and DR, in case contractor exercises the option of 'additional 15% payment', the additional 10% of the total value of items will be made after successful installation, integration, commissioning and acceptance as per the respective milestone(s).	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
404	56	6.E	In case, contractor does not exercise the option to claim 'additional 15% payment' as mentioned above at point C. then in respect of equipment (s) at DC and DR, additional 35% of the total value of items will be made after successful installation, integration,	Please amend the clause to:In case, contractor does not exercise the option to claim 'additional 15% payment' as mentioned above at point C. then in respect of equipment (s) at DC and DR, additional 25% of the total value of items will be made after successful installation, integration, commissioning and acceptance as per the respective milestone(s).	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			commissioning and acceptance as per the respective milestone(s).		
405	57	6.G	In respect of EMS and DCIM solution (i.e. Hardware and Software of Milestone-2 and Milestone-8), i. 50% of the total value of solution will be made after delivery at DC (for Milestone-2) and at DR(for Milestone-8) respectively. ii. 35% of the total value of solution will be made after successful installation, integration,	Please amend the clause to: In respect of EMS and DCIM solution (i.e. Hardware and Software of Milestone-2 and Milestone-8), i. 75% of the total value of solution will be made after delivery at DC (for Milestone-2) and at DR(for Milestone-8) respectively. ii. 25% of the total value of solution will be made after successful installation, integration, commissioning and acceptance at DC(for Milestone-2) and at DR(for Milestone-8) respectively.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			commissioning and acceptance at DC(for Milestone-2) and at DR(for Milestone-8) respectively.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
406	58	6.H	Thereafter, based on successful performance during warranty period, balance 15% value of the respective milestone shall be released in twelve (12) equal instalments on a quarterly basis after completion of every quarter. It would be duty of contractor to get the satisfactory performance certificate from CERT-In or (any other 3rd party to whom equipment's warranty has been transferred on the basis of instructions from ERNET India) along with necessary documents. ERNET India may give an option to contractor to claim Balance 15% payment against submission of Bank	Please delete this clause:	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>Guarantee. If this option is given by ERNET India and the same is accepted by Contractor, then the contractor would be having an option to submit Bank Guarantee (BG) for: -i. 15% value, with the validity till completion of warranty period of last milestone + Three (3) months of claim period, orii. Three (3) Bank Guarantees of 5% each (as reduced by the payment (s) already made w.r.t warranty and maintenance support) valid for one year, Two year & Three years from the date of last milestone + 3 months of claim period.iii. Bank Guarantee formats to be signed by the contractor in this respect will be</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>given to contractor at the time of exercising this option.iv. BG would be taken to secure the payment of balance 15% (over & above 85% payment) released to the contractor and the same would be liable to be invoked in case of defaults and breach of contract as stipulated at Section III: General Conditions of Contract(GCC) Clause 12.1.</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
425	213	EMS Solution, Point No. 1	It should be a comprehensive SSL 256 bit secure web based IPv4 and IPv6 compliant solution, consisting of all standard features/modules of Enterprise Management Solution (EMS) such as fault management, performance management, configuration management, event management, an IT helpdesk/service desk to perform SLA management , Configuration Management Database(CMDB) ,incident, problem, document/knowledge management, schedule, asset management and has a inbuilt syslog server / capability to integrate	Kindly confirm the Events Per Second (EPS) count to size the Syslog hardware appropriately.	The system should have data storage capability of 0.5 Peta Bytes from day 1 at each DC and DR location to handle approx 20K EPS , and it should have capability to extend storage for additional data store by adding external server and storage solutions.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			a syslog server / or an integrated syslog server, so as to act as a sysLog aggregator,		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
426	214	EMS Solution, Point No. 1	IT Equipment being purchased via the bid "GEM/2022/B/21837 82" titled as "Selection of System Integrator for Setting up of ICT (Security) Infrastructure at 18 Remote Sites"	Kindly confirm if the devices procured under the mentioned tender is covered in the Total IT Elements i.e 2800 mentioned in the BOM. If not, kindly confirm the no. of extra devices to consider.	<p>The devices procured under the referred/mentioned tender (in this clause discussed here) are being covered in the BoM sought for this tender.</p> <p>At the same time, Bidder needs to ensure that the hardware sizing for deploying the solution needs to be done, considering the max scalable capacity sought in specifications primarily point number 4 ,5, 6 of General Requirements along with other specifications of EMS Technical Specifications from Day#1 .</p> <p>Also, refer to revised Technical specifications of EMS point#6 in Annexure-B</p>
427	216	EMS Solution, Point No. 5	To provide another third instance at DR, which may remain passive (or active) until complete DC is down and/or DC disconnects from the MPLS network and/or as per any other similar/ required scenario.	As per BOM, Local is required at both DC & DR i.e total 4 instances of EMS application is required to be deployed and each instance should be installed on a separate physical instance. Kindly suggest if our understanding is correct here.	Two instances are sought to form a HA as per the design considered. One Instance at DC and Another at DR & Each Instance to have local HA(s) . Additionally, refer# EMS Technical Specifications for more detailed understanding. Also, refer the Note#2 of General Requirements of EMS Technical Specifications point#5 i.e. Bidder may propose an alternate design / solution in combination full-filling the sought requirements, if required. SI may add any other third party components (such as a backup solution etc.) to achieve this requirement.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
428	218	EMS Solution, Point No. 8	The solution should be bundled with adequate cyber security measures by including 3rd party security software or by having in-built security measures to alert/ prevent any cyberattacks on the provided solution.	Security of EMS solution is taken care by security solutions already being procured in this tender. Request you to remove this point.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
429	233	EMS Solution, Point No. 121	5 Database Monitoring parameters such as a Database Availability b Database Process and Logs c Locks and Buffers d Tablespace/Database e Sessions/Connections f Database Memory h SQL Statistics i Database Jobs etc.	Kindly confirm the number of application/DB instances to be monitored.	10

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
430	233	EMS Solution, Point No. 128	It should allow to audit configurations and deploy configuration updates in single or multiple devices at once. From the scalability perspective, purposed solution should support managing configurations of hardware of more than 180 different OEMs , including all major OEMs	Request you to change the requirement to following to make it more generic " It should allow to audit configurations and deploy configuration updates in single or multiple devices at once. From the scalability perspective, purposed solution should support managing configurations of hardware of different OEMs which supports standard protocols like SSH/Telnet, including all major OEMs "	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
431	233	EMS Solution, Point No. 129	It should have enhanced network security by preventing unauthorized configuration changes and notifying the admin about any changes .	If a user has taken direct access to a network device then it is not possible for EMS solution to prevent is however EMS solution will generate notification for such instances. Request you to modify the requirement as following " It should have mechanism to prevent unauthorized configuration changes and notifying the admin about any changes if any changes are done through EMS portal"	Preventing unauthorized configuration changes refers to not to allow any non-eligible users to make any changes ; Non Eligible refers to users who don't have access privileges per module/functionality etc.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
432	234	EMS Solution, Point No. 131	Should be able to backup, compare and restore network configuration for all the networking devices defined as per scope of work of this tender. Backup system should allow to store for at least 1 year of historical data. Further, it should be a provision on the tool for configuring the data retention and log archival so that operator(s) may be able to control as per its discretion.	Kindly confirm how many backup version of configuration files of one Network devices to be kept in a year.	There are no limits on the backup versions. Instead, the limit is based on the duration i.e. back up duration sought

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
433	242	EMS Solution, Point No. 218	The system shall have integrated ITIL v3 or higher processes complied Operations Management System for Helpdesk, Ticketing, Maintenance and Configuration Management Database (CMDB). The system shall enforce best practices workflow and meet ITIL framework guidelines. All monitoring elements should be stored and accessed from a central datastore. This also should be have RBAC.	To Make sure the Helpdesk tool and all other moudules follow ITIL guideline. Request you to change the requirement to following" The system shall have integrated 7 process Pink Verify 2011 ITIL v3 certified or higher processes complied Operations Management System for Helpdesk, Ticketing, Maintenance and Configuration Management Database (CMDB). The system shall enforce best practices workflow and meet ITIL framework guidelines. All monitoring elements should be stored and accessed from a central datastore. This also should be have RBAC."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
434	245	EMS Solution, Point No. 248	The solution should be able to record the actions of users per session basis including details such as time stamp etc. as per user for audits and records purposes.	Kindly confirm for how long session recording needs to be retained.	Refer to point 232 :Supplied solution should allow at least backup / history database maintained for at least 1 year including but not limited to configurations, alarms, services , assets, asset locations, network performance related database

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
435	66	Bill of Material	Note : Solution must maintain historical data for 1 year, has an integrated syslog to acts as a sysLog aggregator.	Kindly confirm if 1 year syslog data retention can be provided as 3-9 or 6-6 segregation i.e 3 months live data and 9 months archived data which will be produced on demand or 6 months live and 6 months archived data.	1 Year retention is required.
436	96	Management & Security Features for all the server mentioned from S.N. 1 to 13 Management Features-1	1.Secure component verification and alerting.	Platform Integrity check	Kindly refer revised Specification in Annexure-B
437	96	Management & Security Features for all the server mentioned from S.N. 1 to 13 Security Features-2	1.Provision for Cryptographic firmware updates.	Provision for Cryptographic firmware updates / Signed firmware updates / secure firmware updates	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
438	96	Management & Security Features for all the server mentioned from S.N. 1 to 13Security Features-2	2.in case of any security breach system should provide the lock down feature.	Preventing any security breach by implementing Multiple Authentication methods ensuring interoperability by authentication, platform Integrity check, Key creation management and storing the encrypted key within the secure chip	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
439	37	5.4 "Assignment and Sub-contracting"	2	It is observed that OEM's do not deal or operate directly. Generally they operate through some authorised partners. In view of above even if SI wish to deal directly without any subcontracting, in view of OEM system of operation through partners, eventually SI has to involve OEM's authorised partners. In view of above may kindly amend to involve _ SI/ OEM or OEM's authorised partner may be allowed, which should not be considered as subcontracting. Further, Manpower of OEM's authorised partner may also be considered.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
440	45	Clause 6.4 "Warranty"	12(viii) "The overall Penalties for non-adherence with the SLA of warranty support (during 2nd & 3rd year of warranty period) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment (CAPEX). In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2."	The clause is very stringt vs general norms and may lead to laod higher costing on account of this exorbitant LD. Maximum penalty should be capped at a maximum of 10%.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
441	53	Clause 6 "The payment terms are:"	b) "In respect of DC and DR equipment (s), 50% of the total value of equipment(s)delivered at DC and similarly 50% of the total value of equipment(s) delivered atDR shall be released on 100% of delivery of all equipment(s) in good conditionbased on the respective milestone(s) and after successful Rack mounted, Poweron Self-Test (PoST)by the Contractor."	1. Advance payment @15% may be considered agaisnt advance BG of equivalent amount.2. 70-80% payment may be released on 100% delivery of DC and DR equipments/ and Remote locations.As No OEM agree for post commission payments and as such SIs are required to make upfront payments on delivery of material or advance LC. Therefore with current payment conditions, SI has to finance the project and which eventually will be built on the project cost. To enable level playing field a reasonable payment terms as requetsed may be considered which is general trend in the industry.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
442	287 and 289	Clause 1, Service Level during Operation & Maintenance period for Equipment	<p>Note at Page 289,</p> <p>In respect of DC and DR equipment (s), 50% of the total value of equipment(s) delivered at DC and similarly 50% of the total value of equipment(s) delivered at DR shall be released on 100% of delivery of all equipment(s) in good condition based on the respective milestone(s) and after successful Rack mounted, Power on Self-Test (PoST) by the Contractor.</p>	Maximum penalty should be capped at a maximum of 10%.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
443	Additional Clause			We agree that subcontracting of the project being strategic may not be possible. Since the project involves multiple expertises. Further as the Tender is not restricted e.g. CPSE/ Government, bidding in consortium will facilitate Bidder to jointly execute the project expeditiously. Therefore our request is consider allowing consortium bidding. At present clause Consortium is not allowed.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
444	123	Internet Firewall with IPS 1.1	The appliance-based security platform should be capable of providing firewall, application visibility, and IPS functionality in a single appliance	Request to change the clause as below : The appliance-based security platform should be capable of providing firewall, application visibility, and IPS functionality in a single appliance and must have native integration with Proposed AAA solution.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
445	126	Internet Firewall with IPS 8.1	The management must be accessible via a web-based interface and ideally with no need for additional client software`	Request to change the clause as below : The management of Internet Firewall and AAA solution must be accessible via Single web-based interface with no need for additional client software.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
446	123	Internet Firewall with IPS	Additional Clause	Request to Add the below clause : The Internet Firewall Appliance should have native capability to integrate with NAC solution to share threat intelligence with each other to have well co-ordinated cyber security posture.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
447	153	Section V: Technical Specifications/ 41. Console Management Server	The Solution shall be industrial-grade and comply with the following requirements: 1) Dual-core ARM Cortex-A9 MP Core with Core Sight 2) 1GB DDR3L RAM 3) 16GB eMMC Flash 4) 2 Gigabit Fiber SFP ports 5) 10/100/1000BT) Ethernet interfaces on RJ45	Specifications seems to be vendor specific. Please consider minimum specs of 1Ghz CPU,512 MB RAM, 8 GB Flash, Dual Gigabit Ethernet Ports.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
448	154	Section V: Technical Specifications/ 41. Console Management Server	The OOB equipment must support Serial (48 ports), Ethernet and SFP connections	Specifications seems to be vendor specific. Please consider Supports 48 port Serial,Dual Ethernet & Modem ports or SFPs for OOB Management	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
449	154	Section V: Technical Specifications/ 41. Console Management Server	The Solution should provide combination of USB and RJ45 serial ports for target network devices	Specifications seems to be vendor specific. Please consider to USB/DB9/DB25 connectors on target network devices	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
450	154	Section V: Technical Specifications/ 41. Console Management Server	Both hardware and software components of the solution will have built-in Firewall for additional security which can restrict services to any interfaces, brute-force protection.	Specifications seems to be vendor specific. Considering firewall feature and using Firewall feature will utilize the resources (CPU,RAM etc) on maximum processing & filtering the Packets. Instead the Box should be support all latest Authentications & Encryptions to meet the Security Compliances.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
451	155	Section V: Technical Specifications/ 41. Console Management Server	Security – .Preset security profiles– secure, moderate and open Custom security profiles .X.509 SSH certificate support .SSHv1 and SSHv2 .Local, RADIUS, TACACS+, LDAP/AD, NIS and Kerberos authentication . Two-factor authentication (RSA SecurID®) .One-Time Password (OTP) authentication .Local, backup-user authentication support PAP/CHAP and Extensible Authentication Protocol (EAP) authentication (for dial-up lines)Group authorization: • TACACS+, RADIUS and LDAP • Port access • Power access • Appliance privilegeIP packet and security filtering User-access	Specifications seems to be vendor specific. Considering firewall feature and using Firewall feature like Packet filtering & NAT translation will utilize the resources (CPU, RAM etc).	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			lists per portSystem event syslog IPsec with NAT traversal support		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
452	157	Section V: Technical Specifications/ 42.KVM Console	KVM Session should support Keyboard pass through.	Specifications seems to be vendor specific. Please allow bidder to consider USB ports in local Consoles	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
453	158	Section V: Technical Specifications/ 42.KVM Console	Built-in KVM switch should have two local console ports. One to connect with the LCD console tray and another for external Monitor and keyboard connection for any emergency local access.	Specifications seems to be vendor specific. Please consider one local console ports this will serve the purpose	Kindly refer revised Specification in Annexure-B
454	158	Section V: Technical Specifications/ 42.KVM Console	LCD console tray should be global certified by most of the agencies like UL, CE, CCC, BSMI, C-Tick, EAC, VCCI, KCC , FCC Class A	Please consider minimum certification for FCC, CE, VCCI, UL, and ROHS.	Kindly refer revised Specification in Annexure-B
455	158	Section V: Technical Specifications/ 42.KVM Console	LCD console tray and built in KVM switch should support max resolution 1600 x 1200 at 60 Hz.	Since all devices will have FHD, request please consider FHD-1920x1200 / 1920 x 1080 resolution at 60 Hz. for KVM also.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
456	185	Section V: Technical Specifications/ 54. Smart Rack/Hybrid iPDU:	<p><u>Hybrid iPDU</u> iPDU should have minimum 30 outlets of hybrid nature which can be utilized as either C13 or C19 outlet. All outlets should provide high retention to avoid accidental dislodging of power cords. The IPDU hybrid outlets should meet electrical compliance and should be UL certified.</p>	<p>Specifications seems to be vendor specific. 30 No's of Combo outlets (Hybrid) are asked on single PDU - As per tender spec each rack to be provisioned with 7-7.4kW i.e 7-7.4 kVA (considering Single Phase 32 AMps & power factor ≤ 1) of power, each C19 derives to 16A which is of 3.7kVA even with 30% of Load calculation on each outlet & considering the risk of over loading, number of C19 combo outlets has to be provisioned only based on the input power for 7.4KVA that is 8xc19 outlets. So 30 combo outlets all combinations would add risk to business & non utilization of outlets.</p> <p><u>Justification</u> a) In a 30 socket PDU, max of 6 to 8 sockets shall be used for connecting high-power computing devices and rest shall be used for connecting normal power consuming devices. If more number of C19 outlets are available and high-power computing devices are connected, then there shall be no power available connecting normal power consuming devices b) This is a Vendor specific feature and other vendors cannot match this specification.</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
				<p>c) more no of outlets does not mean more power to rack unless the input power is available in this case the input power is limited to 7.5kVA which is 1Ph32A</p> <p>d) Having all hybrid outlets leads t confusion in connecting device</p> <p>e) In the present PDU, if single phase inlet cable is connected and more number of C19 outlets are used, it will be lead to tripping of the entire PDU</p>	

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
457	187	Section V: Technical Specifications/ 55. Non Smart Rack with Redundant IPDU	<u>Non Smart Rack with Redundant IPDU</u> 2 numbers of Hybrid iPDU (as per annexure) Metered PDU with minimum 24 sockets each and power cord, with ability to monitor power consumption of individual servers and network equipment.	No Power Ratings of the PDU is given. <u>Justification</u> Power ratings will help to Plan for required iPDUs with proper capacity.	Kindly refer revised Specification in Annexure-B
458	73	1. Server (Category-1)	<u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	<u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
459	73	1. Server (Category-1)	<u>Memory</u> Total 1 TB RAM, DDR4 2933+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)	<u>Request to change</u> Total 1 TB RAM, DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)	Kindly refer revised Specification in Annexure-B
460	74	2. Server (Category-2) 2A (in case bidder quote server up to 5 U)	<u>Processor</u> 2 Quantity (Dual Socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 18+ Cores (2.3+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 18+ cores (2.3+ GHz base frequency, Cache Size 128+ MB)	<u>Request to change</u> 2 Quantity (Dual Socket) x Intel Xeon Gold scalable series Latest Generation, 18+ Cores (2.3+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD Latest Generation EPYC, 18+ cores (2.3+ GHz base frequency, Cache Size 128+ MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
461	75	2. Server (Category-2) 2A (in case bidder quote server up to 5 U)	<u>Memory</u> Total 768 GB RAM, DDR4 2933+ MHz ECC REG DIMM (Buffered) (12 no:s x 64G OR 6 no:s x 128G)	<u>Request to change</u> Total 768 GB RAM, DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (12 no:s x 64G OR 6 no:s x 128G)	Kindly refer revised Specification in Annexure-B
462	76	2. Server (Category-2)2B OR (in case bidder quote server with single DAS)	<u>Processor</u> 2 Quantity (Dual Socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ Cores (2.1+ GHz base frequency, Cache Size 30+ MB)OR2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.1+ GHz base frequency, Cache Size 128+ MB)	<u>Request to Change</u> 2 Quantity (Dual Socket) x Intel Xeon Gold scalable series Latest Generation, 24+ Cores (2.1+ GHz base frequency, Cache Size 30+ MB)OR2 Quantity (Dual socket) x AMD Latest Generation EPYC, 24+ cores (2.1+ GHz base frequency, Cache Size 128+ MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
463	76	2. Server (Category-2) 2B OR (in case bidder quote server with single DAS)	<u>Memory</u> Total 1 TB RAM, DDR4 2933+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)	<u>Request to change.</u> Total 1 TB RAM, DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
464	77	3. Server (Category-3)	<p><u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	<p><u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
465	77	3. Server (Category-3)	<p><u>Memory:</u> 16x 32GB or 8x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 512GB)</p>	<p><u>Request to Change</u> 16x 32GB or 8x 64GB DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (Total 512GB)</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
466	79	4. Server (Category-4)	<u>Processor</u> One quantity Intel Xeon scalable series 2nd/3rd Gen or Latest Generation , 12+ core processor (2.9+ GHz base frequency, Cache Size(for 2nd Gen 24.75+ MB / for 3rd Gen 18 + MB)ORAMD EPYC 2nd/3rd Gen or Latest Generation EPYC , 12 core processor (2.9+ GHz base frequency, Cache Size 64 MB)	<u>Request to Change:</u> One quantity Intel Xeon scalable series Latest Generation , 12+ core processor (2.9+ GHz base frequency, Cache Size(for 2nd Gen 24.75+ MB / for 3rd Gen 18 + MB)ORAMD EPYC Latest Generation EPYC , 12 core processor (2.9+ GHz base frequency, Cache Size 64 MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
467	79	4. Server (Category-4)	<u>Memory:</u> 8 no:s x 16GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 128GB)	<u>Request to Change</u> 8 no:s x 16GB DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (Total 128GB)	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
468	81	5. Server (Category-5)	<p><u>Processor:</u> 2 Quantity (Dual socket) x Intel Xeon scalable series 8 + core processor 2nd/3rd Gen or Latest Generation (3.1+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ For 3rd Gen 18 + MB))</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD EPYC 7252 or above 2nd/3rd Gen or Latest Generation EPYC, 8 core processor (3.1+ GHz base frequency, Cache Size 64+ MB)</p>	<p><u>Request to Change</u> 2 Quantity (Dual socket) x Intel Xeon scalable series 8 + core processor Latest Generation (3.1+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ For 3rd Gen 18 + MB))</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD EPYC 7252 or above Latest Generation EPYC, 8 core processor (3.1+ GHz base frequency, Cache Size 64+ MB)</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
469	81	5. Server (Category-5)	<p><u>Memory:</u> 2 no:s x 16GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 32GB)</p>	<p><u>Request to Change</u> 2 no:s x 16GB DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (Total 32GB)</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
470	82	6. Server (Category-6)	<u>Processor:</u> One Quantity Intel Xeon 8 core 2nd/3rd Gen or Latest Generation processor (2.7+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ for 3rd Gen 18 +MB))OR1 Quantity x AMD EPYC 2nd/3rd Gen or Latest Generation, 8 core processor (2.7+ GHz base frequency, Cache Size 32 MB)	One Quantity Intel Xeon 8 core Latest Generation processor (2.7+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ for 3rd Gen 18 +MB))OR1 Quantity x AMD EPYC Latest Generation, 8 core processor (2.7+ GHz base frequency, Cache Size 32 MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
471	82	6. Server (Category-6)	<u>Memory:</u> 2 no:s x 8GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 16 GB)	<u>Request to Change</u> 2 no:s x 8GB DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (Total 16 GB)	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
472	83	7. Server (Category-7)	<p><u>Processor:</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 18+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation Gen EPYC, 18+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	<p><u>Request to Change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 18+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD Latest Generation Gen EPYC, 18+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
473	83	7. Server (Category-7)	<p><u>Memory:</u> 8 no:s x 32GB OR 4 no:s x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 256GB)</p>	<p><u>Request to Change</u> 8 no:s x 32GB OR 4 no:s x 64GB DDR5 4800+ MHz ECC REG DIMM (Buffered) (Total 256GB)</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
474	85	8. Server (Category-9)	<u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	<u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
475	85	8. Server (Category-9)	<u>Memory:</u> 16x 32GB or 8x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 512GB)	<u>Request to Change</u> 16x 32GB or 8x 64GB DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (Total 512GB)	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
476	87	9. Server (Category-10)	<p><u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	<p><u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
477	87	9. Server (Category-10)	<p><u>Memory:</u> 32 no:s x 32GB or 16 no:s x 64GB or 8 no:s x 128GB DDR4 2933+MHz ECC REG DIMM (Buffered) (Total 1TB)</p>	<p><u>Request to Change</u> 32 no:s x 32GB or 16 no:s x 64GB or 8 no:s x 128GB DDR5 4800+MHz ECC REG DIMM (Buffered) (Total 1TB)</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
478	89	10. Server (Category-11)	<u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	<u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
479	89	10. Server (Category-11)	<u>Memory:</u> 8x 32GB OR 4x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 256GB)	<u>Request to Change</u> 8x 32GB OR 4x 64GB DDR5 4800+ MHz ECC REG DIMM (Buffered) (Total 256GB)	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
480	91	11. Server (Category-13)	<p><u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	<p><u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
481	91	11. Server (Category-13)	<p><u>Memory:</u> 8x 64GB OR 4x128GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 512GB)</p>	<p><u>Request to Change</u> 8x 64GB OR 4x128GB DDR5 4800+ MHz ECC REG DIMM (Buffered) (Total 512GB)</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
482	92	12. Server (Category-14)	<u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	<u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
483	92	12. Server (Category-14)	<u>Memory:</u> 8x 32GB OR 4x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 256GB)	<u>Request to Change</u> 8x 32GB OR 4x 64GB DDR5 4800+ MHz ECC REG DIMM (Buffered) (Total 256GB)	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
484	94	13. Server (Category-16)	<p><u>Processor</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	<p><u>Request to change</u> 2 Quantity (Dual socket) x Intel Xeon Gold scalable series Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB)</p> <p>OR</p> <p>2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
485	94	13. Server (Category-16)	<p><u>Memory:</u> 16x 32GB or 8x 64GB DDR4 2933MHz ECC REG DIMM (Buffered) (Total 512GB)</p>	<p><u>Request to Change</u> 16x 32GB or 8x 64GB DDR5 upto 4800+ MHz ECC REG DIMM (Buffered) (Total 512GB)</p>	Kindly refer revised Specification in Annexure-B
486		SSL VPN Gateway	Point 6	Request to remove this clause. We are a Make in India OEM and currently do not support this feature	Kindly refer revised Specification in Annexure-B
487		SSL VPN Gateway	Point 7	Request to remove this clause. We are a Make in India OEM and currently do not support this feature	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
530	252	7. The bidder must be an authorised representative of the products/Equipment(s) offered. The authorisation letter from the OEM must be submitted along with the bid Authorisation must be issued by OEMs Authorise signatory. OEMs MAF should contain mainly the following points in its MAF (Manufacturer Authorisation Form) while issuing to bidder:	Offered equipment(s)/Software(s) should not be declared end of life/support till 31.12.2029.	<p>All the equipments have a life cycle of minimum 8 years and all OEM provide the same and by adding this point of 8 years support all OEM's will supply / quote latest products.</p> <p>Products will take minimum delivery timeline of 30-40 weeks which means 6 months, its like 2023 is completed and devices will be supported for only for 5 years from there, to get full benefit to govt. and to get latest products from all OEM's, we request you to please change the clause as per below, so all OEM's will quote latest products</p> <p>"Offered equipment(s)/Software(s) should not be declared end of life/support till 31.12.2032."</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
531	48	Site Survey of Data Centre(DC) & 50 remote sites.Delivery, Installation, Testing & Commissioning of Complete Hardware at DC [except EMS and DCIM equipments/solution] including the Delivery, Installation, Testing & Commissioning of Complete Hardware at 50 remote sites & their integration with DC as per SoW. Offering of this infrastructure under Milestone-1 for Acceptance Testing (AT) to ERNET India as per Acceptance	T+ 30 Weeks	There are multiple delivery locations and most of the delivery timeline from most of the OEM's are 30-40 weeks, so completing installation in 30 weeks is impossible. So request you to please change this to T+ 60 Weeks	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
		Testing Plan (ATP).			

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
532	253	B.Original Equipment Manufacturer (OEM)'s Criteria	The product (same or similar type as per BoM) offered by OEM should have been supplied and installed (as listed below in last five years) to any Central/State Government/ Govt. undertakings / UT's/ Autonomous Bodies/Public Listed Companies in India from 01/03/2018 to 28/02/2023. Copies of relevant documents in this regard should be submitted to the satisfaction of ERNET India.	The product (same or similar type as per BoM) offered by OEM should have been supplied and installed (as listed below in last seven years) to any Central/State Government/ Govt. undertakings / UT's/ Autonomous Bodies/Public Listed Companies in India from 01/03/2016 to 28/02/2023. Copies of relevant documents in this regard should be submitted to the satisfaction of ERNET India.	Clause may be read as: The product (same or similar type as per BoM) offered by OEM should have been supplied and installed (as listed below in last six years) to any Central/State Government/ Govt. undertakings / UT's/ Autonomous Bodies/Public Listed Companies in India from 01/03/2017 to 28/02/2023. Copies of relevant documents in this regard should be submitted to the satisfaction of ERNET India.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
533		Additional Query		<p>THE RFP has asked for multiple network, Server, security and software products to be deployed in a DC. We would like to apprise that in any modern DC to deploy such a large range of solution - "Infrastructure as a code" is used and to manage all these from single console, day2 and day3 operation we require automation suite. Thus we request you to add Automation suite, so as not to jettison for timely implementation for effective O&M + Governance required technologies are available. All large DC's RFPs asked for automation solutions to achieve these desired outcomes. THE RFP has asked for multiple network, Server, security and software products to be deployed in a DC. We would like to apprise that in any modern DC to deploy such a large range of solution - "Infrastructure as a code" is used and to manage all these from single console, day2 and day3 operation we require automation suite. Thus we request you to add Automation suite, so as not to jettison for timely implementation for effective O&M + Governance required technologies are available. All large DC's RFPs asked for automation solutions to achieve these desired</p>	<p>No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
				outcomes.	

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
554	251	Bidder's Qualification Criteria	Bidder should have experience of successful implementation of similar project(s) in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India as:Single order of Rs. 250 Crore or more; ORTwo orders each having minimum of Rs. 150 Crore or more; ORThree orders each having minimum of Rs. 120 Crore or moreSimilar Projects: - Setting up of Data Centre (including computing, storage & networking Infrastructure) / Operation & Maintenance of Data Centres / Network Operation Centres/ Security operation centres/ Smart City Projects/ Large IT networking.	Bidder should have experience of successful implementation/ongoing of similar project(s) in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India as:Single order of Rs. 250 Crore or more; ORTwo orders each having minimum of Rs. 150 Crore or more; ORThree orders each having minimum of Rs. 120 Crore or moreSimilar Projects: - Setting up of Data Centre (including computing, storage & networking Infrastructure) / Operation & Maintenance of Data Centres / Network Operation Centres/ Security operation centres/ Smart City Projects/ Large IT networking.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			Security operation centres/ Smart City Projects/ Large IT networking.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
555	251	Bidder's Qualification Criteria	At least one order should contain Supply & successful implementation of IT Equipment (similar to BoM of this Tender i.e Server, Storage, Networking and firewalls equipment etc.) in Data Centre environment of value not less than Rs. 80 Cr. in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India. In case of supply of IT equipment in Data Centre project is a part of larger project(large IT Networking/Smart City Projects) then bidder should get certificate from Statutory Auditor/Practicing CA-	At least one order should contain Supply & successful implementation of IT Equipment (similar to BoM of this Tender i.e Server, Storage, Networking and firewalls equipment etc.) in Data Centre environment of value not less than Rs. 50 Cr. in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India. In case of supply of IT equipment in Data Centre project is a part of larger project(large IT Networking/Smart City Projects) then bidder should get certificate from Statutory Auditor/Practicing CA- (With UDIN) regarding value of IT Equipment at Data Centre supplied and installed. This order may be one of the order from the orders provided against clause-A(4) above or a seperate order altogether.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			(With UDIN) regarding value of IT Equipment at Data Centre supplied and installed. This order may be one of the order from the orders provided against clause-A(4) above or a seperate order altogether.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
556	252	Bidder's Qualification Criteria	Order Completion date/date(s) should fall between 01/03/2016 to 28/02/2023.	Kindly Consider order Completion date/date(s) should fall between 01/03/2016 to 31/03/2023.	<p>Note of Section VI Clause A.5 may be read as:</p> <p>Note i.r.o clause 4,5&6- Bidder shall provide relevant copies of the customer purchase orders in support of scope of work, deliverables, project value and satisfactory work completion certificate from client. Bidder shall also provide Name, Address, email and contact no. of organization whose Purchase orders are submitted by Bidder. Order Completion date/date(s) should fall between 01/03/2016 to 28/03/2023.</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
557	48	Section-9; 9 Terms of Delivery and delays	Activity Site Survey of Data Centre(DC) & 50 remote sites. Delivery, Installation, Testing & Commissioning of Complete Hardware at DC [except EMS and DCIM equipments/solution] including the Delivery, Installation, Testing & Commissioning of Complete Hardware at 50 remote sites & their integration with DC as per SoW. Offering of this infrastructure under Milestone-1 for Acceptance Testing (AT) to ERNET India as per Acceptance Testing Plan (ATP). Timeline (Milestone)T+ 30 Weeks	We request you to kindly amend the timeline clause as:T+ 40 Weeks	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
558	53	10 Prices and Payments Terms:	In respect of DC and DR equipment (s), 50% of the total value of equipment(s) delivered at DC and similarly 50% of the total value of equipment(s) delivered at DR shall be released on 100% of delivery of all equipment(s) in good condition based on the respective milestone(s) and after successful Rack mounted, Power on Self-Test (PoST) by the Contractor	Since, the successful bidder has to submit a Performance Security @ 3% of total value of Contract. So additional PBG of 15% against the payment should be removed. We request you to kindly amend the payment terms as: In respect of DC and DR equipment (s), 70% of the total value of equipment(s) delivered at DC and similarly 70% of the total value of equipment(s) delivered at DR shall be released on 100% of delivery of all equipment(s) in good condition based on the respective milestone(s) and after successful Rack mounted, Power on Self-Test (PoST) by the Contractor or on Pro-rata basis in case of partial delivery of equipment at DC & DR.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
559	144	Section 38. IPS/IDSClause 3	The appliance must have Real World Throughput of 10 Gbps and scalable up to 30 Gbps for future requirements on the same appliance	As per RFP, an Internet Firewall with IPS should support at least 100gbs and 15 Gbps throughput is expected from a mix of firewall, IPS, and Anti-malware.And as per this clause, the expected throughput of IPS is only 30 Gbps, it will create a bottleneck or drop in traffic at the IPS boxPlease change the clause to The appliance must have Real World Throughput of 10 Gbps and be scalable up to 40 Gbps for future requirements on the same appliance	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
573	58	Section III: General Conditions of Contract(GCC) 12.1.5 Limitation of Liability	Except in cases of criminal negligence or wilful misconduct, the aggregate liability of the contractor to the ERNET India, whether under the contract, in tort or otherwise, shall not exceed the total Contract value, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the contractor to indemnify the ERNET India concerning IPR infringement.	<p>To make the contract feasible and commercially viable please add the below statement in Limitation of Liability clause: In the current clause; indirect liabilities are also uncapped. Generally in most of the tenders, indirect liabilities are outside of the purview of tender. Hence; we request addition as below-</p> <p>Neither party shall be liable for any indirect, special, punitive, exemplary, speculative or consequential loss or damage.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
574	48	12) SLA during warranty period and penalties thereof	The overall Penalties for non-adherence with the SLA of warranty support (during 2nd & 3rd year of warranty period) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment (CAPEX). In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2.	We request the penalty capping to be reduced to 10%.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
575	289	E) Help Desk Support Services Level	Note:- The overall Penalties (for Clause 1-A,B,C,D in Section-VIII) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment of Grand Total Value. In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2 of Section-III	We request the penalty capping to be reduced to 10%.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
576	NA	Clause not present	General	It is requested that atleast 3-4 weeks be given post the release of pre-bid queries responses for submitting a qualitative and competitive bid.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
577	NA	Clause not present	Overall penalty capping	We request the department to mention an overall penalty capping of 10% of the TCV during the entire project duration	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
578	NA	Clause not present	Automation suite requirement	THE RFP has asked for multiple network, server, security and software products to be deployed in a DC. As you are already aware; in any modern DC to deploy such a large range of solution - "Infrastructure as a code" is used and to manage all these from a single console and an automation suite becomes a very viable solution for such deployments. Thus we request you to add Automation suite; not just for timely implementation; but also for effective O&M & overall governance	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
579	151	Section V: Technical Specifications	Active Directory Solution Device Support - 2500 or higher User Support - 1000	Please clarify the requirement for Client Access License, shall be based on Device (2500) or Users (1000)? Do you have more users per device (shared devices) or more devices per user?	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
604	268	Training Point 2 -iii	Installation, configuration and administration of all Networking, Firewalls, Servers, AAA Appliance, Load Balancer, NDR, EMS, DCIM, CMS, IT Helpdesk etc.	Do let us know if NDR solution needs to be provided. If YES..Pls provide the NDR Specification and detailed BOM	NDR is not part of this tender requirement

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
605	186	Non Smart Rack with Redundant IPDU	<u>Non Smart Rack with Redundant IPDU</u> 2 numbers of Hybrid iPDU (as per annexure) Metered PDU with minimum 24 sockets each and power cord, with ability to monitor power consumption of individual servers and network equipment.	No Power Ratings of the PDU is given.	Kindly refer revised Specification in Annexure-B
606	188	56. LED Display	Panel Technology IPS	Request to change IPS to IPS/VA. There are two panel technology, IPS&VA, OEM comes with VA panel as it is better because in VA panel Contrast ratio starts from 4000:1).	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
607	103	18. DC OOB Access Switch	Number of 40GQSFP+ Port (Uplink):- 2 or higher with minimum 80Gbps of stacking/MLAG/MCLA G bandwidth with stacking/MLAG/MCLA G ports from day 1 along with its transceivers	We understand that either 2 X 40G interface or Minimum 80Gbps of stacking is required to meet the functionality. Request to kindly clarify .Remarks :- 80 Gbps of stacking can also be provided by using different combination of interface such as 2 X 50Gbps Or 2 X100Gbps or 4 X25Gbps . Request to kindly clarify so that the appropriate solution can be provided .	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
608	105	19. DR OOB Access Switch	Number of 40GQSFP+ Port (Uplink):- 2 or higher with minimum 80Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 along with its transceivers	<p>We understand that either 2 X 40G interface or Minimum 80Gbps of stacking is required to meet the functionality. Request to kindly clarify .</p> <p>Remarks :- 80 Gbps of stacking can also be provided by using different combination of interface such as 2 X 50Gbps Or 2 X100Gbps or 4 X25Gbps . Request to kindly clarify so that the appropriate solution can be provided .</p>	Kindly refer revised Specification in Annexure-B
609	107	20. DC OOB Core Switch	No of 10G SFP/SFP+ Ports:- Minimum 96 Nos	<p>(17) DR OOB Core Switch is asked with 48 X 1/10G ports , where as DC OOB Core Switch is asked with 96 X10G Ports . The 96 Ports form factor of switch is not available with many OEMS.</p> <p>Request to reduce the 96 ports to 48 Ports or allow the stack of 2 Switches can be provided to meet the functional and Port requirement .</p>	Kindly refer revised Specification in Annexure-B
610	107	20. DC OOB Core Switch	Switching Capacity (Non-Blocking) (Gbps):- 3120 or higher	<p>Request to kindly reduce the switching capacity to 2160Gbps (48 X10 + 6 X100) X 2 = 2160 Gbps .</p> <p>Request to relax for leading OEM to participate .</p>	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
611	108	21. DR CE Router/ Internal WAN Router	Routing Engine :-The Router should be populated with redundant Routing Card/Engines and/or should have multi processors	Request Change :- The Router should be populated with redundant Routing Card/Engines. The current clause is creating ambiguity. Multi processor is not equal to redundant routing engine or will provide redundancy in case of failure of Routing/control plane . Hence request to change the clause correct and right solution .	Kindly refer revised Specification in Annexure-B
612	110	23. DR Internet Router	Port population: Should be supplied on day 1 with 4 x 1000Base-LX Single Mode SFP transceivers, 4 x 10/100/1000Base-T Interface Ports and 4 x 10G Base SR Transceivers. Should be scalable to support additional 4 X 40G	Request Change :- Should be supplied on day 1 with 4 x 1000Base-LX Single Mode SFP transceivers, 4 x 10/100/1000Base-T Interface Ports and 4 x 10G Base SR Transceivers. Should be scalable to support additional 2 X 40G We request to change the scalability to 2 x 40G for the optimum sizing of the solution.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
613	100	15. DC Leaf Switch	No of SFP/ SFP+ Ports : Minimum 24 Nos	<p>Request Change :- No of SFP/ SFP+ Ports : Minimum 48 Nos</p> <p>We request to change the number of interfaces to 48 Port. This will help in optimum sizing (Powerpoint, space , cooling , fiber layout) of the solution. Secondly 48 Port 1/10G is the standard configuration for a Leaf Switch available with multiple OEMs. This will ensure reduction in quantity without any change in the network design and functionality asked in the tender and will also help in capex and Opex reduction.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
614	101	16. DR Leaf Switch	No of SFP/ SFP+ Ports : Minimum 24 Nos	<p>Request Change :- No of SFP/ SFP+ Ports : Minimum 48 Nos We request to change the number of interfaces to 48 Port. This will help in optimum sizing (Powerpoint, space , cooling , fiber layout) of the solution. Secondly 48 Port 1/10G is the standard configuration for a Leaf Switch available with multiple OEMs. This will ensure reduction in quantity without any change in the network design and functionality asked in the tender and will also help in capex and Opex reduction.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
615		Server (All Categories) General Features for Server	For the Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.	For the Storage (HDD) Drives : Sanitize Instant Erase , Self- Encrypting (SED/ ISE). Required support should be available in RAID controllers.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
616	76	Server (Category -2B)Storage	84 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)Note: Single DAS expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	84 no:s x 18+ TB Enterprise Drives or Minimum 1512 TB RAW capacity using 18TB / 20TB / 22TB Enterprise drives , (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)Note: Single DAS expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
617	84	Server (Category -7) Power Supply	Redundant ,Maximum consumable 1100 W	Redundant , Maximum consumable 2100 W	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
618	84	Server (Category -7)Storage	16 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.	16 no:s x 18+ TB Enterprise Drives or minimum 288TB RAW capacity using 18TB/20TB/22TB Enterprise drives , (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
619	85 & 86	Server (Category -9)Storage	60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) Note: Single DAS (upto 5U)expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead. IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	60 no:s x 18+ TB Enterprise Drives or minimum 1080 TB RAW capacity using 18TB/20TB/22TB Enterprise drives , (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) Note: Single DAS (upto 5U)expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead. IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
620	88	Server (Category -10)Storage	Storage in Server: 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead.	Storage in Server: 60 no:s x 18+ TB Enterprise Drives or minimum 1080 TB RAW capacity using 18TB/20TB/22TB Enterprise drives , (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
621	88	Server (Category -16)Storage	12+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.	12+ no:s x 18+ TB Enterprise Drives or minimum 216 TB RAW capacity using 18TB/20TB/22TB Enterprise drives , (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
622	Page No. 244	Heavy-duty workstation Monitor	24" inch FHD IPS (1920 x 1080) Anti-Glare Narrow Border Infinity Touch/ Non-Touch Display	23.8 Inch FHD IPS /VA/TN (1920 x 1080) Anti-Glare Narrow Border Infinity Touch/ Non-Touch Display	Kindly refer revised Specification in Annexure-B
623	Page No. 244	Heavy-duty workstation Camera	FHD Camera	FHD Camera External or Integrated in Monitor	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
624	59	6. The payment terms	a) Under this project, there are two types of Payments. One is CAPEX Payment i.e. price of equipment(s) and other is payment pertaining to OPEX i.e. Operation & Maintenance (O&M) services.b) In respect of DC and DR equipment (s), 50% of the total value of equipment(s) delivered at DC and similarly 50% of the total value of equipment(s) delivered at DR shall be released on 100% of delivery of all equipment(s) in good condition based on the respective milestone(s) and after successful Rack mounted, Power on Self-Test (PoST)by the Contractor.	We request you to amend the payment terms as follows: - a) Under this project, there are two types of Payments. One is CAPEX Payment i.e. price of equipment(s) and the other is payment pertaining to OPEX i.e. Operation & Maintenance (O&M) services.b) 10% of the Total Value of the project as non-recoverable Mobilization Advancec) In respect of DC and DR equipment (s), 65% of the value of equipment delivered at DC on pro-rata basis and similarly 65% of the value of equipment delivered at DR on pro-rata basisd) In respect of DC and DR equipment (s), 20% of the value of equipment shall be paid against successful installation, testing & commissioning at DC and similarly 20% of the value of equipment shall be paid against successful installation, testing & commissioning at DR	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
625	59	6. The payment terms	f) In respect of equipment at remote sites, 85% of the total value of items will be made after successful delivery, installation, integration, commissioning and acceptance the respective milestone(s).	e. In respect of equipment at remote sites, 65% of the total value of items will be made after successful delivery on monthly pro-rate basis and 20% of the total value of items will be made after installation, integration, commissioning, and acceptance the respective milestone(s).	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
626	60	6. The payment terms	h) Thereafter, based on successful performance during warranty period, balance 15% value of the respective milestone shall be released in twelve (12) equal instalments on a quarterly basis after completion of every quarter. It would be duty of contractor to get the satisfactory performance certificate from CERT-In or (any other 3rd party to whom equipment's warranty has been transferred on the basis of instructions from ERNET India) along with necessary documents. ERNET India may give an option to contractor to claim Balance 15% payment against submission of Bank	Balance 5% shall be released against submission of 5% of the of Bank Guarantee with the validity till completion of warranty period Bank Guarantee formats to be signed by the contractor in this respect will be given to contractor at the time of exercising this option.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>Guarantee. If this option is given by ERNET India and the same is accepted by Contractor, then the contractor would be having an option to submit Bank Guarantee (BG) for: - i. 15% value, with the validity till completion of warranty period of last milestone + Three (3) months of claim period, orii. Three (3) Bank Guarantees of 5% each (as reduced by the payment (s) already made w.r.t warranty and maintenance support) valid for one year, Two year & Three years from the date of last milestone + 3 months of claim period.iii. Bank Guarantee formats to be signed by the contractor in this respect will be</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			given to contractor at the time of exercising this option.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
627	60	6. The payment terms	g. In respect of EMS and DCIM solution (i.e. Hardware and Software of Milestone-2 and Milestone-8),i. 50% of the total value of solution will be made after delivery at DC (for Milestone-2) and at DR(for Milestone-8) respectively.ii. 35% of the total value of solution will be made after successful installation, integration, commissioning and acceptance at DC(for Milestone-2) and at DR(for Milestone-8) respectively.	g. In respect of EMS and DCIM solution (i.e. Hardware and Software),i. 65% of the total value of solution will be made after delivery at DC and at DR respectively.ii. 20% of the total value of solution will be made after successful installation, integration, commissioning and acceptance at DC and at DR respectively.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
628	63	12.1.4 Contractual Remedies for Breaches/Defaults or Termination for Default	ERNET India may debar the contractor or any of its successors from participating in any Tender Process undertaken by it for a period not exceeding two years commencing from the date of debarment. Terminate contract for default, fully or partially including its right for Risk-and-Cost Procurement as per following sub-clause.	As is the common practice in government tenders, debarment is not applicable for default of contract. Hence, we request you to remove the clause.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
629	293	Service Level during Operation & Maintenance period for Equipment	For the equipment supplied via this bid, a penalty @ 0.25 % of the equipment(s) cost per day or part thereof for first 24 hours, will be deducted for downtime beyond permissible limit. In case, DCIM, EMS, etc. goes non-functional, a penalty @0.25% per day or part thereof for first 24 hours for	We request you to relax the clause and amend the clause as follows: - For Equipment at DC & DR procured via this bid For the equipment supplied via this bid, a penalty @ 0.1% of the equipment(s) cost of affected portion* per day or part thereof for first 24 hours, will be deducted for downtime beyond permissible limit. In case, DCIM, EMS, etc. goes non-functional, a penalty @ 0.1% per day or part thereof for first 24 hours for respective component will be applicable.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			respective component will be applicable		
630	295	Service Level during Operation & Maintenance period for Equipment	F. Security and Incident Management Service Levels(There will not be any penalty capping for this section)	We request you to limit the penalty capping to the overall cap of SLA Penalty i.e., 25% of the respective Quarterly payment of Grand Total Value and amend the clause as follows: - F. Security and Incident Management Service Levels(There will not be any penalty capping for this section)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
631	57	9.5 Extension of Delivery Period and Liquidated Damages	If the Contractor fails to meet the prescribed timelines for respective milestones due to any reason whatsoever then in such a case ERNET India would be entitled to impose the Liquidated Damages for the delay @ 0.5 % of the Contract value of the respective milestone per week or part of the week of delayed period. Overall Liquidated Damages shall be restricted to 10% of the total contract value. While calculating LD; GST will be excluded from the value on which LD is calculated; thereafter GST will be charged on the LD value as per S.No. 4 clause 5.3 of Section II of this document. . In case, delay beyond 20	As is the common practice in government tenders, Liquidated damages should be applicable on the undelivered portion and not on the total contract value. Kindly amend the clause as follows: - If the Contractor fails to meet the prescribed timelines, starting from delivery of complete hardware under respective milestones, for any reason whatsoever then in such a case ERNET India would be entitled to impose the Liquidated Damages for the delay @ 0.5% of the Contract value undelivered value of the Contract Value per week. respective milestone per week or part of the week of delayed period. Overall Liquidated Damages shall not exceed 10% of the contract value (including taxes). However, Liquidated Damages shall be levied only for delay beyond the scheduled overall Project completion date and not on intermediate milestones.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			weeks, ERNET India may initiate termination for default		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
632	64	12.1.5 Limitation of Liability	Except in cases of criminal negligence or wilful misconduct, the aggregate liability of the contractor to the ERNET India, whether under the contract, in tort or otherwise, shall not exceed the total Contract value, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the contractor to indemnify the ERNET India concerning IPR infringement	We request you to amend the clause as follows: -Except in cases of criminal negligence or wilful misconduct, the aggregate liability of the contractor to the ERNET India, whether under the contract, in tort or otherwise, shall not exceed 50% of the total Contract value, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the contractor to indemnify the ERNET India concerning IPR infringement.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
633	40	5.7 Performance Bond/ Security	The successful bidder shall submit a Performance Security @ 3% of total value of Contract within 14 days from the date of issuance of contract. The Performance Security if submitted in the form of Bank Guarantee, Fixed Deposit and Insurance Surety bond should be valid for a minimum period of 49 months (Implementation period+ Warranty Period+ Claim Period of 3 months).	We request you to allow Bidder to submit separate Performance Security for the implementation period and Warranty and O&M Period.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
634	55	12.1 Termination due to Breach, Default, and Insolvency	12.1.1 Defaults and Breach of Contract	We request you to make the clause for termination to be applicable on ERNET as well, because it would make the contract applicable to both sides	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
635	57	12.2.1 Notice for Determination of Contract	12.2.1 Notice for Determination of Contract	We request you to make the notice for determination of contract on ERNET as well, because it would make the contract applicable to both sides	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
636	251	3.2 Roles and Responsibilities of Contractor under this tender & Interlinkages with Other Tenders Floated for the Project:	Warranty/AMC of phase-1 equipments are not under purview of this tender. However, contractor must ensure that due to activities undertaken by it during the O&M period, warranty of Phase-1 equipments should not become void.	We understand that IT Infrastrucutre of Phase-1 is and shall be under warranty till completion of warranty of this RFP. Kindly confirm.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023). End User (i.e CERT-In) will take care for extension of warranty/AMC for Phase-I equipment(s)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
637	56	12.1.4 Contractual Remedies for Breaches/Defaults or Termination for Default	Risk and Cost Procurement: In addition to termination for default, the ERNET India shall be entitled, and it shall be lawful on its part, to procure Equipment and services similar to those terminated, with such terms and conditions and in such manner as it deems fit at the "Risk and Cost" of the contractor. Such 'Risk and Cost Procurement' will be contracted within nine months from the breach of Contract. The Contractor shall be liable for any loss which the ERNET India may sustain on that account provided the procurement, or, if there is an agreement to procure, such agreement is made.	Request you to delete the Risk purchase clause.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			The Contractor shall not be entitled to any gain on such procurement, and the manner and method of such procurement shall be in the entire discretion of the ERNET India. It shall not be necessary for the ERNET India to notify the contractor of such procurement. It shall, however, be at the discretion of the ERNET India to collect or not the security deposit from the firm/ firms on whom the contract is placed at the risk and cost of the defaulted firm.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
638	257	2. Overall Deliverables of Contractor	vi. To configure MPLS WAN links & IPSec Tunnels at 250 remote sites & Data Centres.	We understand that MPLS WAN Links shall be provided by ERNET India to the Bidder. Kindly confirm.	The ERNET India empanelled service provider will be providing the MPLS link. The successful bidder shall coordinate with service provider while configuring the equipment over MPLS WAN.
639	273	10. Acceptance Testing (AT)	ERNET India may require the Contractor to carry out any test and/or inspection not specified in the Contract but deemed necessary to verify that the characteristics and performance of the equipment(s) and services comply with the technical specification's codes and standards under the Contract. The Contractor shall be required to carry out such test and/or inspection at its own cost.	We request you to share the extent of test/inspection so as to factor the cost. Else, we request ERNET India to reimburse the cost at actuals.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
640	285	13. Manpower for Operation & Management at DC , DR and at Delhi	Contractor must ensure that all the manpower deployed for Operation & maintenance should be on Contractor's or OEM payroll.	We request you to amend the clause as follows: - Contractor must ensure that all the manpower deployed for Operation & maintenance should be on Contractor's or OEM or Contractor's Resource partner payroll.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
641	307	Form 6: Check-List for Bidders	Make in India Certificate	We hereby request the department to clarify, if they allow the bidders to supply the Material from an OEM whose major ownership/Stake is bought over by a China based company from original owners who were based in a different country. This means that the company is now managed and goverened by Chinese company. Will that be a violation of land/border clause.	As Clause is self explanatory so No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023), OEM must submit Form-11 along with Tender

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
642	203	DCIM - Point no. 3	The solution should be able to detect, collect, register and manage information on infrastructure elements related to Power, Temperature , Cooling , Rack space, rackPDUs , Assets tags of data center. It shall show available power, available space, heating and cooling on floors in racks, and network ports and power connectors on the UI/dashboards readily, depending upon the interfaces. There will be an existing BMS system, bidder must scope & plan to integrate with BMS (if the access/permissions are provided) for any of the relevant data for any of such systems.	Please share the existing BMS details like Make ,I/O Summary (Protocols and Compatibility with DCIM)	BMS details such as Make,Model, I/O Summary and protocols supported shall be provided later. In General , Provided that the access to BMS is allowed , an integration of a total of approximately 100 BMS nodes (including for DC and DR) with DCIM may be required.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
643	205	DCIM - Point no. 6	a. The solution design and deployment architecture should meet the availability requirements ensuring that the deployed solution should be distributed or has a load alanced implementation of application(s) to ensure that availability of services is not compromised at any failure instance.b. The complete solution should be provided in High Availability mode . There should be seamless automatic successful switchover/handover (in case of failure) between the two instances. The respective HA mode instances of applications/modules should execute at different physical	1.Do you mean HA at DR and DC to exist simultaneously ? Pl confirm 2. How many HA instances and DR Instance at each site you need?3. Please share exact count of IT Hardware to be considered for scope of the hardware for HA and DR?4. Please share preferred architecture ,if you have as per your vision,this will facilitate the bidding team to prepare BOQ accordingly.	DC and DR are at physically different locations, two different subnets. OverallDC,DR and Remote locations are connected on MPLS Network. Our Main requirement is HA should be provided on different physicalservers, none of our data centres (i.e DC and DR) go unmonitored and unmanaged (at any point in time) and sync of data between allthe instances provided should be maintained.Two instances are sought to form a HA as per the design considered. One Instance at DC and Another at DR & Each Instance to have local HA(s) . For choosing h/w specs for each HA instance: Each of the HA instance should have hardware based redundancy and refer to the BoM 'PART B' 1.a to 1.e for scope of hardware & also refer to scalability & backup requirements as sought in the bid. Additionally, refer# Technical Specifications for more detailed understanding. Also, refer the DCIM's Technical Specifications point#6.6.f i.e. Design for HA has been proposed in this spec, other design may be suggested by bidder adhering to all our requirements.Also, refer to revised Technical specfications of EMS point#6 in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>servers. The servers should be of industry standard and data center compatible. Each instance should be able to manage & monitor complete infrastructure at DC and DR.c. SI must ensure the automatic sync of all relevant data amongst the different data bases of the instances. There shouldn't be any data loss during or after completion of sync.d. The SI must budget to provide the relevant hardware / software (if any) which can sync DCIM & its module's data from DC to DR and vice versa (DR to DC sync is applicable in special cases when DC went down and comes back). The software must only sync the delta (i.e.</p>		

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			<p>changed part) everytime to maintain whole database sync. e. It must be noted that in case the HA is provided within two instances running on different physical servers at DC SI must ensure to provide another third instance at DR , which will remain passive until complete DC is down and/or as per any other defined scenario. When the link between DC and DR goes down & DC's instance is monitoring -managing the DC's infra, the instance at DR must monitor - manage DR infrastructure. The data (such as alarms etc.) must be synced with DC instance , when DC-DR link comes back. Also on such</p>		

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			occasions/scenarios, whenever the DC and DR instance are running actively at same point of time, solution should not require any additional licenses. Sufficient licenses for the solution should be provisioned to handle such scenarios i.e. ensuring DC and DR instance can run without the need for any extra license.· SI must create Standard operating procedure document for replicating the data (from all of the supplied modules) from DC to DR on regular basis with a periodicity allowed to be defined (between 30min to 5 days).		

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644	206	DCIM - Point no. 8	It should get integrated with EMS (proposed in this bid) for Alarms/Events, Change Management, IT helpdesk/Service desk (for any requests/authorizations) etc.	Please share the methodology ,protocol & data with DCIM for purpose of integration.	Integration shall be performed using SNMP and /or Rest API or any other non-properitary interfaces.
645	207	DCIM - Point no. 25	Integration of Solution with Helpdesk and EMS : Whenever a fault arises in the monitored/managed infrastructure/ or its own solution, a ticket should automatically get logged as an incident in the service desk. The Alarm/Fault should be visible into the Integrated EMS system being proposed by SI in this bid. As a process, the ticket should be assigned with predefined/preconfigured SLAs to the concern team/team	Please share the methodology ,protocol & data with DCIM for purpose of integration.	Integration shall be performed using SNMP and/or Rest API or any other non-properitary interfaces.

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			members.		
646	209	DCIM - Point no. 36	The alarms generated in DCIM for the components should also be reflected in the EMS system	Please share the methodology ,protocol & data with DCIM for purpose of integration.	Integration shall be performed using SNMP and/or Rest API or any other non-properitary interfaces.

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647	211	DCIM - Point no. 44	Vendor must integrate DCIM solution & its modules with proposed EMS , Change Management , IT Helpdesk solution under this project. The bidder may integrate or also have to integrate this solution with other necessary (proposed) modules as desired to accomplish the required functionality. Bidder must also ensure that all the hardware of various different OEMs proposed in this solution by the bidder must be managed, monitored by the proposed DCIM+EMS solution. The proposed solution should be able to show the alarms from all sub-system & system components planned to be supplied in this bid including	Please share the methodology ,protocol & data with DCIM for purpose of integration.	Integration shall be performed using SNMP and/or Rest API or any other non-proprietary interfaces.

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			Phase-I and other bids referred in this tender. In general solution should be OEM agnostic & should by default support integration with major OEMs of Network and server equipment and natively support SNMPv3 for other devices.		

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648	68	Section IV: Bill of Material Part A - 31	Remote Router/ Firewall – 2Gbps (In Remote Sites)	Request you to clarify whether this specification asks for a Remote router or a Application (Web Application Firewall)	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
649	68	Section IV: Bill of Material Part A - 35 AAA Section V: Technical Specifications 33. AAA (Authentication, authorization, and accounting) Server - 4	AAA	As per the RFP, AAA solution must be provided in High Availability mode to support Active-Passive deployment. In the Bill of Material the AAA quantity is mentioned only for DR. Please clarify that AAA solution is only for DR and not for DC, If yes, kindly share make and model of AAA in DC.	Kindly refer section -VII point 1.1

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650	126	Section V: Technical Specifications 32 Internet Firewall with IPS 6. Antivirus - 6.1 12.7 Security Administration and Management Services	Firewall should have integrated Antivirus solution if not please quote separate appliance. Protection from viruses / malwares etc. is the responsibility of Contractor for the supplied systems. Contractor must provide antivirus / end point protection with regular updates and take sufficient steps to avoid any kind of attack on supplied systems.	RFP asks for "Firewall should have integrated Antivirus solution if not please quote separate appliance." and "Protection from viruses / malwares etc. is the responsibility of Contractor for the supplied systems. Contractor must provide antivirus / end point protection with regular updates and take sufficient steps to avoid any kind of attack on supplied systems." Request you to add Antivirus or End point protection in the BOQ and provide technical specifications for the same.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
651	127	Section V: Technical Specifications 32 Internet Firewall with IPS - 1.4	Firewall & IPsec should be ICSA Lab certified	Request you to remove or modify the clause with respect to certifications to ensure broader OEM participation.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
652	127	Section V: Technical Specifications 32. Internet Firewall with IPS - 1.5	All the features asked should support from day one and should be from same OEM. Any open source and third party solution is not	Request you to modify the clause to - "All the features asked should support from day one and should not be some open source solution." to ensure broader OEM participation.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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			accepted		
653	128	Section V: Technical Specifications 32. Internet Firewall with IPS - 3.7	Firewall solution should support DNS64 & DHCPv6.	Request to modify or remove DNS64 feature as it is OEM specific.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
654	130	Section V: Technical Specifications 32. Internet Firewall with IPS - 9.7	Should support multiple Report format like PDF, HTML, CSV and XML	The asked clause is specific to a OEM. Request you to ammend the same as suggested "Should support multiple Report format like PDF, HTML, CSV or XML."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
655	130	Section V: Technical Specifications33. DR Internal Firewall	Redundant FAN for fully loaded chassis from day 1	The asked clause is specific to a OEM. Request you to ammend the same as suggested "Redundant FAN and power supplies."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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656	156	Section V: Technical Specifications 39. SSL VPN Gateway	Should have IPV6 support with IPv6 to IP4 and IPv4 to IPv6 translation and full IPv6 support. Also should have IPV6 support with DNS 6 to DNS 4 & DNS 4 to DNS 6 translation based health check for intelligent traffic routing and failover. Solution should support full DNS server functionality to support all kind of DNS records including A,AAAA, MX, CNAME, PTR DNS records.	Kindly remove this feature as it's a DNS and CGNAT feature not related to SSL VPN.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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657	156	Section V: Technical Specifications 39. SSL VPN Gateway	The solution should provide comprehensive and reliable support for high availability with Active- active & active standby unit redundancy mode using standard VRRP (RFC-2338) for HA interconnection over network. Should support both device level and VA level High availability.	Security solution need sync for HA with same OEM Solution. So that session, connections, configurations can be sync in HA devices. Kindly modify clause for better clarity and right solution - "The solution should provide comprehensive and reliable support for high availability with Active- active & active standby unit redundancy mode using standard VRRP (RFC-2338) or Equivalent for HA interconnection over network. Should support both device level and VA level High availability."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
659	265	Section VII: Scope of Work 3. Roles and Responsibilities of Contractor	Contractor of this tender should coordinate with the selected system Integrators / Contractors chosen in the bids mentioned under sub-section "Other Tenders Floated for the Project" to perform:i. End to end integration of all infrastructure procured, includinga. Phase-1 IT infrastructure (i.e. Networking, Security appliances & Servers) at Data Centre	Request you to provide high level information about the Phase-1 IT infrastructure such as security appliances,etc. as RFP asks for end to end integration of Phase-1 infrastructure.	Kindly refer section -VII point 1.1

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660	266	5. Role and Responsibilities of contractor at Disaster Recovery Data Center (DR): 1)	Site Survey, and Preparation of High Level Design & Low Level Design for DR in sync with DC. Submission of Survey reports and design. The architecture in DR would follow the same design and functional principles as laid down for DC . Contractor to ensure for smooth integration/functionality of various analytics application and tools across DC and DR.	Request you to clarify whether DR should be the same as DC with respect to architecture design and components used.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
661	296	Section VIII: Service Level Agreement during Operation & Maintenance F. Security and Incident Management Service Levels: 1	For every instance of Data Theft, the bidder is subject to penalty and/or punishment applicable under the IT act/ ERNET India/CERT-In data theft policy or any other prevailing laws of the State/Country at that point of time, which shall be over and above the stated	RFP asks for Data Theft protection i.e DLP. Request to add Data Leak Protection in the BOQ and provide technical specifications for the same.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			penalty.		
662	89	5- Technical Specifications- Server (Category-6)	Interface (NIC)- 2 x 1G, copper + 2 x 1G Fiber SFP (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)	Request to clearly specify the network port count & corresponding speed on the server.For example 4 x 1GbE network ports and 2 x 10GBASE-T network ports.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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663	90	5- Technical Specifications- Server (Category-7)	Interface (NIC)- 10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)	Request to specify the transceiver type required as either "LC" or "SC" since bidder will not be aware of the site requirement before bidding. RFP contains the overall BOQ and request to include the same. Moreover as a bidder, we haven't provided with enough information on the existing networking gears to which the proposed technology components need to be integrated.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
664	92	5- Technical Specifications- Server (Category-9)	Interface (NIC)- 10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)	Request to specify the transceiver type required as either "LC" or "SC" since bidder will not be aware of the site requirement before bidding. RFP contains the overall BOQ and request to include the same. Moreover as a bidder, we haven't provided with enough information on the existing networking gears to which the proposed technology components need to be integrated.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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665	94	5- Technical Specifications- Server (Category-10)	Interface (NIC)- 10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)	Request to specify the transceiver type required as either "LC" or "SC" since bidder will not be aware of the site requirement before bidding. RFP contains the overall BOQ and request to include the same. Moreover as a bidder, we haven't provided with enough information on the existing networking gears to which the proposed technology components need to be integrated.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
666	95	5- Technical Specifications- Server (Category-11)	Interface (NIC)- 10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)	Request to specify the transceiver type required as either "LC" or "SC" since bidder will not be aware of the site requirement before bidding.RFP contains the overall BOQ and request to include the same.Moreover as a bidder, we haven't provided with enough information on the existing networking gears to which the proposed technology components need to be integrated.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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667	264	5- Technical Specifications- General note	Bidder shall supply required quantity of fiber patch chords (Single mode/ Multimode), patch chord as per site requirements. All accessories for successful installation in rack should be supplied by Bidder. Supplied equipment must be mountable on 19-inch rack.	Request to specify the count of fiber patch cord length and type being required and include in the BOQ as line item.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
668	103	5- Technical Specifications- General note	Additional SFP requirements - Bidder shall additionally supply 10% extra SFPs compatible with servers.	Request to provide the additional 10% count of SFP transceivers mentioning the operating mode as well with either single mode or multi mode.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
669	157	5- Technical Specifications- Active Directory Solution	Device's support required - 2500 or higher, User support- 1000	Please do inform whether the authentication sign-in and access level would be required for 1000 users	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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670	251	7- Scope of work - Overall Deliverables of Contractor	ix. Operations and Maintenance (O&M) of supplied equipment & Phase-1 infrastructure, including supply of manpower for a period of one year at Data Centre (DC & DR).	Kindly confirm whether the operations & maintenance need to be quoted for only one year to all equipments including the new supply RFP components and existing supplied phase-I components. Request to provide the entire existing components list to consider the scope of operations and maintenance.	Yes, O&M to be quoted for one year only. Kindly refer section -VII point 1.1
671	264	7- Scope of work - Roles and Responsibilities of Contractor under this tender & Interlinkages with Other Tenders Floated for the Project	End to end integration of all infrastructure procured, including a. Phase-1 IT infrastructure (i.e. Networking, Security appliances & Servers) at Data Centre. 15 remote sites of Phase-1.c. 30 leaf switch lying with customer extra at DC. Same shall be configured/reconfigured as per requirement	Request to share the entire asset details with the make and model number and corresponding hardware configuration to check on the integration feasibility approach or if there is an issue with the earlier solutioning due to which integration would be of challenge bidder will not be penalized.	Kindly refer section -VII point 1.1
672	265	7- Scope of work - Roles and Responsibilities of Contractor at Data Center	Expand and Integrate the existing IT infrastructure of Phase-1 Data Centre with the equipment (s) planned in this tender utilizing the existing	Request to share the existing IT Infrastructure (Phase 1 Data Centre HLD and LLD)	Kindly refer section -VII point 1.1

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			HLD and LLD		
673	265	7- Scope of work - Roles and Responsibilities of Contractor at Data Center	To provide necessary support for the installation of third party Operating System and software applications on the commissioned computing infrastructure.	Request to provide the third operating system and software applications (tentative list) which are going to be installed and configured as part of the requirement.	The end user will supply the Operating System(OS) and licenses of required server OS: Windows, Red Hat Linux, SUSE Linux, Ubuntu . Bidder will provide the necessary support for installation of these OS on the supplied servers.

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674	269	7- Scope of work - Role and Responsibilities of Contractor i.r.o EMS, DCIM and related software applications	18) Contractor must provide & configure CA certificates from Verified CA store to allow both Internet and Intranet Access to software web based modules (such as EMS/DCIM etc.) which are valid for the total duration of work on all applicable devices/servers to support SSL based encryption. The default access to EMS and other management modules provided should be via only Intranet, whereas in certain special cases, internet access to specific modules may be provided upon authorized requests& approvals in system (Helpdesk).	Request to provide the tentative count of applications list to which CA certificates need to be considered for quoting.	Bidder is required to provide the CA certificates as per the applications provided for the overall RFP (including the applications sought in BoM)

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675	269	7- Scope of work - Role and Responsibilities of Contractor i.r.o EMS, DCIM and related software applications	Contractor may choose the best and optimized design to deploy the various sought applications / solutions on Hardware. The contractor must ascertain the hardware & other requirements of these servers as per the sought criticality, HA, scope of work, total users, backup , total concurrent users, amount of data to be saved per server per application and other factors.	Please confirm on the period of retention logs required to do the storage sizing. For backup, do we get any of the existing backup equipments like tape library, backup appliance. If backup is required, kindly inform the duration of data backup to be maintained for compliance.	Backup period is 01 Year. Bidder needs to arrange the equipments to suffice the backup requirements asked in the bid.
676	273	7- Training	Training for 50 Persons shall be provided onsite by the Contractor or Contractor's representatives / respective OEMs for a minimum period of 30 days for installation and operation of installed equipment(s).	Training for 50 persons being asked. In-addition to that training and certification on Data Centre, Routing & Switching, Security and Linux System Administration being asked for a total of 130 persons. Do let us know the exact count of people where training and certification need to be provided.	In total maximum of 50 persons will be required to be trained by the contractor/OEM. The total number of certifications shall remain fixed as defined in tender

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677	Tender Document Pg 91	11. Server (Category-13)	General Query	Pls confirm if any local storage is needed for the server.If yes, pls share the requirement.	yes, local storage is not required in Server Category-13
678	Tender Document Pg 258	2. Overall Deliverables of Contractor	v. Support the installation of third party Operating System and applications on the commissioned computing infrastructure.	<p>1. Request you to pls share the existing third party Operating System and applications details.We are assuming that the application support will be taken care by ERNET only. If application support needs to be provided,Pls share the details of Applications to be installed.</p> <p>2. Please elaborate on kind of support required for installation of third party OS and applications. What are the proposed OS and what all applications framework are there. Please confirm if the involvement of any OS administrator or DBA or applications administrator is expected for any activity.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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679	Tender Document Pg 257	1. Project Overview	i. To setup & Integrate IT Infrastructure and commissioning of Monitoring and Management software at DC, its DR and 250 remote locations.	Pls confirm the number of remote locations whether they are 248 locations or 250 locations. As per Pg No. 71, Cities where Hardware to be delivered are 1 DC, 1 DR and 248 remote locations.	Number of sites under this tender are 232 remote sites, 1 DC and 1 DR. However It may be noted by the bidder that the location of these 232 remote sites would be from the list of cities for remote locations provided in BoM. In addition, there are 15 remote sites commissioned under Phase-I by CDAC for which O&M is under the scope of this tender.
680	Tender Document Pg 259	4. Role and Responsibilities of contractor at Data Center:	8) Setup of High Availability Modes of operation for the equipment(s) & software at DC as per specification .	Pls confirm how bidder needs to setup HA as no HA Solution is asked in many of the components asked.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
681	Tender Document Pg 259	3. Roles and Responsibilities of Contractor 3.2 Roles and Responsibilities of Contractor under this tender & Interlinkages with Other Tenders Floated for the Project:	ii. Synchronize the delivery plan at sites/location with MPLS service provider for ensuring timely end-to-end IPSec Tunnels over MPLS from all sites/locations.	Kindly share name of MPLS service provider	PGCIL is the MPLS service Provider

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682	Tender Document Pg 41	6.1 (Scope of Work) - 2	Training: Contractor Shall provide the training for installation, operation and maintenance of supplied equipment(s) as detailed in Section-VII.	OEM Training is required or Contractor training shall suffice the requirement. Also, Please allow online training option also as it will save lot to travelling time.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
683	Tender Document Pg 37	5.4 Assignment and Sub-contracting	3) The contractor shall take prior permission in writing from ERNET India for any subcontracting that the contractor wish to enter into for limited Works (e.g loading/ unloading, racking & stacking of equipment(s), laying of Data Center cabling etc.) .	<p>1. Need permission to subcontracting the partial or entire project. The ownership will be with bidder.</p> <p>2. Please allow sub-contracting for remote site. As project timeline is very limited, to complete milestones parallely and ontime we request subcontracting for remote site.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
684	Tender Document Pg 159	44. Monitoring and management tool for servers	2. Access device-level lifecycle management with a single click—no need to navigate among appliances with license to add up to 4000 servers	Request you to please elaborate the requirement. Are you looking to have a Dashboard for the devices, Where device contract details like Procurement date, Contract Validity Date, etc will be represented on the Dashboards. And can Drill down for granular or detailed information.	The Clause is self explanatory

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685	Tender Page 151	40. Active Directory Solution	1. Device's support required: 2500 or Higher	Need Clarity on this as customer is going to use both option or any one of the below	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
686	Tender Page 151	40. Active Directory Solution	2. User support : upto 1000		No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
687	Tender Page 26	11.3.3 Evaluation of Conformity to Bill of Material and Technical Specifications and other parameters specified in Tender document	TEC may ask the bidder to bring any selected Equipment(s)/items, sub items of their quoted equipment(s) for technical evaluation at ERNET India or any other location decided by TEC in specified time limit with 5 days.	Please allow 15-20 days time for equipment arrangement.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
688	General Query	Generic	-	Please confirm the owner of these locations as we site readiness will impact our milestones completion/payment. Also confirm that delay due site readiness and approval process will not be counted in project timeline.	Owner of Remote location are different govt and private offices.
689	General Query	Generic	-	Please confirm the list of 18 sites which is not in our O&M scope along with List of 15 sites of phase 1.	Cities of these location are as referred in BoM. Further more details like address will be given to successful bidder only

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690	General Query	Generic	-	Commercial format for DC and DR during 2 years warranty phase is not available in the price bid. Due to statutory compliance of manpower it is required.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
691	General Query	Generic	-	Need clarity on the re-badgeing of the resources . If yes , need their current package details .Can we change onrole resouces to partner pay role resouces.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
692	General Query	Generic	-	Kindly confirm that this project scope does not involve any data, database or applications migration from old/existing infrastructure to new infrastructure. If it involves any such activity then please provide details on data/database/applications and expected work.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023). End User (i.e CERT-In) will take care for extension of warranty/AMC for Phase-I equipment(s)
693	General Query	Generic	-	We are assuming that racks required in remote locations will be provided by the ERNET. Bidder need not to factor racks for the remote location.	Rack and Space will be arranged by end user (i.e CERT-In)
694	General Query	Generic	-	There is no clarity of distance of the electrical panel from where Tapping has to be done, and having multiple locations, it is not feasible to do a survey, hence request you to pls provide clarification on the same location wise	Clauses are self explanatory in the tender document

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695	General Query	Generic	-	Request you to pls confirm do bidder needs to factor any OS Licenses i.e. Windows /Redhat.	Clauses are self explanatory in the tender document
696	General Query	Generic	-	Request you to pls confirm the remote locations type i.e. they are offices or colleges and their operational timings and days.	Remote locations are different govt and private offices.
697	General Query	Generic	-	Kindly confirm the infra requirement like VM, OS, DB for management/log application for any EMS and Infra Management components will be provided by ERNET.	Backup period is 01 Year. Bidder needs to arrange the equipments to suffice the backup requirements asked in the bid.
698	General Query	Generic	-	Pls confirm the Beneficiary Name & Address for which hardware and software licenses needs to be provided.	Kindly refer Section III, Clause 8 (Transfer of Assets and Insurance)
699	General Query	Generic	-	Request you to pls confirm can we do site-survey before the submission of bid.	All Basic Amenities are available in Data Center. Further to collect the detail of Phase-I equipment, Kindly refer Section-VII , Clause 1.1 (Note)
700	General Query	Generic		Please confirm the payment releasing authority. Also confirm if payment will be released from centralized location or repective locations.	Payment will be released by ERNET India from its Delhi Office only

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
701	Tender document page no 54	6 (f) Payment Terms	In respect of equipment at remote sites, 85% of the total value of items will be made after successful delivery, installation, integration, commissioning and acceptance the respective milestone(s).	Kindly ammend the clause as " In respect of equipment at remote sites, 60% of the total value of items will be made after 100 % delivery at respective sites and 25 % on installation, integration, commissioning and acceptance of the respective milestone(s).	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
702	General Query	Generic		As our compliance policy, we need to take NOC declaration signed from customer that product supplied by Hitachi will not be used in weapon of mass destruction. NOC format attached in mail. Kindly confirm who sign this document after award of PO.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
703	Page 47	Clause No. 9: Timeline for Delivery	Project timelines for Delivery, Installation, testing, commissioning and acceptance Milestone Table	As the completion of work related to remote sites is dependent on several third party dependencies, it is requested to consider Go-Live of project excluding the hindered sites and release the subsequent payment related to Milestone. In case sites are made available post Go-Live, same will be completed during the O&M phase.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
704	Page 47	Clause No. 9: Timeline for Delivery	Project timelines for Delivery, Installation, testing, commissioning and acceptanceMilestone Table: Milestone 3,4,5,6Site Survey , Delivery, Installation, Testing & Commissioning of Complete Hardware at Remote Sites and their integration with DC's EMS Solution, including Offering of this infrastructure under Milestone-5 for AT to ERNET India as per ATP	Considering the challenges in material supply, request to amend the delivery timeline from T+36 weeks to T+44 weeks	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
705	Page 291	Clause No. G: Manpower Service Level Agreement	<p>Sl.No. 4 - If the employee is absent for more than 3 days without informing or taking prior approval</p> <p>Sl.No. 5 - If employee is on leave</p> <p>Penalty 0.5% of quarterly OPEX valud per day per manpower</p>	Request to make the penalty clause to be 0.05% of quarterly OPEX valud per day per manpower	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
706	Page 44	Clause No. 6.4: Warranty Point No. 9	OEM support should be provided on all days and at all hours.	More elaboration on the support is required- as we can have online support only 24x7, physical support from OEM will not be available 24 hours, it will be for 8 hours only	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
707	Page 41	Clause No. 6.2 : Project Planning and Management	During the project implementation, the Contractor shall report the following items to the ERNET India/ CERT-In via the reports	Do the bidder need to get the Reports format approved before submission of documents to ERNET	Yes

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
708	Page 45	Section III: General Conditions of Contract(GCC) Clause No. 6.4 Warranty Point No. 12.8	The overall Penalties for non-adherence with the SLA of warranty support (during 2nd & 3rd year of warranty period) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment (CAPEX).	As per this clause, 1st year of warranty period/O&M period penalties will be without any capping. So it is hereby requested for capping the penalties also for the remaining periods and reduce the capping to 10%	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
709	Page 53	Section III: General Conditions of Contract(GCC) Clause No. 6 The Payment terms are	Clause No. 6 Payment Terms	<p>Considering the project cash flows and smooth operations, request to please revisit the payment terms as per below suggestions:-</p> <p>1. 10% amount of Capex Value as mobilization advance against either of the following options:-</p> <p>i. Against submission of Advance Bank Guarantee (ABG) @110% of advance value (OR)</p> <p>ii. Interest bearing advance and adjustment against the invoices issued on the delivery of material.</p> <p>As this is a large requirement, the advance would be helpful for SI for smooth mobilisation. Also this practice has been followed in almost all the large Govt procurements.</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
710	259	4. Role and Responsibilities of contractor at Data Center:	2) Supply of equipment & related software as per specification & BoM at DC and the installation, testing, commissioning & configuration of all supplied equipment(s) & software at DC . Integration of all remote sites through IPSec over MPLS Links.	Kindly clarify that ERNET will provide the Power cabling, earthing, Cooling and allied Non IT infra and bidder needs to provide as per the BOQ requirements.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
711	259	4. Role and Responsibilities of contractor at Data Center:	3) Expand and Integrate the existing IT infrastructure of Phase-1 Data Centre with the equipment (s) planned in this tender utilizing the existing HLD and LLD.	Kindly clarify that Bidder can provide new solution in place of the existing Infrastructure integration. Kindly confirm	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
712	260	5. Role and Responsibilities of contractor at Disaster Recovery Data Center (DR):	3) Supply of equipment & related software as per specification & BoM at DR and the installation, testing, commissioning & configuration of all supplied equipment(s) & software at DR . Integration of all remote sites through IPSec over MPLS Links.	Kindly clarify that ERNET will provide the Power cabling, earthing, Cooling and allied Non IT infra and bidder needs to provide as per the BOQ requirements.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
713	261	6. Role and Responsibilities of contractor at Remote Sites & its Integration	3) Supply of equipment & related software as per specification and BoM at 232 sites and installation, Testing, Commissioning & Configuration of all supplied equipment(s) at 232 remote locations.	Kindly clarify that ERNET will provide the Power cabling, earthing, Cooling and allied Non IT infra and bidder needs to provide as per the BOQ requirements only	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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714	275	12.10 Remote site support	viii. Any shifting of site till the time of completion of O&M will be done by Contractor, if required. Further , this is clarified that once equipment are installed and accepted by ERNET India thereafter, Intracity shifting will be the bidder's responsibility and Intercity shifting will be the end user's responsibility.	Kindly add the shifting line item in the BOQ so all bidder will quote for the similar requirements.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
715	48	6. Timeline for Delivery, Installation, testing, commissioning & Acceptance:	Delivery, Installation, Testing & Commissioning of EMS & DCIM Solution (H/w and S/w) for DC & their integration with DC, existing Phase-1 Hardware and remote sites of previous milestone(s). Offering of this infrastructure under Milestone-2 for AT to ERNET India as per ATP .	Kindly confirm whether these existing devices are part of the 10000 devices for which the system has to be sized. We also request to share the details of existing equipment (server, network switches, routes etc.) for proper sizing.	Kindly refer section -VII point 1.1

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717	222	7. EMS Solution	32. Users must be able to choose the thresholds (high and low) for when an alarm and/or warning will activate, along with the points for the severity level. Users must be able to acknowledge and filter alarms. Alarms should have a way to prioritize more important alarms. The solution shall include an alarm history page where all system alarms are stored. Users should be able to search for previous alarms by site, device, or point. Should be able to manage and display alarms/events/alerts, store them and should allow creation of new alarms/events/alerts from scratch with customizable	Since alarms are based upon the events generated on devices and not created manually, so request you to amend the clause as "Should be able to manage and display alarms/events/alerts, store them and with customizable threshold limits"	Creating the alarms/ events/ alerts from scratch here means that in case of change in threshold the alarms/events/alerts are now created based upon the new thresholds. Refer to the revised Clause 32 of EMS Specifications in Annexure-B.

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			threshold limits.The threshold may be applied to any valid parameters which are being monitored per device .		

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718	224	7. EMS Solution	51. Should provide Risk Visibility Dashboards of network infrastructure	We understand that the risk visibility dashboard of NMS should provide details of server OS versions, network switch/router versions & configuration which is not as per defined policy.	Risks Dashboards in this context refer to risks arising out of high disk space usage in servers, high memory utilization, processes, CPU Utilization (load/usage) than configured or any risk due to configured security policies (including but not limited to risks arising due to mismatch between Firmware/OS versions on servers / switches / routers , configuration mismatches or any other risks visualized by the EMS .
719	257	1. Project Overview 2. Overall deliverables of contractor	1. Project Overview: i. To setup & integrate IT infrastructure and commissioning if monitoring and management software at DC, its DR and 250 remote locations 2. Overall deliverables of contractor: ix. O&M of supplied equipment and Phase-1 infrastructure for a period of one year at Data Centre (DC & DR)	We understand that setup, deployment scope is limited to DC, DR and 232 remote sites. Further O&M scope shall be limited to DC, DR, 232 remote sites and 15 sites of Phase-1 infrastructure. So, to sum DC, DR, 247 (232+15) remote sites for a period of one year. Kindly confirm. Also please clarify the O&M scope 18 remote sites (via GE/2022/B/2381749) is under current scope of this tender or not.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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720	45	12-viii SLA during warranty period and penalties thereof:	The overall Penalties for non-adherence with the SLA of warranty support (during 2nd & 3rd year of warranty period) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment (CAPEX)	As per Global industry standard and ERNET's other tenders too, the maximum cap of penalty is 10%. Please change it to 10%.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
721	44	12) ii	After completion of O&M of 1 year (during the warranty period), Bidder will deploy two resident engineer (One for Networking & One for System/Server) in each shift (total 3 shifts per day 8 hours each shift) at each Data Center (DC & DR) and restore the Equipment & services within 24 hours (i.e the permissible limit) of the failure.	a) Bidder understands that indicative manpower are required in first year of warranty only. b) Please clarify that only 3 resources will be required for 3 shifts but no reliver is being required, which implies that to carry the O&M for 6 or 7 days in a week, bidder will be required to deploy extra resources. Please clarify.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
722	209	15	The SI needs to also budget for a mandatorily replacement of battery (as a preventative maintenance of all asset tags with fresh battery in the last quarter of 3rd year of O&M .	Bidder understands that no manpower is required for 2nd and 3rd year. In this case, the battery will be procured and directly handed over to customer at one common place. Please clarify.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
723	306	Part C	<p>Operation and Maintenance for DC, DR and Remote Sites</p> <p>1 Operation and Maintenance (O&M) of DC along with deployment of 21 Technical Manpower at DC</p> <p>2 Operation and Maintenance of DR along with deployment of 14 Technical Manpower at DR</p> <p>3 Operation and Maintenance of 247 Remote Sites (O&M of 247 Remote sites in this tender includes 232 sites to be commissioined via this tender & 15 sites whose hardware is procured via CDAC bid i.e Phase I Stage 1)</p> <p>4 Deployment of 2 Technical Manpower for Technical Support at Delhi</p>	<p>Bidder understands that Remote sites in first year (Warranty year) will be managed by Contractor's own manpower. But after first year of warranty period, it will be managed by customer itself. Please clarify.</p>	<p>No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)</p>

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724	263	7 - 25)	25) The Contractor shall ensure that all the devices that will be installed in the DC, DR , remote locations as part of the physical infrastructure shall be Simple Network Management Protocol (SNMP) latest version enabled and shall be centrally monitored and managed on a 24x7 basis.	Please clarified who will do the job of monitoring. Contractor will place its helpdesk team to handle the fault and configuration. But there is no separate monitoring team is being required in this tender. Please clarify.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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725	268/269	12 - 3) & 4)	3) Operations, maintenance and management of all IT components and related services for the Phase-1 equipment(s). List of available equipment(s) with Make & Model will be provided to prospective Contractors after submission of Non-Disclosure Agreement (NDA). These equipment (s) are under warranty. Extension of warranty/AMC of such equipment are not under purview of this tender.4) Keeping the warranty of supplied hardware in this bid & other existing hardware of Phase-1 intact will be the sole responsibility of successful Contractor.	In clause no 3, it is mentioned that existing equipment's Warranty and AMC is not the part of bidder, but in clause no 4, it is mentioned in reverse way, which reflects the responsibility is lying with bidder.Please clarify.	Clause 4 explains that during the operational activities of phase-I equipment, bidder should not void the warranty of equipment(s)

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726	269	12 - 8) & 9)	8) Generation of analytical reports on daily, weekly, monthly basis and submitting to ERNET India/ CERT-In for reviewing. 9) Review meeting shall be held weekly and monthly during O&M period.	We understand that the efforts of generating reports on daily and weekly basis will be extracted through NMS/Helpdesk Portal only. Request you to please remove weekly meeting and rephrase it monthly or whenever required.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
727	226	64	Additionally, periodic VAPTs must be done yearly from the date of acceptance and additional VAPT should be done	Bidder has to provide the cost for one year (O&M) so bidder should not consider the cost of VAPT for 2nd and 3rd year. Please clarify.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
728	44	12) ii)	<p>ii. After completion of O&M of 1 year (during the warranty period), Bidder will deploy two resident engineer (RE);One for Networking & One for System/Server; in each shift (total 3 shifts per day 8 hours each shift) at each Data Center (DC & DR) and restore the Equipment & services within 24 hours (i.e the permissible limit) of the failure. Resident Engineer must be OEM certified for networking & Systems with at least 3 years of relevant experience and must possess BE/B.Tech/MCA degree. Document proof shall be submitted at the time of deployment of such resident engineer. Further, it is clarified</p>	<p>As per this clause, bidder needs to provide manpower in second and third year too, but the finance sheet Part- C (OPEX), no similar ITEM description is being mentioned. Please elaborate or clarify whether we should consider this cost of manpower in year 2 and year 3 and where to put the cost of these resource ?</p>	<p>No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			that after completion of O&M of 1 year (during the warranty period), 6 resident engineers needs to be deployed at DC and 6 resident engineersneeds to be deployed at DR (2 in each shift and total there will be 3 shifts of 8 hours each).		

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729	275	12.10 - viii)	viii. Any shifting of site will be done by Contractor, if required.	Contractor should be bound to do the O&M of all the deployed network. Change of shifting of any NE, Equipment, site or anything should be considered under change management. So request you to please fix the number of sites to be shift in a year to consider the efforts of bidder	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
730	278	12.14	Please note:MIS and SLA reports shall be provided by Contractor via automated tool in dashboard. The above given reports are indicative, the Contractor may have to provide additional reports as per the requirement of ERNET India/CERT-In.	Any additional report, which may require additional resources, support of OEM, any new configuration or manpower of OEM or any other extra effort will be paid separately by customer.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
731	280	13.1	In case deputed employee/staff is not available or is on leave, the Contractor is required to provide the alternative personnel with same or higher technical capabilities of the non-available personnel.	Bidder understands that basic holidays, urgent leaves, medical leaves or any other emergency leaves can be availed by the deputed staff. The replacement will be required only in case of long leaves or exit or change of resources. Please clarify.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
732	Page No. 157-158	Item no. 42 KVM Console	Proposed 18.5" LCD console tray and 16 port IP KVM switch should be built in design and should occupy 1U space together in 19" standard rack.	Proposed 18.5" or more LCD console tray and 16 port IP KVM switch should be built in design and should occupy 1U space together in 19" standard rack.	Kindly refer revised Specification in Annexure-B
733	Page No. 157-158	Item no. 42 KVM Console	Both LCD console tray and the built-in KVM switch should have separate power supply.	Both LCD console tray and the built-in KVM switch should have single power supply.	Kindly refer revised Specification in Annexure-B
734	Page No. 157-158	Item no. 42 KVM Console	Built-in KVM switch should not have power on/off switch to avoid accidental and unnoticed power off.	Built-in KVM switch should have power on/off switch for power management of the KVM for smooth operation	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
735	Page No. 157-158	Item no. 42 KVM Console	Operating temperature and Humidity of LCD console tray should be 0°C to 50°C and 10% to 80%	Operating temperature and Humidity of LCD console tray should be 0°C to 40°C and -20% to 80%	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
736	Page No. 157-158	Item no. 42 KVM Console	It should have two independent USB 2.0 compliant pass through ports at front side.	It should have two or more independent USB 2.0 compliant pass through ports at front side and back side	Kindly refer revised Specification in Annexure-B
737	Page No. 157-158	Item no. 42 KVM Console	LCD console tray should be global certified by most of the agencies like UL, CE, CCC, BSMI, C-Tick, EAC, VCCI, KCC , FCC Class A	LCD console tray should be global certified by most of the agencies like CE, FCC,UL/ CCC, BSMI/ C-Tick/ EAC,/ VCCI, KCC / ,RoHS,ICES-003, ISO etc.	Kindly refer revised Specification in Annexure-B
738	Page No. 158	Hybrid PDU	Output - iPDU should have minimum 30 Nos color coded outlets (Color coding w.r.t circuit breakers) of hybrid nature which can be utilized as either C13 or C19 outlet. All outlets should provide high retention to avoid accidental dislodging of power cords. The IPDU hybrid outlets	Output - iPDU should have minimum 30 Nos color/ <i>Non color</i> coded outlets (Color coding w.r.t circuit breakers) of hybrid nature which can be utilized as either C13 or C19 outlet. All outlets should provide high retention to avoid accidental dislodging of power cords. The IPDU hybrid outlets should meet electrical compliance and should be UL certified.	Kindly refer revised Specification in Annexure-B

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			should meet electrical compliance and should be UL certified.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
739	45	6.4 (12) viii	viii. The overall Penalties for non-adherence with the SLA of warranty support (during 2nd & 3rd year of warranty period) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment (CAPEX). In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2.	The maximum penalty capping of 25% is on very higher side. Request to cap to 10% as per general practices followed	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
742	143	37. Privilege access manager	The appliance should have storage capacity of more than 10 TB for retention of audit records and option to export the audit records over sftp / rsync for backup	Requested ERNET to modify the clause as:The Solution should have storage capacity of more than 10 TB for retention of audit records and option to export the audit records over sftp / rsync for backup	Kindly refer revised Specification in Annexure-B
743	268	iii	Installation, configuration and administration of all Networking, Firewalls, Servers, AAA Appliance, Load Balancer, NDR, EMS, DCIM, CMS, IT Helpdesk etc.	NDR is not being asked in the requirement but still there is a mention here in this clause, requesting ERNET to pls clarify.	NDR is not part of this tender requirement

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744	287	1 (1)	Contractor has to provide uptime of each equipment and its related services @99.5% for the equipment(s) installed at DC & DR including Phase-1 equipment(s). The uptime shall be calculated on monthly periodicity	Request to modify 99.5% on service availability instead of single devices	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
745	287	1 (1)	Contractor has to provide uptime of each equipment and its related services @99.5% for the equipment(s) installed at DC & DR including Phase-1 equipment(s). The uptime shall be calculated on monthly periodicity	What will be the SLA for Non IT devices, i.e Fireproof Vault, Degausser, LED Display etc.	SLA referred in the bid pertains to IT and Non IT equipment(s) both

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746	276	12.12 Change Management Services	Plan for changes to be made - draw up a task list, decide on responsibilities, coordinate with all the affected parties, establish and maintain communication between parties to identify and mitigate risks, manage the schedule, execute the change, ensure and manage the port change tests and regular updates w.r.t changes should be documented in knowledge bank	Please clarify the approximate number of change request per month which are dependent on Applications/Security/Infrastructure /EMS/DCIM etc.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

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747	290	Section No. F	Security and Incident Management Service Levels , Clause No. For every Virus attack reported and not resolved within 36 hrs from the time of attack Quarterly 36 hours Rs. 50,000 for delay of every 24 hours or its part. If more than three virus attacks are reported in a quarter, then Rs. 1,00,000/- per incident would be deducted as penalty	Bidder understood that Antivirus solution is not being provided as part of the requirements, Please clarify this clause is only limited to Network layer (Detected by "Internet firewall with IPS" appliance). ?	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
748	290	Section No. F	Security and Incident Management Service Levels , Clause No. For every instance of Data Theft, the bidder is subject to penalty and/or punishment applicable under the IT act/ ERNET India/CERT-In data theft policy or any other prevailing laws of the State/Country at that point of time, which shall be over and above the stated penalty. Every instance in the Quarter At every instance Rs.5,00,000 per instance.	Requesting ERNET to remove this clause as DLP (Data Leak Prevention) solution is not being asked in the RFP.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
749	GeM Tender - Pg. No. 5	1. Generic	OPTION CLAUSE: The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent of bid quantity at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity by up to 25% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.	The prices are dependant on Taxes, Duties (including Custom Duty), Levies, USD-INR exchange rate, OEM List Price, OEM Discounting etc. These factors are not within bidder's control and hence please request ERNET to allow price revision for additional quantity as per the prevailing business conditions during order placement. The revised prices will be applicable only on the subsequent orders after 1st PO.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
750	18	5.2 Firm/ Variable Price	5.2.1 Firm Price Prices quoted by Bidder shall remain firm and fixed during the currency of the contract and not subject to variation on higher side any account.	The prices are dependant on Taxes, Duties (including Custom Duty), Levies, USD-INR exchange rate, OEM List Price, OEM Discounting etc. These factors are not within bidder's control and hence please request ERNET to allow price revision for additional quantity as per the prevailing business conditions during order placement. The revised prices will be applicable only on the subsequent orders after 1st PO.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
751	27	12 Award of Contract	<p>12.1.1 Right to Vary Quantities</p> <p>ERNET India reserves the right to decrease the quantity to be ordered up to 25 percent of final bid value at the time of placement of contract. The ERNET India also reserves the right to increase the ordered quantity by up to 25% of the final bid value at the time of placement of contract or within one (1) year period from the issuance of the contract. It may be noted by the bidder that the prices of SFPs and Patch cords quoted in the bid shall remain valid for the complete duration of contract period. Successful Bidder/ Contractor is bound to accept the orders accordingly failing</p>	<p>The prices are dependant on Taxes, Duties (including Custom Duty), Levies, USD-INR exchange rate, OEM List Price, OEM Discounting etc. These factors are not within bidder's control and hence please request ERNET to allow price revision for additional quantity as per the prevailing business conditions during order placement. The revised prices will be applicable only on the subsequent orders after 1st PO.</p>	<p>Clause may be read as: Right to Vary Quantities:</p> <p>ERNET India reserves the right to decrease the quantity to be ordered up to 25 percent of final bid value at the time of placement of contract. The ERNET India also reserves the right to increase the ordered quantity by up to 25% of the final bid value at the time of placement of contract or within one (1) year period from the issuance of the contract. It may be noted by the bidder that the <i>finally accepted prices</i> of SFPs and Patch cords shall remain valid for the complete duration of contract period. Successful Bidder/ Contractor is bound to accept the orders accordingly failing which; ERNET India may declare this as an event of default and consequences for event of default will be applicable.</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			which; ERNET India may declare this as an event of default and consequences for event of default will be applicable.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
752	46	8 Transfer of Assets and Insurance	8.1 Transfer of AssetsThe ownership of the supplied Equipment along with its warranty and all other associated rights shall be transferred within 90 days to CERT-In, ; after successful Commissioning and Acceptance of each milestone by ERNET India. All the risks, responsibilities, liabilities thereof in respect of all equipment shall remain with contractor till acceptance of each milestone. All licenses are to be provided in the name of Indian Computer Emergency Response Team, Ministry of Electronics and Information Technology Government of India.	Please request ERNET to revise the clause as below:"The ownership of the supplied Equipment along with its warranty and all other associated rights shall be transferred to CERT-In on delivery of equipments to ERNET India. All the risks, responsibilities, liabilities thereof in respect of all equipment shall remain with ERNET India. All licenses are to be provided in the name of Indian Computer Emergency Response Team, Ministry of Electronics and Information Technology Government of India."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
753	46	8 Transfer of Assets and Insurance	<p>8.2 InsuranceThe Bidders shall also arrange to get equipment insured to cover loss/damage due to theft, burglary, fire, or any natural disaster for the period till 30 days after successful acceptance as per respective milestones as defined in terms of delivery in this tender document. Bidder shall be required to extend the insurance period in case, there is delay in commissioning & acceptance of project. The insurance shall not be for an amount less than 100 percent of the value of the equipment(s) as mentioned in the contract. Bidder may include cost of insurance in the unit price of equipment(s) quoted in the price bid.</p>	<p>Please request ERNET India to revise the Insurance clause upto delivery of equipments at designated premise. Post delivery Insurance of the supplied equipments has to be covered under ERNET's Insurance policy.</p>	<p>No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
754	289	1 Service Level during Operation & Maintenance period for Equipment	Note:- The overall Penalties (for Clause 1-A,B,C,D in Section-VIII) per quarter shall be capped at a maximum of 25% of the respective Quarterly payment of Grand Total Value. In case penalty imposed on the contractor consecutively for two quarters reaches the maximum Penalty (i.e 25%) then in such an eventuality ERNET India reserves the right to terminate the Contract as per Clause 12.1 & 12.2 of Section-III	Please request ERNET to revise the SLA penalty capping at 5% of quarterly payment value each quarter.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
755	38	5.6.1-IPR Rights	All deliverables, outputs, plans, drawings, specifications, designs, reports, and other documents and software submitted by the contractor under this Contract shall become and remain the property of the ERNET India/ CERT-In and must not be shared with third parties or reproduced, whether in whole or part, without the ERNET India/ CERT-In's prior written consent. The contractor shall, not later than upon termination or expiration of this Contract, deliver all such documents and software to the ERNET India/ CERT-In, together with a detailed inventory	Since there is no exclusivity in the services/software provided, there cannot be an IPR transfer in favour of ERNET India. Accordingly, we request a revision in the clause, to be read as follows: "Neither party will gain by virtue of this Agreement any rights of ownership of copyrights, patents, trade secrets, trademarks or any other intellectual property rights owned by the other. All copyrights patents, trade secrets, trademarks and any other intellectual property rights existing prior to the Effective Date or developed independent of this Agreement shall belong to the party that owned such rights immediately prior to the Effective Date or has developed such intellectual property right. Contractor will own all intellectual property rights, title and interest in any ideas, concepts, know how, documentation or techniques developed under this Agreement and provides ERNET a non-exclusive, non-transferable, royalty-free license for its internal use only during the term of the contract."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			thereof.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
756	46	8.1-Transfer of Assets	The ownership of the supplied Equipment along with its warranty and all other associated rights shall be transferred within 90 days to CERT-In, ; after successful Commissioning and Acceptance of each milestone by ERNET India. All the risks, responsibilities, liabilities thereof in respect of all equipment shall remain with contractor till acceptance of each milestone. All licenses are to be provided in the name of Indian Computer Emergency Response Team, Ministry of Electronics and Information Technology Government of India. Contact details including email id of Cert-In will be	We request a revision in the clause, to be read as follows:"Ownership of the supplied Equipment along with its warranty and all other associated rights shall stand transferred in the name of ERNET India immediately upon delivery of such equipment."	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>provided to L-1 bidder. Contractor shall provide following documents during handover of assets as per milestones:1) Invoices with serial no of devices2) Bill of Material3) OEM Warranty certificates4) Duly received Delivery challan at all locations5) Software license detail, if any6) Final Acceptance report7) Any other document specified by ERNET India</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
757	52	9.6-Force Majeure	1) On the occurrence of any unforeseen event, beyond the control of either Party, directly interfering with the delivery of Equipment(s) and Services arising during the currency of the contract, such as war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, pandemic, quarantine restrictions, strikes, lockouts, or acts of God, or any other defined by government, the affected Party shall, within a week from the commencement thereof, notify the same in writing to the other Party with reasonable evidence thereof. Unless otherwise directed by	It may not be possible for the bidder to perform the services if a force majeure event occurs, since equipment to be delivered will come from third party OEMs. A force majeure event like a pandemic might affect delivery timelines. In view of the above, we request a revision in the clause, to be read as follows: "1) On the occurrence of any unforeseen event, beyond the control of either Party, directly interfering with the delivery of Equipment(s) and Services arising during the currency of the contract, such as war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, pandemic, quarantine restrictions, strikes, lockouts, or acts of God, or any other defined by government, the affected Party shall, within a week from the commencement thereof, notify the same in writing to the other Party with reasonable evidence thereof. In case of any delay in performance of the Services and delivery of Equipment due to Force Majeure event including of any pandemics, the timeline for such work shall automatically get extended for	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			ERNET India in writing, the contractor shall continue to perform its obligations under the contract as far as reasonably practicable and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. If the force majeure condition(s) mentioned above be in force for 90 days or more at any time, then in such a case either party shall have the option to terminate the contract on expiry of 90 days of commencement of such force majeure by giving 14 days' notice to the other party in writing. In case of such termination, no damages shall be claimed by either party	such period affected due to Force Majeure event. If the force majeure condition(s) mentioned above be in force for 90 days or more at any time, then in such a case either party shall have the option to terminate the contract on expiry of 90 days of commencement of such force majeure by giving 14 days' notice to the other party in writing. In case of such termination, no damages shall be claimed by either party against the other, save and except those which had occurred under any other clause of this contract before such termination.2) Notwithstanding the remedial provisions contained in GCC-clause9.6 (2) or 12.1.1, none of the Party shall seek any such remedies or damages for the delay and/ or failure of the other Party in fulfilling its obligations under the contract if it is the result of an event of Force Majeure."	

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			<p>against the other, save and except those which had occurred under any other clause of this contract before such termination.2)</p> <p>Notwithstanding the remedial provisions contained in GCC-clause9.6 (2) or 12.1.1, none of the Party shall seek any such remedies or damages for the delay and/ or failure of the other Party in fulfilling its obligations under the contract if it is the result of an event of Force Majeure.</p>		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
758	57	12.1.2-Notice for Default	As soon as a breach of contract is noticed, 'Notice of Default' shall be issued to the contractor, giving two weeks' time to resolve the issues mentioned in the notice. Despite serving NFD, ERNET India would be having right to invoke contractual remedies to safeguard its interest.	<p>We request that a notice period of atleast 30 days to cure any breach on our part. Accordingly, we request a revision in the clause, to be read as follows:</p> <p>"As soon as a breach of contract is noticed, 'Notice of Default' shall be issued to the contractor, giving thirty days' time to resolve the issues mentioned in the notice."</p>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
759	57	12.1.4 (1)- Contractual Remedies for Breaches/Default	If there is an unsatisfactory resolution of the issues raised in the 'Notice of Default' within the period specified in the notice, then ERNET India may take any one; or more of the following contractual remedies. 1) Temporary withhold payments due to the contractor till recoveries due to invocation of other	We request a clarification that ERNET will not withhold any payments due to the contractor for the services which have already been provided successfully.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			contractual remedies are complete.....		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
801	251	3	<p>Having experience of working and completing similar project will be a challenge. Following is the clause which may cause issue. Bidder should have experience of successful implementation of similar project(s) in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India as:</p> <p>Single order of Rs. 250 Crore or more; OR Two orders each having minimum of Rs. 150 Crore or more; OR Three orders each having minimum of Rs. 120 Crore or more Similar Projects: - Setting up of Data</p>	<p>We request you to add the below content in the clause: or <i>(a) For bidder who have built their own Data Centre for commercial use will need to provide documentary evidence to justify commercial operation e.g., name of at least 10 client(s) who may be using the data centre services, list of services provided. Alternatively, in the case of NDA, bidder shall submit a declaration signed by the Authorized Signatory of the bidder mentioning details of such clients along with supporting documents. Group Companies and Subsidiaries of large enterprises using parent company data centre is allowed</i></p>	<p>No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)</p>

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			Centre (including computing, storage & networking Infrastructure) / Operation & Maintenance of Data Centres / Network Operation Centres/ Security operation centres/ Smart City Projects/ Large IT networking.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
802	251	4	At least one order should contain Supply & successful implementation of IT Equipment (similar to BoM of this Tender i.e Server, Storage, Networking and firewalls equipmentetc.) in Data Centre environment of value not less than Rs. 80 Cr. in Central/State Government/ Govt. undertakings/ UT's/Autonomous Bodies/Public listed companies/reputed Private organisation in India. In case of supply of IT equipment in Data Centre project is a part of larger project(large IT Networking/Smart City Projects) then bidder should get certificate from Statutory Auditor/Practicing CA-	We request you to add the below in the clause: <i>In case of own data centre, Certificate with CA's Registration Number and Seal on confirming the invested value as defined for orders shall be established.</i>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			(With UDIN)regarding value of IT Equipment at Data Centre supplied and installed. This order may be one of the order from the orders provided against clause-A(4) above or a seperate order altogether.		

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
803	251	5	Bidder should have experience of successful implementation of Supply & Installation at 100 locations, of WAN setup, in customer office premises in single or multiple orders in Central/State Government/ Govt. undertakings / UT's /Autonomous Bodies/Public listed companies.	For providing connectivity service valid licence from DOT is applicable which may not be available with all SI's. Hence we request you to add the following point in the clause for acceptance: <i>Order from the group companies of the bidder having valid licence to provide such services is acceptable</i>	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
804	260	5.3	Integration with MPLS Connection	Kindly clarify and share details of the Integration requirements with MPLS connectivity. In Case MPLS is being procured separately, Please share the protocols and details of existing/to be procured Infra	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
805	258	2.iii	Managing & Monitoring	Please Confirm the nature and specifications of managing & Monitoring platform for reference.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
806	257	1	To Establish MPLS connectivity at DC, DR and 250 remote locations. Please note that ERNET India will arrange MPLS service provider, however, integration of supplied hardware with MPLS link will be the responsibility of contractor	Who will be the MPLS service provider and and is there any other existing application with whom integration is required. Please specify the sources	PGCIL is the MPLS service Provider.
807	259	4.12	Perform the security audit (including VAPT) and fix all security issues at the time of acceptance.	if there are any specific criterias which has to be shared. please highlight	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
808	261	6.11	The power connection will be provided by end user. Thereafter, if any extension of power cable is required from power point to UPS/Rack or In case the RACKPDUs are not available in RACK, the same shall be in the scope of bidder.	Requesting to elaborate on power connection requirement and the equipments	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
809	262	7.1	The Contractor needs to create processes and perform required integrations to accomplish the functionality.	what are the applications and their framework, please highlight the security measures to be taken while doing integrations and sources	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
810	265	8.2	The integration of existing and new AIM with EMS for the Alarms or any other events.	Please highlight the events when alarms to be triggered	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
811	266	9.8	Training of ERNET India and CERT-In manpower about installation and operation of equipment(s).	At which location Training/KT will be conducted & what are SoPs for such trainings, please specify	Training is in the scope of SI so place will be finalised by SI. Location must be in Delhi NCR
812	266	9.9	Contractor shall have proper escalation procedure and emergency response for any failure of DC and DR.	We believe this clause talks about Support Ticket system, please clarify	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
813	271	12.3.2	Contractor shall keep backups of all the versions of equipment configuration.	what kind of backups other than installation/configuration/re-configuration/rollback of all the equipment is required please elaborate	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
814	274	12.7.viii	Security Administration and Management Services	what will be the key parameters of report and the frequency of report generation	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
			report generations		
815	275	12.9.viii	Tuning of various parameters to optimize performance and to ensure industry standard QoS with customization is being delivered.	Please specify various parameters to optimize performance	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)
816	NA	NA	General	Please include a Master Platform which shall govern the applications to be deployed under this project. This will allow transparency and ease of management for users since a single platform will be managing applications and assets of different make & type.	No Change (Clause will remain same as per Tender Document (GEM/2023/B/3273791) floated dated 16.03.2023)

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
817	266	Section VII: Scope of Work : Acceptance Testing (AT)	New Clause (#5) added in Section VII, 10 Acceptance Testing(AT)	Not Applicable	It may be noted by bidder that VAPT to be done for entire setup including Phase-1 Equipment. A Successful Vulnerability assessment (VA) and Penetration Testing (PT) report through a Third-party certified agency (CERT-In empanelled Security auditors) and Fixing of all identified Vulnerabilities upon upgrades/patch updates and providing the "all clear" reports. VAPT should be comprehensive but not limited to following activities: (a) Network Scanning, Port scanning, system identification and trusted system scanning, Vulnerability scanning, Malware scanning, Spoofing, Application Security Testing, Access Control Mapping, Cookie Security, DMZ Network architecture review, Firewall rule review, OS Security configuration, Database Security Configuration, any other attacks. Application Security Testing for the softwares provided by the System Integrator. (b) Network is not fully airgapped and hence External network penetration to test the effectiveness of perimeter security controls and Internal network penetration test to test the effectiveness against the insider threats are in the scope of the bidder. (c) The bidder has to do the VA & PT for the Solutions including Applications that are procured as part of in this tender.(d) Instead of performing VAPT against each Milestone, Bidder shall perform VAPT 2 times only . First VAPT for Milestone 1 and Second VAPT with 8th Milestone for complete Setup (i.e DC, DR, EMS, DCIM and remote sites) . VAPT for the sites completed after

Sr. No.	Tender Page No.	Section/ Clause No.	Tender Clause	Bidder's Clarification Sought	ERNET India's Clarification/Corrigendum/Addendum/Response
					8th Milestone is not mandatory.

Section V: Revised Technical Specifications
Technical Specification

1. Server (Category-1)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	Total 1 TB RAM, DDR4/DDR5 2933+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity , Write Intensive, Read (1+ GB/s) Write(500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	12+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 <i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 324 TB.</i>		
Interface (NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		

HW Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 12 no:s of HDDs		
Power Supply	Redundant, maximum consumable 1200 W /Rated 1600 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

2. Server (Category-2)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
	<u>2A (in case bidder quote server up to 5 U)</u>		
Physical dimension	<u>Up to 5U</u>		
Processor	2 Quantity (Dual Socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 18+ Cores (2.3+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 18+ cores (2.3+ GHz base frequency, Cache Size 128+ MB)		

Memory	Total 768 GB RAM, DDR4/DDR5 2933+ MHz ECC REG DIMM (Buffered) (12 no:s x 64G OR 6 no:s x 128G)		
Boot Storage subsystem	<p>Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD</p> <p>Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD</p> <p>IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size</p>		
Storage	<p>Storage in up to 5U server : 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p><i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 1080 TB.</i></p>		
Interface (NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60 no:s of HDDs, where all available HDDs in the server should be configurable under a single virtual partition with RAID 5,6,50,60		
Power Supply	<i>Redundant, maximum consumable 2100 W/ Rated 3200W</i>		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		

Server	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
	<u>2B OR (in case bidder quote server with single DAS)</u>		
Physical dimension	<u>Maximum up to 7U</u>		
Processor	2 Quantity (Dual Socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ Cores (2.1+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.1+ GHz base frequency, Cache Size 128+ MB)		
Memory	Total 1 TB RAM, DDR4/DDR5 2933+ MHz ECC REG DIMM (Buffered) (16 no:s x 64G OR 8 no:s x 128 G)		
Boot Storage subsystem	Boot Storage subsystem with Redundant HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	84 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) Note: Single DAS expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead. IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16		

	<i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 1512 TB.</i>		
Interface NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 84 no:s of HDDs		
Power Supply	Redundant, maximum consumable 3000 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

3. Server (Category-3)

Description	Specification	Marked/ Highlighted Reference Specification	Cross of with	Compliance (Yes/No)
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		reference page no.	
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	Memory: 16x 32GB or 8x 64GB DDR4/DDR5 2933MHz ECC REG DIMM (Buffered) (Total 512GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	4+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 <i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 72 TB.</i>		
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 4+ no:s of HDDs		

Cache Drive Type	Enterprise NVMe drive for caching: Capacity: 3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power supply	Redundant, maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

4. Server (Category-4)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	One quantity Intel Xeon scalable series 2nd/3rd Gen or Latest Generation , 12+ core processor (2.9+ GHz base frequency, Cache Size(for 2nd Gen 24.75+ MB / for 3rd Gen 18 MB) + OR AMD EPYC 2nd/3rd Gen or Latest Generation EPYC , 12 core processor (2.9+ GHz base frequency, Cache Size 64 MB)		

Memory	8 no:s x 16GB DDR4/DDR5 2933MHz+ ECC REG DIMM (Buffered) (Total 128GB)		
Boot Storage subsystem	<p>Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD</p> <p>IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size</p>		
Storage	<p>2 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p><i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 36 TB.</i></p>		
Interface (NIC)	2x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	* Baseboard management console with dedicated RJ45 interface , (IPMI)		
HW Raid controller	* HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 2+ no:s of HDDs		
Cache Drive Type	* Enterprise NVMe drive for caching: Capacity: 3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power supply	Redundant, maximum consumable 1100 W		

Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

5. Server (Category-5)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon scalable series 8 + core processor 2nd/3rd Gen or Latest Generation (3.1+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ For 3rd Gen 18 + MB)) OR 2 Quantity (Dual socket) x AMD EPYC 7252 or above 2nd/3rd Gen or Latest Generation EPYC, 8 core processor (3.1+ GHz base frequency, Cache Size 64+ MB)		
Memory	2 no:s x 16GB DDR4/DDR5 2933MHz+ ECC REG DIMM (Buffered) (Total 32GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		

Storage	<p>2 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p><i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 36 TB.</i></p>		
Interface (NIC)	4x 1G, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers) , 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 2+ no:s of HDDs		
Power Supply	Redundant, maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

6. Server (Category-6)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with	Compliance (Yes/No)
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		reference page no.	
Physical dimension	Maximum up to 2U Rack Mountable		
Processor	One Quantity Intel Xeon 8 core 2nd/3rd Gen or Latest Generation processor (2.7+ GHz base frequency, Cache Size (for 2nd Gen 20+ MB/ for 3rd Gen 18 +MB)) OR 1 Quantity x AMD EPYC 2nd/3rd Gen or Latest Generation, 8 core processor (2.7+ GHz base frequency, Cache Size 32 MB)		
Memory	2 no:s x 8GB DDR4/DDR5 2933MHz+ ECC REG DIMM (Buffered) (Total 16 GB)		
Boot Storage Sub System	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	2 x 8+ TB Enterprise Drives (Each HDD spec: SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 <i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 36 TB.</i>		
Interface (NIC)	2x 1G, copper + 2 x10 G Fiber SFP (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	RAID Support : System BIOS should support for RAID 0,1 (Software RAID or HW raid)		
Power Supply	Redundant, Maximum consumable 1100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		

for Server	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
Feature Support	All the features mentioned above should be available from day one		

7. Server (Category-7)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum upto 2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 18+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation Gen EPYC, 18+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	8 no:s x 32GB OR 4 no:s x 64GB DDR4/DDR5 2933MHz+ ECC REG DIMM (Buffered) (Total 256GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		

Storage	<p>16 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p><i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 288 TB.</i></p> <p>Note: Single DAS (upto 5U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.</p>		
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers),		
Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 16+ no:s of HDDs		
Power Supply	<i>Redundant ,Maximum consumable 1100 W /Rated 2100 W</i>		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

8. Server (Category-9)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	<i>Maximum up to 5U Rack Mountable or 7 U with Single DAS</i>		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	16 no:s x 32GB OR 8 no:s x 64GB DDR4/DDR5 2933+MHz ECC REG DIMM (Buffered) (Total 512GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		

Storage	<p>* 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p><i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 1080 TB.</i></p> <p>Note: Single DAS (upto 5U)expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead.</p>		
Interface (NIC)	4x 1G Copper, 4x10G Fiber SFP+ (connectivity support for copper/fiber transceivers)		
Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60+ no:s of HDDs		
Power Supply	<i>Redundant, maximum consumable 2100 W/ Rated 3200W</i>		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

9. Server (Category-10)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
Physical dimension	Maximum up to 5U Rack Mountable or 7 U with Single DAS			
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)			
Memory	32 no:s x 32GB or 16 no:s x 64GB or 8 no:s x 128GB DDR4/DDR5 2933+MHz ECC REG DIMM (Buffered) (Total 1TB)			
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD /M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size			
Storage	Storage in Server: 60 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 1080 TB. Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O throughput of all the disks combined should not be impacted due to any DAS expansion			

	connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM. Server OEM shall give undertaking for the support of DAS on their letterhead.		
Interface (NIC)	NIC: 4x 1G Copper, 4x10G Fiber SFP+ (connectivity support for copper/fiber transceivers)		
Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 4+ GB cache, battery or flash backed protection, for the 60+ no:s of HDDs		
Power Supply	Redundant, maximum consumable 2100 W/ Rated 3200W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

10. Server (Category-11)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable			
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation Epyc , 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)			
Memory	8x 32GB OR 4x 64GB DDR4/DDR5 2933+MHz ECC REG DIMM (Buffered) (Total 256GB)			
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size			
Storage	Storage: 8 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 <i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 144 TB.</i>			
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers)			

Interface (NIC)	10G ports should be fully populated with required LR / SR Transceivers as per site requirement (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 8+ no:s of HDDs		
Cache Drive Type	Enterprise NVMe drive for caching: Capacity: 3.2 TB, PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s, Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS, Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power Supply	<i>Redundant ,Maximum consumable 1100 W /Rated 1600 W</i>		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
	10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Feature Support	All the features mentioned above should be available from day one		

11. Server (Category-13)

Description	Specification	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
Physical dimension	Maximum up to 2U Rack Mountable			
Processor	Processor: 2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)			
Memory	8x 64GB OR 4x128GB DDR4/DDR5 2933+MHz ECC REG DIMM (Buffered) (Total 512GB)			
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size			
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers), 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make), 2 no:s x dual 100G QSFP28 , PCIe 4.0 (NIC: Dual port 100G. Mellanox MCX516A-CDAT ConnectX-5 Ex/ Intel E810 2CQDA2/NVIDIA Mellanox MCX613106A-VDAT ConnectX-6/NVIDIA Mellanox MCX623106AN-CDAT ConnectX-6 Dx EN)			
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)			
Power Supply	Redundant, Maximum consumable 1200 W			
Accessories	Rails kit for rack mounting , power cables and server tag .			

General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

12. Server (Category-14)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	1U/2U Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	8x 32GB OR 4x 64GB DDR4/DDR5 2933+MHz ECC REG DIMM (Buffered) (Total 256GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		

Storage	<p>4 no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256+ MB Cache, 3.5", MTBF = 8+ Lakhs hours)</p> <p>IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16</p> <p><i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 72 TB.</i></p>		
Interface (NIC)	NIC: 4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers) , 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
Baseboard management	Baseboard management console with dedicated RJ45 interface , (IPMI)		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 2+ no:s of HDDs		
Cache Drive	<p>* Enterprise NVMe drive for caching: Capacity:3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32)</p> <p>Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS</p> <p>Latency, read/write 120/20 µs (4KB transfer size with queue depth 1)</p> <p>Endurance 3 DWPD</p>		
Power Supply	<i>Redundant ,Maximum consumable 1100 W /Rated 1600 W</i>		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Servers	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

13. Server (Category-16)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Physical dimension	Maximum up to 4U (6U DAS allowed) Rack Mountable		
Processor	2 Quantity (Dual socket) x Intel Xeon Gold scalable series 2nd/3rd Gen or Latest Generation , 24+ cores (2.8+ GHz base frequency, Cache Size 30+ MB) OR 2 Quantity (Dual socket) x AMD 2nd/3rd Gen or Latest Generation EPYC, 24+ cores (2.8+ GHz base frequency, Cache Size 128+ MB)		
Memory	16x 32GB or 8x 64GB DDR4/DDR5 2933+MHz ECC REG DIMM (Buffered) (Total 512GB)		
Boot Storage subsystem	Boot Storage subsystem with HW RAID 1 having 2 no:s x Enterprise SAS SSD/M.2 NVME SSD, Each SSD spec: 400GB+ Capacity, Write Intensive, Read (1+ GB/s) Write (500+ MB/s), MTBF = 2+ million hours, 2000+ TBW, 2+ DWPD IOPS: Each SSD should have 150K+/100K+ Random Read/Write IOPS at 4K block size		
Storage	12+ no:s x 18+ TB Enterprise Drives, (Each HDD spec: CMR Technology, SAS 12+ Gb/s, 7200+ RPM, 256MB Cache, 3.5", MTBF = 8+ Lakhs hours) IOPS: Each HDD should have 150+/500+ Random Read/Write IOPS at 4K block size at QD16 <i>OEM can provide each HDD of 18/20/22 TB ensuring total required storage capacity of 216 TB.</i> Note: Single DAS (upto 5 U) expansion can be used. However, the effective I/O		

	throughput of all the disks combined should not be impacted due to any DAS expansion connector limitations. DAS and Server should be compatible and support of DAS to be provided by Server OEM only. Server OEM shall give undertaking for the support of DAS on their letterhead.		
Interface (NIC)	4x 1G Copper, 2x10G Fiber SFP+ (connectivity support for copper/fiber transceivers) , 10G ports should be fully populated with required SR Transceivers (of appropriate OEM Make)		
GPU Card	2 x NVIDIA-A100 GPU cards with CUDA support		
Baseboard management	Offline Management: Baseboard management console = 1		
Raid controller	HW Raid controller= RAID 0,1,5,6,10, 50, 60, SATA/SAS-3 connectivity, 2+ GB cache, battery or flash backed protection, for the 12+ no:s of HDDs		
Cache Drive	Enterprise NVMe drive for caching: Capacity: 3.2 TB ,PCI Express Gen4 x 8, NVMe Sequential read 6,200 MB/s ,Sequential write 2,600 MB/s (Sequential and Random performance 128KB block size with queue depth 32) Random read (4K) Up to 1,000K IOPS ,Random write (4K) Up to 180K IOPS Latency, read/write 120/20 µs (4KB transfer size with queue depth 1) Endurance 3 DWPD		
Power Supply	Redundant , Maximum consumable 2100 W		
Accessories	Rails kit for rack mounting , power cables and server tag .		
General Features for Server	Certification/Compliance (OS): Windows, Red Hat Linux, SUSE Linux, Ubuntu		
	Certification/Compliance (Virtualization/Cloud Platform): VM Ware, Red Hat Virtualization		
	Power Supply Efficiency: Platinum or Higher		
	For Storage (HDD) Drives : Sanitize Instant Erase , Self-Encrypting (SED). Required support should be available in RAID controllers.		
Feature Support	All the features mentioned above should be available from day one		

Note: + considered as or Higher, mentioned wherever in specifications of servers from S.N. 1 to 13

Management & Security Features for all the server mentioned from S.N. 1 to 13

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Management Features-1	Remoter power On/ Shutdown of server, Remote Management of Server over LAN & WAN with SSL encryption through gigabit management port,, Should have virtual Media support with all required licenses., Remote KVM, Server Health Logging, Out of Band Management, Real-time Health logging and telemetry streaming, power management, storage management including raid configuration, virtual media access ,Secure component verification and alerting/ Platform Integrity Check ,Secure management with configuration of https, LDAP/radius, NTP for time sync, SNMP,API based management support, along with support of Redfish, IPMI etc., HTML 5 based virtual console, Remote Firmware, bios, driver update, Dedicate Ethernet port, and OOB baseboard management controller , browser-based and command-line interface for managing and monitoring the server hardware. Support for managing pass phrase and key encryption. Support for managing pass phrase and key encryption key for the self-encrypting drive(SED) and support for Instant Secure Erase (ISE) . Support for secure Instant arrays of SEDs. All Hardware and Licenses for management features to be provided by bidder without additional cost.		
Security Features-1	Secure Boot (Firmware and Bios Level Security), , Hardware root of trust/Dual Root of Trust, Server should provide policy based security, Server should provide server intrusion detection,, "Malicious Code Free design" (to be certified by OEM).		

Security Features-2	Provision for Cryptographic firmware updates/ <i>Signed firmware updates / secure firmware updates.</i> Secure /Automatic BIOS recovery, Network Card secure firmware boot, in case of any security breach system should provide <i>Features for Prevention of security breaches or Lockdown on security breaches.</i> Support for TPM 2.0	Features for Prevention of security breaches or Lockdown on security breaches	
General Note	Bidder shall supply required quantity of fiber patch chords (Single mode/ Multimode), patch chord as per site requirements. All accessories for successful installation in rack should be supplied by Bidder. Supplied equipment must be mountable on 19-inch rack. The device should have front to back airflow with efficient cooling mechanism. All the features mentioned above should be available from day one		

Networking Specifications of DC and DR

It may be noted that all the OEMs of Networking Devices should provide their respective Intent-Based Networking Software License.

14. DR Spine Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based		
No. of Interface Slots	4 or higher		
No. of MPU/SUP/RE/ Fabric Slots	2 or higher		
No. of Routing engines/ Supervisor Modules	2 or higher		
No. of FAN Tray	2 or higher		
Support for 100G QSFP28 Port	Yes		
Number of 100G QSFP28 Port	144 or higher		
Switching Capacity (Gbps)	28,800 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL, 16K ACL Entries /extended ACL /terms/Traffic Policy ACL IP Prefixes/group based segmentation entries ,GRE (Must Support 1000 or Higher GRE Tunnels or 1000 VXLAN Tunnels)		

c. Management Protocol	c. Role Based CLI,SNMPv1/v2/v3,Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. Virtual output Queue VoQ)/Egress QoS, WRED,LLQ,PTP,8GB Buffer/equivalent per line card, 802.1Qbb,8 queues/port, WRR		
Management solution	<i>Datacentre Fabric Management solution that supports unified management to fabric including spine and leaf switches with Zero Touch provisioning of all DR Fabric Nodes.</i>		
	<i>Fabric Management solutions should provide Advanced telemetry that can collect streaming telemetry data from all DR switches and monitor and get alerts on data transfers across a fabric.</i>		
	Management solution should support integrated and customizable visualizations for path analysis, heat maps and bandwidth visualization		
	<i>Should support creation of Service Level Agreements/custom events to create SLA (Issue reporting to issue resolution time) in one central location for all DR switches and alert any time there is a deviation from defined properties.</i>		
	<i>Should have ability to check the compliance of devices and services across the entire fabric in DR.</i>		
	<i>Hardware and software (Compute & Storage) required for Fabric Manager shall be provided from day 1</i>		
<i>Other Features</i>	<i>Should support 400K IPv4 Routes, 128K IPv6 Routes,100K IPv4/v6 Multicast Routes.</i>		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		
Redundant FAN	Redundant FAN for fully loaded chassis from day 1		
Feature Support	All the features mentioned above should be available from day one		

15. DC Leaf Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of SFP/ SFP+ Ports	Minimum 24 Nos		
Type of SFP Port	10G		
Support for 100GQ SFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	2 or higher		
Switching Capacity (Non-Blocking) (Gbps)	880 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress&1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb/802.1Qaz, 8queues/port, Remarking of bridged packets		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		
Redundant FAN	Redundant FAN for complete Chassis from day 1		
Feature Support	All the leaf switches (planned for DC) should have license to		

	integrate with Spine switch and Fabric Manager. All the features mentioned above should be available from day one		
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16. DR Leaf Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of SFP/ SFP+ Ports	Minimum 24 Nos		
Type of SFP Port	10G		
Support for 100GQ SFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	2 or higher		
Switching Capacity (Non-Blocking) (Gbps)	880 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress&1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ,SDWRR/WRR,32MBBuffer,802.1Qbb/802.1Qaz, 8queues/port, Remarking of bridged packets		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		

Redundant FAN	Redundant FAN for complete Chassis from day 1		
Feature Support	All the leaf switches (planned for DR) should have license to integrate with Spine switch and Fabric Manager. All the features mentioned above should be available from day one		

17. DR OOB Core Switch

Description	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of 10G SFP/SFP+ Ports	Minimum 48 Nos		
Type of SFP Port	10G		
Support for 100GQSFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	4 or higher		
Switching Capacity (Non-Blocking) (Gbps)	1960 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/Multihoming (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress & 1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Openstack,Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d.QoS	d. WRED,SPQ, SDWRR / WRR, 32MB Buffer, 8queues /port		
Stacking	Should be supplied on day 1 with stacking/Inter-connect		

	cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded from day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

18. DC OOB Access Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Number of 1000Base-T Ports	48 or higher		
Number of 10G SFP+ Port(Uplink)	2 or higher		
Stacking Bandwidth	Minimum 20Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 (along with its transceivers ,if required)		
Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps)	136 or higher		
Number of VLAN Supported	512		
Layer2 Protocols	802.1QVLAN,LAG,LACP,STP,MSTP,RSTP,IEEE802.3x,VLAN		

Basic Layer-3 Protocol from day1	Static Routing, PBR		
Advance Layer-3 Protocol support	OSPFv2, OSPFv3		
Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP		
Security Feature	RA Guard or equivalent, DHCP Snooping, Dynamic ARP Inspection (or similar security feature which validates ARP packets and prevents attacks such as MITM/ (Control Plane Policing (CoPP), ARP cache poisoning or Similar		
Management Protocol	GUI/Web, CLI, Telnet, TFTP, SNMPv1, SNMPv2/V2C, SNMPv3, NTP, RMON, SSHv2, IP Based Management		
QoS	802.1p, SP, Queues per port, WRED / WTD, Sflow/Netflow, Shaping, Policing/Rate Limiting, Strict Priority Queueing or Low Latency Queueing		
Stacking	Should be supplied on day1 with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

19. DR OOB Access Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Number of 1000Base-T Ports	48 or higher		
Number of 10G SFP+ Port(Uplink)	2 or higher		
Stacking Bandwidth	Minimum 20Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 (along with its transceivers ,if required)		
Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps)	136 or higher		
Number of VLAN Supported	512		
Layer2 Protocols	802.1QVLAN,LAG,LACP,STP,MSTP,RSTP,IEEE802.3x,VLAN		
Basic Layer-3 Protocol from day1	Static Routing, PBR		
Advance Layer-3Protocol support	OSPFv2,OSPFv3		
Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP		
Security Feature	RA Guard or equivalent, DHCP Snooping, Dynamic ARP Inspection(or similar security feature which validates ARP packets and prevents attacks such as MITM/(Control Plane		

	Policing (CoPP), ARP cache poisoning or Similar		
Management Protocol	GUI/Web,CLI,Telnet,TFTP,SNMPv1,SNMPv2/V2C,SNMPv3,NTP, RMON,SSHv2, IP Based Management		
QoS	802.1p,SP,Queues per port, WRED /WTD, Sflow/Netflow, Shaping, Policing/Rate Limiting, Strict Priority Queueing or Low Latency Queueing		
Stacking	Should be supplied on day1with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

20. DC OOB Core Switch

Description	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
No of 10G SFP/SFP+ Ports	Minimum 48 Nos		
Type of SFP Port	10G		
Support for 100GQSFP+ Port (Uplink)	Yes		
No .of 100G QSFP+ Port	4 or higher		
Switching Capacity (Non-Blocking) (Gbps)	1960 or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/Multihoming (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL,1500 Ingress & 1500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Openstack,Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d.QoS	d. WRED,SPQ, SDWRR / WRR, 32MB Buffer, 8queues /port		
Stacking	Should be supplied on day 1 with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded from day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

21. DR CE Router/ Internal WAN Router

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Router	WAN		
Routing Engine	<i>The Router should be populated with redundant Routing Card/Engines/control plane /supervisor engine</i>		
Aggregated Throughput (Gbps)	<i>1600 Or higher</i>		
Port population	<i>Should be supplied with 8 numbers of 100G QSFP28 ports with non-blocking architecture and wire-speed from day 1</i>		
Number of Routes	Should support 1M IPv4, 450K IPv6 Routes		
Routing Protocols from day-1	OSPF ,BGP MPLS, EVPN-MPLS, Segment Routing, Multicasting-MVPN, MOFRR,RSVP-TE, LDP, BGP-LU-SR-TE		
Network Management Protocols	Role based cli, config rollback, python scripts, rest API, netconf, xml, schema, secure boot/signed image verification, secure copy		
IPsec Throughput (Mbps)	Any applicable numeric value		
Security Protocol	radius,802.1x,tacacs,stateless ACL ,dynamic ACL ,rule propagation via BGP, control plane dos,		

QoS	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS for Traffic Management, inspections.		
IPv6 Ready	IPv6:OSPF v3 and static routers ipv6 Routing IPv6 Multicast IPv6 QoS, IPv6 VPN over MPLS		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

22. DR Border Leaf Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type Of Core Switch	Chassis Based, Non-Chassis Based		
Support for 100G QSFP+ Port	Yes		
No. of Ports	Should have minimum 24Nos of 100G QSFP28 Ports		
Switching Capacity (Gbps)	4800 Or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed)		

b. Security Feature	b. Port, VLAN, ACL, Routed ACL		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3, Openstack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED, SPQ, SDWRR/WRR, 32MB Buffer, 802.1Qbb / 802.1Qaz, 8 queues / port, Remarking of bridged packets		
Other features	Switch should support all functions required to operate as a Border Leaf Switch providing DC Gateway, Service Chaining and Data centre Interconnect (DCI) using EVPN type-5 routes. Should support 850K IPv4 Routes, 450K IPv6 Routes, 64K Multicast Route		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	Switches should have license to integrate with Spine switch and Fabric Manager. All the features mentioned above should be available from day one		

23. DR Internet Router

Description	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Router	WAN		
No. of 10G SFP+ ports (Fiber /Copper)	8 Or higher		

Port population	<i>Should be supplied on day 1 with 4 x 1000Base-LX Single Mode SFP transceivers, 4 x 10/100/1000Base-T Interface Ports and 4 x 10G Base SR Transceivers. Should be scalable to support additional 2 X 40G</i>		
Switching Capacity (Non-Blocking) (Gbps)	256 or higher		
Number of Routes	Should support 1M IPv4, 450K IPv6 Routes		
Routing Protocols	OSPF, BGP, MPLS, EVPN-MPLS ,Segment Routing, Multicasting MVPN, MOFRR, RSVP-TE ,LDP, BGP-LU, SR-TE		
Network Management Protocols	Role based CLI, Config rollback, python scripts, rest API , Netconf, xml schema, secure boot/signed image verification, secure copy		
Security Protocol	secure boot/signed image verification, secure copy		
QOS	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS for Traffic Management, inspections.		
IPv6 Ready	IPv6:OSPFv3 and static routers IPv6 RoutingIPv6 Multicast IPv6QoS IPv6 VPN over MPLS		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

24. DR Interconnect Switch - Type 1

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based, Non-Chassis Based		
Support for 100G QSFP+ Port	Yes		
No. of Ports	Should have minimum 8 Nos of 10G and 12 Nos of 100G QSFP28 Ports		
Switching Capacity (Gbps)	2560 Or higher		
a. Layer 2 Protocols	a. VLAN, LAG, LACP, STP, MSTP, RSTP, IEEE 802.3x		
b. Basic & Advance Layer-3 Protocol	b. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed), OSPFv2, OSPFv3,PBR, BGP, BGP4 , IS-IS, PIM-SSM		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3, Open stack, Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ,SDWRR/ WRR, 32MB Buffer, 802.1Qbb, 8queues /port, Remarking of bridged packet		

Security Feature	VLAN & Routed ACL,1500 Ingress &1500 Egress ACL Entries, 802.1x , RADIUS/TACACS, Port Security / equivalent ,BPDU Guard, IGMP snooping		
Stacking	Should be supplied on day1with stacking/Inter-connect cable of 5 meter length		
Other features	Switch should support all functions required to operate as an interconnect switch connecting various devices including firewall and routers with an on-blocking fabric		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

25. DR Interconnect Switch - Type 2

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based, Non-Chassis Based		
Support for 10 SFP & 100G QSFP+ Port	Yes		
No. of Ports	Should have minimum 16Nos of 10G and 8 Nos 100G QSFP28 Ports		
Switching	1920 Or higher		

Capacity(Gbps)			
a. Layer 2 Protocols	a. 802.1Q VLAN, LAG, LACP, STP, MSTP, RSTP, VxLAN, IEEE 802.3x,VLAN		
b. Basic & Advance Layer-3 Protocol	b. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG (No proprietary solutions are to be deployed), Static routing, RIPv1/RIPv2, BGP, OSPFv2, OSPFv3, PBR		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3,Openstack,Python, XML,SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED,SPQ, SDWRR/ WRR,32MB Buffer, 802.1Qbb ,802.1Qaz, 8queues /port, Remarking of bridged packets		
Security Feature	VLAN & Routed ACL,1500 Ingress & 1500 Egress ACL Entries, 802.1x , RADIUS/TACACS, Port Security or equivalent ,BPDU Guard, IGMP snooping		
Stacking	Should be supplied on day1with stacking /Inter-connect cable of 5 meter length		
Other features	Switch should support all functions required to operate as an interconnect switch connecting various devices including firewall and routers with an on-blocking fabric		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

26. DR WAN Switch

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Core Switch	Chassis Based, Non-Chassis Based		
No. of FAN Tray	2 Or higher		
Support for 100G QSFP+ Port	Yes		
No. of Slots	Should be populated with 4x1GBase-LX, 4x1000 Base-T, 4x10G Base-LR and 4 x 10GBase-SR transceivers. Also should have minimum 12 Nos of 100G QSFP28 Ports and populated with 8 x100G Transceivers (LR/SR will be decided as per TSP MUX)		
Switching Capacity (Gbps)	2568 Or higher		
a. Advance Layer-3 Protocol	a. EVPN-VXLANESI-LAG or equivalent VXLAN-EVPN LAG/ Multihoming (No proprietary solutions are to be deployed)		
b. Security Feature	b. Port, VLAN & Routed ACL, 1500 Ingress & 1 500 Egress ACL Entries, 802.1x		
c. Management Protocol	c. Role Based CLI, SNMPv1/v2/v3, Open stack, Python, XML, SSH, Streaming Telemetry, gRPC, Netconf, ZTP		
d. QoS	d. WRED, SPQ, SDWRR / WRR, 32MB Buffer, 8 queues / port		
Other features	Switch should support all functions required to operate as a WAN Switch acting as interface between Service Provider Links and WAN Router		
Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		

Redundant FAN	Redundant FAN for fully loaded chassis from day 1		
Feature Support	All the features mentioned above should be available from day one		

27. SFPTransceiver-10GBase-SR (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-SRTransceivers		
SFP Mode	Multi		
Compatibility with OEMs Products	All		
Fibre Cable Type	MMF		
Maximum Data Rate	10 Gbps		

28. SFP Transceiver -10GBase-LR (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-LR Transceivers		
SFP Mode	Single		
Compatibility with OEMs Products	All		
Fibre Cable Type	SMF		

Maximum Data Rate	10 Gbps		
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29. QSFP+28 Transceiver-100 GBase-SR4 (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	QSFP 28 - 100GBase-SRTransceivers		
SFP Mode	Multi		
Compatibility with OEMs Products	All		
Fibre Cable Type	MMF		
Maximum Data Rate	100 Gbps		

30. QSFP+28 Transceiver-100GBase-LR4 (For Networking Equipment)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	QSFP 28 -100 GBase-LR4 Transceivers		
SFP Mode	Single		
Compatibility with OEMs Products	All		
Fibre Cable Type	SMF		
Maximum Data Rate	100Gbps		

31. Remote Router/ Firewall – 2Gbps (In Remote Sites) Option I

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type of Router	WAN		
Port population	Should be supplied on day 1 with 12 x Gigabit Ethernet (10/100/1000 Base T) ports, 2 X 1000Base-LX Single Mode SFP transceivers and 2x 10G Base SR Transceivers . All mentioned SFP should be populated from day one (1).		
Routing Protocols from day-1	ospf,bgp,mpls,rsvp/Segment Routing,ldp,l3vpn,l2vpn,mpls-te		
Network Management Protocols	Role based CLI, Web-UI, Config roll back, Python Scripts, Rest-API, ZTP, TWAMP		
IPsec Throughput	2Gbps (Packetsize:1400bytes)		
IPsec Encryption	site-to-site, hub and spoke, advpn/static vpn or equivalent, aes-gcm, sha- 384 or hmac-sha-256 IPSEC encryption		
Security Protocol	Stateful firewall, dos/distributed dos, ipv6, nat, 802.1x		
QOS:	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS/8 queues per port for Traffic Management, inspections, QoS classification with TCP Application traffic.		
IPv6Ready	IPv6:OSPFv3and static router ipv6 Routing IPv6 Multicast IPv6 QoS IPv6 VPN over MPLS/ GRE		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant/Multiple FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

Or

Remote Router/ Firewall – 2Gbps (In Remote Sites) (with Router and Firewall Separately) - Option II

31. Remote Router/ Firewall – 2Gbps (In Remote Sites) - Option II			
Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Remote Router (In Remote Sites)			
Type of Router	WAN		
Router Port population	Should be supplied on day 1 with 12 x Gigabit Ethernet (10/100/1000 Base T) ports, 2 X 1000Base-LX Single Mode SFP transceivers and 2 x 10G Base SR Transceivers. All mentioned SFP should be populated from day one (1).		
<i>Routing Protocols from day-1</i>	<i>ospf,bgp,mpls,rsvp/Segment Routing,ldp,l3vpn,l2vpn,mpls-te</i>		
Network Management Protocols	Role based CLI, Web-UI, Config roll back, Python Scripts, Rest-API, ZTP, TWAMP		
QoS:	Support Class-Based Weighted Fair Queuing (CBWFQ) or Weighted round robin queuing, WRED, Hierarchical QoS/8 queues per port for Traffic Management, inspections, QoS classification with TCP Application traffic.		
IPv6 Ready	<u>IPv6:OSPFv3 and static router ipv6 Routing IPv6 Multicast IPv6 QoS IPv6 VPN over MPLS/ GRE</u>		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		

Redundant FAN	Redundant/Multiple FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		
Remote Firewall (In Remote Sites)			
IPsec Throughput	2 Gbps		
IPsec Encryption	site-to-site, hub and spoke, advpn/static vpn or equivalent, aes-gcm, sha- 384 or hmac-sha-256, IPSEC encryption		
Security Protocol	Stateful firewall, dos/distributed dos, ipv6, nat, 802.1x		
Firewall Throughput	2 Gbps Gbps or higher		
Firewall Port population	Should be supplied on day 1 with 4 x Gigabit Ethernet ports, 2 X SFP+ port (10G) with transceivers		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant/Multiple FAN fully loaded from day 1		

Note: Bidder may offer Router & Firewall from same OEM as separate device subject to meeting the mentioned specification and solution requirement as mentioned in the clause.

32. Internet Firewall with IPS

S. No.	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Hardware Architecture		
1.1	The appliance-based security platform should be capable of providing firewall, application visibility, and IPS functionality in a single appliance		

1.2	Firewall appliance should be supplied with at least 8 x 1GE RJ-45 interfaces and 8 x 10G SFP+ SR interfaces slot, 4x 100GE QSFP28/40GE QSFP slot. (8x10G SFP+ SR and 4x100G QSFP28 SR transceiver included from day one)		
1.3	The appliance hardware should be a multicore CPU architecture with a hardened 64-bit operating system		
1.4	Firewall / IPsec should be CC/NDPP/ICSA Lab/SE Lab certified		
1.5	All the features asked should support from day one and should be from same OEM. Any open source and third party solution is not accepted		
2	Performance & Scalability		
2.1	Firewall should support at least 100 Gbps of throughput on 64 byte packets or NGFW throughput of atleast 60Gbps on 64 KB HTTP/appmix . The firewall performance should not degrade while IPv6 is enabled in future		
2.2	Should support at least 15 Gbps of Mix / production performance with firewall, IPS, AVC & Anti-malware combined		
2.3	Firewall should support at least 20 Million or higher Layer 4 concurrent sessions , scalable to 30 Million or higher Layer 4 sessions and/or at least 7.0 million or higher layer 7 concurrent sessions		
2.4	Firewall should support at least 1 Million sessions per second or higher, scalable to 2 Million layer 4 new sessions per second or higher and/or at least 3,00,000 new Layer 7 sessions per second or higher		
2.5	Firewall should support at least 1000 VLANs		
2.6	Firewall should support at least 50 Gbps of IPSEC VPN throughput and/or at least 40Gbps of IPSEC VPN throughput considering 64 KB HTTP transaction size		
3	Firewall Features		
3.1	Firewall should provide application detection for DNS, FTP, HTTP, SMTP,ESMTP, LDAP, MGCP, RTSP, SIP, SCCP, SQLNET, TFTP, H.323, SNMP		
3.2	Firewall should support creating access rules with IPv4 & IPv6 objects simultaneously		
3.3	Firewall should support operating in routed & transparent mode. Both modes can also be available concurrently using Virtual Contexts. Minimum 10 virtual firewall license to be provided from day 1		
3.4	Should support Static, RIP, OSPF, OSPFv3 and BGP		

3.5	Firewall should support manual NAT and Auto-NAT, static nat, dynamic nat, dynamic pa		
3.6	Firewall should support Nat66 (IPv6-to-IPv6), Nat 64 (IPv6-to-IPv4) or Nat46 (IPv4- to-IPv6) functionality		
3.7	Firewall solution should support DNS64 & DHCPv6		
3.8	Firewall should support Multicast protocols like IGMP, PIM, etc.		
3.9	Should support security policies based on group names in source or destination fields or both		
3.10	Should support capability to limit bandwidth on basis of apps/groups, Networks / Geo, Ports, etc.		
4	High-Availability Features		
4.1	Firewall should support Active/Standby and Active/Active failover		
4.2	Firewall should support ether channel or equivalent functionality for the failover control and providing additional level of redundancy		
4.3	Firewall should support redundant interfaces to provide interface level redundancy before device failover		
4.4	Firewall should support 802.3ad Ether channel or equivalent functionality to increase the bandwidth for a segment.		
4.5	Firewall should have integrated redundant power supply / redundant hot swappable power supply		
5	Next Generation IPS		
5.1	Should have the capability to inspect SSL traffic. The SSL inspection throughput(IPS ,HTTPS etc.) should not be less than 12 Gbps		
5.2	Should be capable of tuning IDS/IPS sensors (e.g., selecting rules, configuring policies, updating policies, etc.) with minimal human intervention.		
5.3	Should be capable of automatically providing the appropriate inspections and protections for traffic sent over non-standard communications ports.		
5.4	Should be able to link Active Directory and/or LDAP usernames to IP addresses related to suspected security events.		
5.5	Should be capable of detecting and blocking IPv6 attacks.		
5.6	Should support more than 10,000 IPS and 3000 application layer and risk-based controls that can invoke tailored intrusion prevention system (IPS) threat detection policies to optimize		

	security effectiveness.		
5.7	The Appliance OEM must have its own threat intelligence analysis center and should use the global footprint of security deployments for more comprehensive network protection.		
5.8	The detection engine should support capability of detecting and preventing a wide variety of threats (e.g., malware, network probes/reconnaissance, VoIP attacks, buffer overflows, P2P attacks, etc.).		
5.9	Should be able to identify attacks based on Geo-location and define policy to block on the basis of Geo-location		
5.10	The detection engine must incorporate multiple approaches for detecting threats, including at a minimum exploit-based signatures, vulnerability-based rules, protocol anomaly detection, and behavioural anomaly detection techniques.		
6	Antivirus		
6.1	Firewall should have integrated Antivirus solution if not please quote separate appliance		
6.2	The proposed system should be able to block, allow or monitor only using AV signatures and file blocking based on per firewall policy based or based on firewall authenticated user groups with configurable selection of the following services:		
6.3	a) HTTP, HTTPS		
6.4	b) SMTP, SMTPS		
6.5	c) POP3, POP3S		
6.6	d) IMAP, IMAPS		
6.7	e) FTP, FTPS		
6.8	The proposed system should be able to block or allow oversize file based on configurable thresholds for each protocol types and per firewall policy.		
8	Management		
8.1	The management must be accessible via a web-based interface and ideally with no need for additional client software`		
8.3	The management solution must provide a highly customizable dashboard.		
8.4	The management solution must be capable of role-based administration		

9	Reporting		
9.1	Following are the minimum technical requirements for the appliance/Virtual appliance used for log management:		
9.2	support 8 TB of storage for log storage		
9.3	The solution shall provide a unified dashboard to monitor the real-time events/ logs of all managed devices.		
9.4	The solution shall allow monitoring of activities such as the resources, applications, and services accessed in the network.		
9.5	The solution shall allow filtering of logs based on various parameters like user, source & destination IP address, source & destination ports, services etc.		
9.6	The solution shall allow generation of reports with following information : Application Traffic Intrusions and attacks observed Top Source and destinations Top Applications Traffic statistics.		
9.7	Should support multiple Report format like PDF, HTML, CSV or XML		
9.8	Should support Run reports on-demand or on a schedule with automated email notifications, uploads and an easy to manage calendar view.		

33. DR Internal Firewall

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type	NGFW Or higher		

Features	Layer 3-Layer 4,NAT, Next Generation Intrusion Prevention System (IPS)		
Traffic handled	TCP,UDP,HTTP/TCP,TCP/UDP		
Throughput (Real World/Prod Performance) (All Features enabled)(Gbps)	234 Gbps or higher		
Concurrent Session/Concurrent Connection	55 Million Layer 4 sessions or 25 Million Layer 7 sessions		
New session/Connection per second	Minimum 500K Layer 4 sessions or Minimum 200K Layer 7 sessions		
IPsec Throughput (Gbps)	150 Gbps (Packet size:1400Bytes) or Higher		
Port population	Should be supplied on day1 with 8x10GBase-SR Transceivers and 12 x100G Base-SR4 Transceivers		
Power Supplies	Dual Or higher		
Details of the Firewall Policies for the Firewall provided with the License	Application Visibility License, IPS License		
Tunnels	IPSEC VPN (Site to site), Hub and Spoke		
Internet Key Exchange	IKEv1, IKEv2		
Security mechanism	State full signatures, protocol anomaly detection		
NG IPS Signature supported	5000 or Higher		
Number of IPsec VPN Peers Supported (Site to Site)	10000 Or higher. Licenses to be included from day one		
Certification	Common Criteria/Indian Common Criteria Certification Scheme(IC3S) or equivalent		

Redundant Power Supply	Internal Redundant Power Supply for fully loaded chassis from day 1		
Redundant FAN	Redundant FAN for fully loaded chassis from day 1		
Feature Support	All the features asked should be available from day one and should be from same OEM. Any open source and third party solution is not accepted		

34. DR Solution/Application Firewall

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type	NG FW Or higher		
Features	Layer3-Layer4,NAT,ApplicationVisibility and Control(AVC),Next Generation Intrusion Prevention System (IPS)		
Traffic handled	TCP,UDP,HTTP/TCP		
Packet Size	1024 Bytes or 64KB HTTP/application-mix		
Throughput (Real World/Prod Performance) (All Features enabled)(Gbps)	Throughput (Real World/Prod Performance) (All Features enabled)(Gbps) : 60 Gbps on 64KB or 50 Gbps with 64KB HTTP		
IPsec Throughput	Minimum 50 Gbps on 64KB or 40 Gbps with 64KB HTTP		
Concurrent Session/Concurrent Connection	Minimum 40 Million Layer 4 sessions or minimum 20 Million Layer 7 sessions		
New session/Connection per second	Minimum 380K Layer 4 sessions or minimum 200K Layer 7 sessions		

Type of Interface Supported Multi-select	GE Copper, 10GSFP+, QSFP+40G, GESFF, QSFP28 100G		
Port Population	The Firewall should have minimum 12 X 10GSFP+, 4X40G /100G QSFP 28. All the ports shall be fully Populated with respective Transceivers		
Details of the Firewall Policies for the Firewall provided with the License	Application Visibility License, IPS License		
Tunnels	IPSEC VPN (Site to site), Hub and Spoke		
Internet Key Exchange	IKEv1, IKEv2		
Security mechanism	State-full signatures, protocol anomaly detection		
Number of IPsec VPN Peers	5000 Or higher. Licenses to be included from day one		
Supported (Site to Site)	Internal Redundant Power Supply for fully loaded chassis from day 1		
NG IPS Signature supported	5000 or higher		
Certification	Common Criteria/Indian Common Criteria Certification Scheme(IC3S)		

35. AAA (Authentication, authorization, and accounting) Appliance Server

S/N	AAA Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
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1	The AAA solution should be available as a hardware based appliance		
2	The solution must have both Radius and TACACS+ server as a built-in capability and should not have dependency on external server for AAA.		
3	AAA license should be provided to support 5000 devices from day 1 for network device administration using RADIUS and TACACS+ and scalable up to 10000 devices		
4	Solution must be provided in High Availability mode to support Active-Passive deployment.		
5	The solution should be deployed in out-of-band mode. The AAA solution should be integrated with proposed EMS to support overall required functionality .		
6	The proposed solution must provide ND (Next Day) RMA support.		
7	The proposed solution / OEM must have Hindi and English speaking L0 / L1 / L2 / L3 technical support centres in India		
8	The OEM should have local in country RMA depo.		
9	The OEM must have their R&D center developing NAC software.		
10	AAA Server should provide authentication services to all the users connecting to the network and network infrastructure devices.		
11	AAA Server should support standard Radius for Authentication, Authorization and Accounting.		
12	AAA Solution should also support TACACS+ to simplify device administration and enhance security through flexible, granular control of access to network devices, auditing of commands executed on NEs.		
13	TACACS+ device administration should support: i. Role-based access control ii. Per Command level authorization with detailed logs for auditing iii. Logging of commands executed in each user session & its availability for audit purposes and Logs should be available as per user defined period a max upto 1 year.		
14	The solution should be able to create TACACS+ authorization policy for device administrator containing specific lists of commands a device admin can execute. Command sets should support; exact match, case sensitive, ? (any character), * (matches any), etc and support stacking as well		

15	The proposed AAA solution must be capable of supporting 802.1X authentication and shall work with endpoint device native OS supplicant and network devices (authenticator) that are enabled for IEEE 802.1X authentication.		
16	Solution should support MAB address based authentication for unmanaged endpoints like IP phone, IP Camera, Printer, IoT.		
17	It should support Authentication by validating any user's login credentials against a central security database to ensure that only individuals with valid credentials will be granted network access		
18	The proposed solution should be able to integrate with industry leading Directory server like but not limited to LDAP server and Microsoft Active Directory		
19	The AAA server should support the following authentication protocols EAP-PEAP EAP-TLS EAP-MD5 PAP CHAP MS-CHAP and MS-CHAPv2		
20	Device command set authorization Network access restrictions and administrative access reporting. Restrictions such as time of day, day of week and session time limits. User and device group profiles. Should have a Web-based user interface to simplify and distribute configuration for user group profiles		
21	The AAA Server should be able to support large networked environments and support for redundant servers, remote databases, and user database backup services. Lightweight Directory Access Protocol (LDAP) authentication forwarding support for authentication of user profiles stored in directories from leading vendors		
22	Different access levels for each AAA Server administrator- and the ability to group network devices- enable easier control and maximum flexibility to facilitate enforcement and changes of security policy administration over all the devices in a networks		
23	The AAA server should support Time Based Access		
24	The solution should be vendor agnostic and based on open standard		

25	The AAA server should support Location and device-based profiles for groups		
26	The AAA server should support Account lockout or account blacklisting		
27	The proposed AAA solution should have a built-in Profiler for network device visibility. Solution should be able to detect both new and existing endpoints and categorizes them based upon the type of endpoint (Ex: Windows, Printer, Network Device, IP Camera, Android, iPad, etc)		
28	The proposed AAA solution must support network-based profiling by targeting specific endpoints (based on policy) for specific attribute device scans, resulting in higher accuracy and comprehensive visibility of what is on your network		
29	The proposed AAA solution should provide support for discovery, profiling, policy-based placement, and monitoring of endpoint devices on the network all within the same appliance		
30	The proposed AAA solution must support Profiling via Active and Passive collectors like DHCP, SNMP, HCP fingerprinting/API, HTTP-agent, NMAP, WMI, TCPIP, SMB, etc.		
31	The proposed AAA solution must provide active scanning via WMI, SSH, LDAP, SNMP and MDM Collector.		
32	The proposed AAA solution must provide flexible filtering capabilities to sort out device information based on different attributes (e.g MAC address, Manufacturer name, hostname, IP address, etc.)		
33	The proposed AAA solution should produce a real-time endpoint discovery with detailed information including which switch port the device is connected.		
34	The proposed AAA solution must provide device inventory in CSV, Tab Delimiter and PDF exportable format.		
35	The proposed AAA solution must provide capability to import device inventory via CSV and binary file.		
36	The proposed AAA solution must provide information on how many devices are not profiled, how many devices are newly seen in day/week/month, etc.		
Feature Support	All the features asked should be available from day one and should be from same OEM. Any open source and third party solution is not accepted		

36. Load balancer

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
General Specifications	All the features asked should be available from day one		
	Must support high availability		
	Must support SNMP for polling of system statistics		
	Must support SNMP Traps for key system thresholds (specify)		
	Must display a visual representation of authentication in the GUI and Local authentication should be supported		
	Must log all authentication(Radius/ Tacacs+ events): Locally and Via syslog		
	Must support backup of the full system configuration via the GUI		
	Must support automated backup of configuration to an external location		
	Must support a local user database		
	Must have built-in tcp dump-like tool and log collecting functionality		
	Must support REST API for integration with 3rd party management and monitoring		
	Must provide detailed logs and graphs for real time and time based statistics		
	Must support multiple configuration files with at least 2 bootable partitions for better availability and easy upgrade / fallback		
	Must support led warning and system log alert for failure of any of the power and CPU issues		
	The solution should support minimum 12/10 Gbps L4/L7 Throughput		
	The solution should support 5 Gbps SSL Bulk Encryption Throughput		
	The solution should support 15 K SSL transactions per second		
	The Appliance must support minimum 4*10/100/1000 Mbps ports, two SFP Slots and 2 * 10G SFP+ slots		
	The solution must be appliance based, rack mountable and it should be		

	having internal redundant Power Supply from day one		
	The proposed solution should support Virtualization. Should be licensed for minimum 15 Virtual System/Virtual Domains from day one		
Load Balancing requirements	The appliance Must support layer 2 to layer 7 load balancing		
	The appliance Must support server load balancing methods		
	Must support one arm, reverse and transparent proxy mode deployment scenarios		
	Must maintain server persistency		
	Must provide application & server health checks for well-known protocols		
	Must support layer4 and layer 7 load balancing for well-known protocols		
	Must support graceful shut down of real services		
	Must support content routing		
	Must support scripting		
Link Load Balancing requirements	Must support outbound Link Load Balancing		
	Must support outbound multi-homing Link Load Balancing		
Global Server Load Balancing requirements	Must support load balancing of servers between different data centres		
	Must support dynamic proximity		
	Must support inbound Link Load Balancing		
	Must support global server load balancing functionality		
	High Availability Requirements		
	Must provide comprehensive and reliable support for high availability and N+1 clustering based on Statefull session failover with Active-active & active standby unit redundancy mode.		
	Must support communication link for real-time configuration synchronization		
	Must support floating IP address and group for Statefull failover support		
	Must support built in failover decision/health check conditions		
	Must support configuration synchronization at boot time and during run time to keep consistence configuration on both units.		

SSL Offloading Requirements	Must provide secure online application delivery using hardware based high performance SSL acceleration		
	Must support certificate formats		
	Must support Certificate/Private Key backup/restore to/from local disk or remote TFTP server, and through Web UI		
	Must support self-generated CSR (Certificate Signing Request), self-signed Certificate and private key for specified host.		
	Must support HTTP to HTTPS header rewrite for enhanced application delivery support		
	Must have end to end SSL support to act as a SSL Server and/or as SSL Client		
	Must support client certificate verification, CRL's (HTTP, FTP, LDAP) and OSCP protocol		
	Must support Elliptic Curve Diffie-Helman ciphers		
	Must support TLS SNI extension		
	Must support all SSL/TLS versions including TLS1.3		
	Must support SSL Forward Proxy		
Security and Application Acceleration	Must provide performance optimization using TCP connection multiplexing, TCP buffering		
	Must support IEEE 802.3ad link aggregation		
	Must provide real time Dynamic Web Content Compression to reduce server load.		
	Must provide selective compression for Text, HTML, XML, Java Scripts Mime types and pictures		
	Must provide Advanced high performance memory/packet based Web cache		
	Must provide support for customized cache rules including max object size, TTL objects, refresh time interval etc		
	Must provide detailed cache access statistics based on ip or http hosts		
	Must have security SYN flood protection		
	Must have the capability of Rate shaping & QoS Support		
	Must support Web Application Firewall		
	Must support HTTP authentication		

	Must support IP reputation		
	Must support Geo-IP security for DDoS mitigation		
	Must support policy-based Connection limiting		

37. Privileged Access Manager

Privileged Access Manager (2 instances i.e. 1 in DC and 1 in DR; each instance to have local HA mode with hardware redundancy as per specs)	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
<i>A) The Solution Should be On-Premise and all the necessary hardware should be supplied along with the software solution. It should be configurable in HA mode.</i>		
B)Authentication Models		
· There should be a Generic Target System Connectors to enable one to uses this connector for non-standard devices etc.		
· The solution should be agentless i.e. does not require to install any agent on target devices		
· The solution should support transparent connection to the target device, without seeing the password or typing it in as part of the connection		
· The solution should support direct connections to windows, ssh, databases and other managed devices without having to use a jump server.		
· The solution should have an inbuilt multi factor authentication for soft token, mobile OTP, USB token, RADIUS etc. Also it should have an inbuilt authentication for Bio-Metrics without having to acquire another biometric authentication server		
· The solution should be able to integrate with enterprise authentication methods e.g. multiple 3rd party authentication methods including LDAP, RADIUS and a built-in authentication mechanism		
· The solution should also provide local authentication and all the security features as per best standards.		
· The solution should provide flexibility user/device wise for local authentication or enterprise authentication		
· The solution should support an application integration framework for web based as well as .exe based applications. There should be strong out of the box support including ease of integration with any third party connectors.		
· The solution should provide multi-domain feature whereby the entire operations can be carried out within a tenant or line of business.		
· The solution can restrict end-user entitlements to target accounts by location; that is, allow access only from a specified PC or range or class of PCs		

<ul style="list-style-type: none"> • The solution should be able to handle multi-location architecture or distributed architecture with seamless integration at the User Level. For example: Multiple data center may have multiple secondary installations but the primary installation will also simultaneously work for all users and all locations 		
Password Management		
<ul style="list-style-type: none"> • The solution shall perform password change options which is parameter driven 		
<ul style="list-style-type: none"> • The solution should set password options every x days, months, years and compliance options via the use of a policy 		
<ul style="list-style-type: none"> • Ability to create exception policies for selected systems, applications and devices 		
<ul style="list-style-type: none"> • The solution should enable an administrator to define different password formation rules for target accounts on different target systems and supports the full character set that can be used for passwords on each target system. 		
<ul style="list-style-type: none"> • The solution enables an administrator to change a target account password to a random value based on a manual trigger or automatic schedule. 		
<ul style="list-style-type: none"> • Allow single baseline policy across all systems, applications and devices (e.g. one single update to enforce baseline policy 		
<ul style="list-style-type: none"> • The solution should support changing a password or group of passwords according to a policy (time based or 'on-demand') 		
<ul style="list-style-type: none"> • Ability to generate 'One-time' passwords as an optional workflow 		
<ul style="list-style-type: none"> • Ability to send notifications via email or other delivery methods triggered by any type of activity 		
<ul style="list-style-type: none"> • Ability to send notification via email to the user requesting the password that checkout is complete 		
<ul style="list-style-type: none"> • Flexibility that allows exclusivity for password retrieval or multiple users checking out the same password for the same device in the same time period 		
<ul style="list-style-type: none"> • All locally stored target-account passwords should encrypted using AES or similar encryption with at least 256 bit keys 		
<ul style="list-style-type: none"> • The solution should automatically reconcile passwords that are detected 'out of sync' or lost without using external restore utilities 		
<ul style="list-style-type: none"> • The solution should have the ability to reconcile passwords manually, upon demand 		
<ul style="list-style-type: none"> • The solution should automatically verify , notify and report all passwords which are not in sync with PIM 		
<ul style="list-style-type: none"> • The solution should have the ability to automatically "checkout" after a specific time and "check-in" within a specified time 		

• The solution should set unique random value anytime a password is changed. The password generated should be strong and should not generate a similar value for a long iteration.		
• The tool allows secure printing of passwords in Pin Mailers. Lifecycle of printing and labelling of envelopes should be part of the module (or) Any other offline way to securely login to system such as USB authentication key/ Smartcard etc.		
• The solution should be able to control re-prints with adequate authorization		
• Secured Vault platform - main password storage repository should be highly secured (built-in firewall, hardened machine, limited and controlled remote access etc.)		
• The proposed solution should restrict the solution administrators from accessing or viewing passwords or approve password requests.		
Access Management		
• The solution should be able to restrict usage of critical commands over a SSH based console based on any combination of target account, group or target system and end user		
• The solution should restrict privileged activities on a windows server (e.g. host to host jumps, cmd/telnet access, application access, tab restrictions) from session initiated with PIM		
• The solution should be able to restrict usage of critical commands on command line through SSH clients on any combination of target account, group or target system and end user.		
• The solution should be able to restrict usage of critical commands on tables for database access through SSH, SQL+ (client/), front-end database utilities on any combination of target account, group or target system and end-user		
• The solution should provide for inbuilt database management utility to enable granular control on database access for Sql, my Sql, DB2, Oracle etc.		
• The solution enables an administrator to restrict a group of commands using a library and define custom commands for any combination of target account, group or target system and end user		
• The solution should provide secure mechanism for blacklisting/whitelisting of commands for any combination of target account, group or target system and end user		
• The solution can restrict user-specific entitlements of administrators individually or by group or role		
• The solution should have workflow control built-in for critical administrative functions over SSH including databases (example user creation, password change etc.) and should be able to request for approval on the fly for those commands which are critical.		
• The solution can restrict target-account specific entitlements of end users individually or by group or		

role.		
• The solution can restrict end-user entitlements to target accounts through a workflow by days and times of day including critical command that can be fired.		
• The solution should provide for a script manager to help in access controlling scripts and allow to run the scripts on multiple devices at the same time.		
• System should be able to define critical commands for alerting & monitoring purpose and also ensure user confirmation (YES or NO) for critical commands over SSH		
Privileged Session Management and Log Management		
• The solution should be able to support an session recording on any session initiated via PIM solution including servers, network devices, databases and virtualized environments		
• The solution should be able to log commands for all commands fired over SSH Session and for database access through ssh, sql+		
• The solution should be able to log/search text commands for all sessions of database even through the third party utilities		
• The solution should be able to log/search based on text commands for all sessions		
• The solutions should support option for enabling session based recording for all sessions on any combination of target account, group or target system and end-user.		
• All logs created by the solution should be tamper proof and should have legal hold		
• The solution logs all administrator and end-user activity, including successful and failed access attempts and associated session data (date, time, IP address. Machine address, BIOS No and so on). The tool can generate — on-demand or according to an administrator-defined schedule — reports showing user activity filtered by an administrator, end user or user group		
• The tool can restrict access to different reports by administrator, group or role.		
• The tool generates reports in at least the following formats: HTML, CSV and PDF		
• System should be able to define critical commands for alerting & monitoring purpose through SMS or Email alerts		
• The solution should provide separate logs for commands and session recordings. Session recordings should be available in image/ video based formats (non-editable and encrypted) preferably in any proprietary format.		
• The session recording should be SMART to help jump to the right session through the text logs		
• Secure and tamper-proof storage for audit records, policies, entitlements, privileged credentials,		

recordings etc.		
• The proposed solution shall cater for live monitoring of sessions and manual termination of sessions when necessary		
• The proposed solution shall allow a blacklist of SQL commands that will be excluded from audit records during the session recording (Optional). All other commands will be included.		
• The proposed solution shall enable users to connect securely to remote machines through the tool from their own workstations using all types of accounts, including accounts that are not managed by the privileged account management solution The proposed solution shall allow configuration at platform level to allow selective recording of specific device (Optional).		
• The proposed solution shall allow specific commands to be executed for RDP connections (e.g. Start the connection by launching a dedicated program on the target machine without exposing the desktop or any other executables). It should have capability to support End point privilege management.		
• The proposed solution shall support correlated and unified auditing for shared and privileged account management and activity.		
• The proposed system shall support full colour and resolution video recording.		
• The proposed system shall support video session compression with no impact on video quality.		
• The proposed solution should have offline vault for Break glass scenarios .		
PIM Security		
• All communication between system components, including components residing on the same server should be encrypted.		
• All communication between the client PC and the target server should be completely encrypted using secured gateway. (Example: a telnet session is encrypted from the client PC through the secured gateway)		
• The Administrator user cannot see the data (passwords) that are controlled by the solution.		
• Secured platform -main password storage repository/Vault should be highly secured (hardened machine, limited and controlled remote access etc.).		
• Solution should be TLS1.2 and SHA-2 Compliant and can validate FIPS 140 -2 cryptography for data encryption.		
• The solution should secure Solution should secure master data records, entitlement, policy data and other credentials in a non-modifiable storage device/process.		
PIM Administration		
• There must be central administration web based console for administration, user and device		

management and having of feature to auto on-board them.		
• The tool uses Active Directory/LDAP as an identity store for administrators and end users.		
• The tool enables an administrator to define groups (or similar container objects) of administrators and end users.		
• The tool enables an administrator to add an administrator or end user to more than one group or to add a group to more than one super group.		
• The tool enables an administrator to define a hierarchy of roles without limit.		
• Administrative configurations (e.g. configuration of user matrix) shall be accessible via a separate client where client access is controlled by IP address.		
• Important configuration changes in the solutions (example changes to masters) should be based on at least 5 level workflow approval process and logged accordingly		
• Segregation of Duties - The Administrator user cannot view the data (passwords) that are controlled by other teams/working groups (UNIX, Oracle etc.).		
• All administrative task should be done LOB wise i.e. Line of Business Wise		
Architecture		
• Support of multi-tier architecture where the database and application level is separated		
• Scalable Architecture (Horizontally /Vertically) and not limited to restricted hardware/Software count. (Specified correctly if there is such limit)		
• Solution should work at the network layer instead through a jump server. This will have achieve large number of sessions.		
• Solution can support multiple mirrored systems at offsite Disaster Recovery Facilities across different data centre locations.		
• Solution shall have options for backup or integration with existing backup solutions		
• Solution can handle loss of connectivity to the centralized password management solution automatically.		
• There should not be any requirement of change in existing network topology to control privilege session and can support distributed network architecture where different network segment can be controlled centrally.		
• Solution should support client based and browser based administrations.		
• Solution should preferably be an agentless and include password management and session recording features.		

• Solution must support parallel execution of password reset for multiple concurrent request.		
• Solution should support failover from single active instance to stand by instance without loss of any data.		
• Solution should support virtual server instance for management and installation if required.		
• Solution can support multiple instance with load balancer if required in future.		
• System should support for implemented in high availability mode. The solution is to be configured as Active-Passive / Active-Active mode in HA between DC to DR with Synchronization & Auto failover.		
• Solution should have capability to have direct connection with target device using secured gateway channel without compromising risky ports.		
• System has ability to integrate with enterprise authentication systems like ADS, LDAP, windows SSO, RADIUS etc.		
• Systems has ability to integrate BIOMETRIC Solution, Hardware/Software Tokens, Ticketing system, HSM (Hardware Security Module), Automation Software if any.		
SIEM Integration		
• Solution should be able to integrate with leading SIEM Solutions and or other performance monitoring applications to eliminate password hardcoding feature.		
Password Management		
• Solution should manage to protect and preferably eliminate privileged credentials in application, scripts or configuration files.		
Discovery of Privilege Account		
• Solution should authenticate and trust the application requesting privilege password.		
• Solution should be capable to discover privilege accounts on target system, manage user governance and can reconcile it. It can identify non built-in local (backdoor) admin or equivalent account.		
• Solution should identify public/private SSH key, orphan key, and can ascertain its status.		
Notification of Alerts		
Solution should be able to generate alert through SMS/Email		

• For any critical PIM Events and able to send message		
• For any change in Admin rights or configuration file		
• On Other critical events based on customization		
Dash-Board/Reports		
Solution should provide		
• Real time view of the activities of Administrators		
• Reports based on defined frequency, on-demand		
• Scheduled Reports like User Activity/Privileged account list/ activity logs		
• System Administrator changes performed by PIM Admin		
• Reports of password lockouts/checkout on system/password change report/Password status		
• Other customised reports		
• Other Audit Reports based by IT auditor's requirement		
• Ability to replay actual session recording for any forensic analysis as and when required.		
• Dashboard for viewing critical events and password policies.		
The solution should have dashboard for UEBA/UBA , Threat Analytics and reporting.		
Other Miscellaneous:		
• Credential management for privileged accounts of servers with different OS, databases and network devices		
• Delegation of access to privileged accounts		
• Controlled elevation of commands		
• Secrets management for applications, service and devices		
• Privileged task automation (PTA)		
• Remote privileged access for workforce and external users		
• Unified Central dashboard to monitor & manage all activities, accounts, policies and auditing		
• Approval workflows to automate the privileged escalation requests		
• Ability to monitor live sessions, and if required, capability to pause or terminate the session		
• Build reports for usage, audit, forensics, and regulatory compliance purposes.		
• Defined user activity should generate real-time email alerts, as well as block commands, lock, and		

terminate SSH sessions.		
• 'log off on disconnect' feature to ensure sensitive data is not exposed in subsequent RDP/SSH sessions.		
• Granular access control mechanism for Unix / Linux commands		
• Alerts on invoking unprivileged access and suspicious activity.		
• Ability to store the audit logs and recordings for 1 year and option backing up the logs using sftp or any other mechanism.		
• Solution sizing should be done to support 10000 Target systems and the licenses should be supplied on day 1 for 3000 Target systems.		
• Solution should be supplied with all the required hardware.		
• Solution should work in HA with active standby and audit logs should be mirrored across the Active / Standby systems.		
• OEM should be ISO/IEC 27001/27002/27034 compliant (or) Equivalent		
Support		
This application must support all type of devices including servers, storage routers, firewalls, switches etc placed within DC and DR.		
Licenses should be provided for a duration of 5 years.		
Sizing requirement:		
• <i>The Solution should have storage capacity of more than 10 TB for retention of audit records and option to export the audit records over sftp / rsync for backup.</i>		
• Number of Named Users – 50		
• Target Systems - 3000 scalable upto 10K target machines without change in hardware. The system should support at least 200 concurrent sessions		
SSH key management for without any extra licenses		
Solution should be an agentless and include password management and session recording		
Features		
The solution should have End Point Privilege Management and Threat Analytics.		

38. IPS/IDS

Sr. No.	Specifications for Perimeter IPS/IDS	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
A.	Platform Requirement		
1	NIPS solution should be a purpose built dedicated standalone appliance and not an integrated firewall module or UTM appliance.		
2	Monitoring Interface should be able to operate at layer 2.		
3	The appliance must have Real World Throughput of 10 Gbps and scalable up to 30 Gbps for future requirements on the same appliance.		
4	The solution should support on the box SSL inspection.		
5	Solution must support SSL throughput of 5 Gbps from day 1.		
6	The appliance should have below port density:- 1. Fixed 8 - 1G copper ports with/without fail open 2. 4 - 10G SFP+ ports with/without internal fail open 3. Fixed 2 - 10G SFP+ ports 4 All the ports shall be fully populated with its transceivers only.		
7	The appliance should have separate dedicated interface for management console. None of the monitoring ports should be used for this purpose.		
8	The proposed appliance must support 10,000,000 Concurrent Connections.		
9	The proposed appliance must support 200,000 new Connections per Second.		
10	The appliance must have redundant power supply		
B.	Detection Technology		
1	NIPS should support different mode of deployment.		
	a)IDS		

	b) TAP mode		
	c) Inline		
2	Solution must accurately detect intrusion attempts and discerns between the various types and risk levels including Zero-Day attacks, unauthorized access attempts, pre-attack probes, suspicious activity, DoS, DDoS, vulnerability exploitation, brute force, hybrids. The NIPS solution should be able to perform deep inspection of network traffic by using a combination of advanced technologies, including full protocol analysis, threat reputation and behaviour analysis to detect and protect against Zero-day attacks, malware call-backs (C&Cs), Denial of service (DoS) and other advanced threats.		
3	IPS Solution should have built-in SSL decryption Engine for SSL Traffic decryption to support prevention of encrypted attacks - which includes attacks over secured http channel without need to have additional appliances.		
5	The IPS Solution should support Anti-malware protection through various engines as part of solution offerings.		
6	The IPS Solution should have real time emulation techniques for embedded malware protection.		
7	IPS appliance should provide advanced DoS detection with self-learning/ heuristics/threshold based detection for more accurate and fewer false positives.		
8	The IPS must support IPv4 and Ipv6 from day-one and detect attacks inside IPv6 encapsulated packets		
9	IPS should provide protection from evasion based attacks		
10	The solution should have Anti-spoofing capabilities		
11	should have capability for Host quarantine and rate limiting		
12	IPS must support high availability in Active-active and active-passive mode with stateful failover and not only limited to transparent mode.		

13	IPS must support protocol tunnelling for following:- <ul style="list-style-type: none"> ■ IPv6 ■ V4-in-V4, V4-in-V6, V6-in-V4, and V6-in-V6 tunnels ■ MPLS ■ GRE 		
14	NIPS should support provide advanced botnet protection using following detection methods:- <ul style="list-style-type: none"> ■ DNS sink holing ■ Heuristic bot detection ■ Command and control database 		
15	Should protect against DOS/DDOS attacks. Should have learning capability to monitor the network traffic and develops a baseline profile. It should have the ability to constantly update this profile to keep an updated view of the network:- <ul style="list-style-type: none"> ■ Threshold and heuristic-based detection ■ Host-based connection limiting ■ Self-learning/profile-based detection 		
16	Solution should be able to control traffic based on geographical locations -- For e.g. a policy can be created to block traffic coming or going to a particular country. Provision should be there to allow specific IPs for any blocked country		
17	Solution should have the capability to create Black List rules and White List rules which should allow to block or allow traffic to or from specified networks, based on protocols, applications, and other criteria.		
C	Advanced Prevention and Response		
1	IPS Solution must have capability to PRIORITIZE risk of threats to you with Campaigns detected and IP addresses that could be exposed		

2	Solution should provide threat intelligence feeds to provide pre-emptive protection against emerging threats along with geo/country blocking.		
3	IPS must support Inbound SSL Inspection detection and prevention using dynamic agent based key for ECDHA cypher suits		
4	IPS must have multiple signature less engines on the appliance without degrading the performance.		
5	Solution must have dedicated emulation engine to provide protection from advanced attacks. The IPS solution should identify malwares without the need for signatures.		
6	IPS must support on demand throughput scalability by just upgrading software license-Scalable on demand throughput based scalability without changing the hardware		
7	IPS must support Advanced Analytics, Heuristics and Machine Learning		
8	IPS must provide communication fabric based integration with multiple other existing solution. IPS must have the capability to share threat intelligence with other solutions enabling security intelligence and adaptive security.		
9	IPS must have inbuilt network behavioural analysis engine to provide additional context using flows.		
10	NIPS should support High Availability. It should support stateful HA such that state information is shared between the HA appliance. In case one of the appliances fails state is maintained.		
11	NIPS should support Active-Active high availability. The HA should be out of the box solution and should not require any third party or additional software for the same		
12	NIPS should be able to perform entire packet capture of the traffic and sent to the manager for analysis		
D.	Management		
1	Solution should manage the NIPS appliances from a central management console		

2	Management platform supports policy configuration, command, control, and event management functions for the NIPS appliances		
3	Management console should support Radius and LDAP authentication in addition to the local user authentication		
4	Management console should have the ability to allow access to specific hosts by enabling GUI Access and defining the list of authorized hosts/networks		
5	NIPS Management console should support high availability which should have Automated failover and fail-back		
6	NIPS solution should provide Intelligent security management:- <ul style="list-style-type: none"> ■ Intelligent alert correlation and prioritization ■ Robust malware investigation dashboards ■ Preconfigured investigation workflows ■ Scalable web-based management 		
7	NIPS Management console should be capable of producing extensive graphics metric for analysis. Further, users should be able to drill down into these graphical reports to view pertinent details.		
E.	OEM Support		
1	Bidders must address Problems in equipment which cause downtime/degradation of services and resolution of which require development of patches, bug fixes etc. shall be treated, by Security products OEM, on priority basis.		
2	Bidder must provide Schedules and performs Quarterly on-site visits; completes Protection Analysis and offers best practices recommendations.		
3	Bidder must provide Proactive notification of malware threat advisories and product updates		
F.	Feature Support		

	All the features asked should be available from day one and from same OEM. Any open source and third party solution is not accepted		
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39. SSL VPN Gateway

S. No.	Minimum Requirement for SSL VPN Gateway	Marked/ Cross Reference Specification reference page no.	Highlighted Reference of with	Compliance (Yes/No)
1	The appliance should be dedicated SSL VPN Gateway and not a part of UTM/ firewall/ NGFW/ ADC device It should have should have 1x1GbE port for management and 8x10GbE SFP+ ports with its transceivers.			
2	The appliance should have multicore CPU, 64GB RAM, 4TB HDD and dual power supply.			
3	The solution Should have dedicated hardware SSL card and should support 45 Gbps of SSL Throughput			
4	The appliance should be capable of creating multiple virtual portals and support minimum 1000 concurrent users scalable to 10000 concurrent users on the same appliance without changing any hardware			
5	The solution should support different network pools defined per user or group.			
6	Should support IPSec Tunneling within SSL VPN Tunnel Deleted			
7	Should Support Split Tunneling, Full Tunneling, IP address assignment based on user			
8	The appliance should support 45 Gbps of compression throughput. This capability shall be compatible with most modern browsers, requiring no additional software. Proposed appliance should support Desktop over VPN feature to provide access to desktop from remote for WFH purpose.			

9	The solution should support desktop publishing on IOS and Android phones along with device ID based authorization. The solution should support enterprise App-store for android and IOS phones. Should also support SAML, Hardware binding and AAA support along with SSO. Solution must support machine authentication based on combination of HDD ID, CPU info and OS related parameters, mac address to provide secure access to corporate resources.		
10	The solution should support following Authentication methods:		
11	a) Active Directory, b) LDAP , c) RADIUS ,d) Local database e) SAML f) Google O-Auth Support g) SMS		
12	The solution must provide at least 4 authentication methods for granular authentication of VPN users		
13	Appliance must support Access control options based on:-		
14	a) User and group, b) Source IP and network, c) Destination network ,e) Service/Port, f) Host name or IP address ,g) IP range, h) Subnet and domain, I) Day, date, time and range		
15	Should have IPV6 support with IPv6 to IP4 and IPv4 to IPv6 translation and full IPV6 support. Also should have IPV6 support with DNS 6 to DNS 4 based health check for intelligent traffic routing and failover.		
16	The solution should provide comprehensive and reliable support for high availability with Active- active & active standby unit redundancy mode using standard VRRP (RFC-2338) or equivalent for HA interconnection over network VRRP or equivalent.		
17	All the features asked should be available from day one and from same OEM. Any open source and third party solution is not accepted		

40. Active Directory Solution

Description	Specification	Marked/ Cross Reference Specification reference page no.	Highlighted Reference of with Compliance (Yes/No)
Device's support required	2500 or higher		
User support	1000		
Hardware & Software	SI must provide desired hardware and software to meet solution requirement along with antivirus for 3 years		
User Management	User life cycle management.		
	Create, modify, move, unlock, enable/disable, delete, and restore the Single/Bulk Users without using any manual scripts.		
	User Self Service portal to reset password and to unlock the account on their own.		
	Delete the accounts automatically on expiry of validity period		
	Automatically lockdown privileged accounts that are inactive for a period of time.		
	Create privileged roles for task delegation and Audit the actions performed by these Delegates, including what action was performed on what object and when.		
	Allow users to request access to privileged groups.		
	Enhance security of privileged accounts by enabling multi-factor authentication		
Computer Management	Protect privileged accounts from password attacks by enabling advanced password policy requirements, including a dictionary rule Create, modify, move, manage, enable/disable, delete, and restore the Single/Bulk Computers without using any manual scripts		

DNS Functionality	Yes		
Group Management	Create, modify, move and delete the Single/Bulk Groups without using any manual scripts.		
Group Policy Objects(GPO) Management	Create, modify, and manage the GPOs. Link the GPOs to users/Computers/Groups/OU's		
Delegation Management	Define the roles for User, Technician and Admin. Provide restricted privileges for a Technician to perform only specific tasks/roles.		
Administrator Management	Review-Approve facility for all admin activities. Privileged access for Users		
Clean up	The clean-up should be configured to run every month as and when required to remove the users based on certain conditions and consolidated task reports to be sent to relevant stakeholders upon clean-up.		
Role-based access and privileged	Should be configurable with roles that can be used to delegate task to help desk technician and other department members		
Integration with other related systems	Yes, to achieve the required functionality such as for RBAC,DNS, etc.		
Backup and recovery	Facilitate backup of entire Active Directory setup including users and rights data		
	Automates the entire recovery process, including rebuilding the global catalogue & FSMO Role DCs Support Active directory bare metal recovery.		

	Recovery solution must be enabled with automated backups, quick compare of backup to current values of AD to pinpoint differences, and instantly recover the desired data		
	Solution should be able to restore entire forest from single console		
High Availability	Yes		

41. Console Management Server

S. No.	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
	Remote OOB Network Management Solution		
1	SI is responsible for overall SITC of all components of the solution which include hardware, software and accessories required for the solution to meet desired outcomes.		

2	<p>The Solution shall be industrial-grade and comply with the following requirements:</p> <div> <div>1) Dual-core ARM Cortex-A9 MP Core with Core Sight</div> <div>2) 1GB DDR3L RAM</div> <div>3) 16GB eMMC Flash</div> <div>4) 2 Gigabit Fiber SFP ports</div> <div>5) 10/100/1000BT) Ethernet interfaces on RJ45</div> </div>		
3	The equipment must support dual AC power supply for ALL Rack Mounted Devices.		
4	Solution should provide secured Serial access to remote network devices over IP along with Fast, automated configuration with Zero Touch Provisioning		
5	The OOB equipment must support Serial (48 ports), Ethernet and SFP connections.		
6	The Solution should provide combination of USB and RJ45 serial ports for target network devices		
7	The solution should support vendor agnostics and to be compatible with Serial and Ethernet connections of target devices from various network vendors.		
9	Both hardware and software components of the solution will have built-in Firewall for additional security which can restrict services to any interfaces, brute-force protection.		

10	<p>Console Management -</p> <p>.Sun break-safe (Solaris Ready Certified) support and remote (NFS/Syslog/OEM management software) syslog filters data buffering Unlimited number of simultaneous sessions (port sniffing) with ability to toggle event notification (e-mail, pager, SNMP trap) support access</p> <p>.Break-over SSH .Off-line data buffering – local .Level-based .Time stamp and rotations for Simultaneous access on the same port .Configurable .Customizable, global time zone .Multiple and customizable user levels of</p>		
11	<p>Security – profiles–secure, moderate and open Custom security profiles support SSHv2 TACACS+, LDAP/AD, NIS and Kerberos authentication SecurID®) authentication support PAP/CHAP and Extensible Authentication Protocol (EAP) authentication (for dial-up lines)</p> <p>authorization: RADIUS and LDAP • Port access • Power access • Appliance privilege IP packet and security filtering</p> <p>User-access lists per port</p> <p>System event syslog NAT traversal support</p> <p>.Preset security .X.509 SSH certificate .SSHv1 and .Local, RADIUS, . Two-factor authentication (RSA .One-Time Password (OTP) .Local, backup-user authentication Group • TACACS+, IPsec with</p>		

	IP forwarding support factory defaults enforcement	Secure Strong password		
12	Port Access – name or device name Simultaneous Telnet and SSH access HTTP/HTTPS	Directly by server CLI Command		
13	System Management – Configuration wizard in Web for first-time users Command line interface (CLI) Management Interface (HTTP/ HTTPS) Internal temperature sensor available on FTP site, no charge support for network boot	Auto-discovery for automatic deployment Web SNMP Upgrades TFTP		
14	The Solution must be able to provide remote power reset capability (reboot) of targeted devices when integrated with IPDU.			
16	The solution must be capable of integrate with PDU major vendors			
17	The management platform/Software to be provided along with hardware which should support windows and Linux installation			
18	The management platform shall provide a single pane of glass, to access to any devices that is connected to it by means of secure CLI or IP access			
19	OEM or Manufacturer should be ISO 9001: 2000, ISO 14001 , ISO/IEC 27001:2013 and ISO 45001 certified.			
20	Emissions, Immunity and Safety:			

	• FCC Class A		
	• UL		
	• CE Class A		
	• EN-60950		
Feature Support	All the features asked should be available from day one		

42. KVM Console

Sr.no	Technical Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	<i>Proposed 17" or higher LCD console tray and 16 port IP KVM switch should be built in design and should occupy 1U space together in 19" standard rack. KVM Console should also include centralized monitoring software to monitor all KVMs.</i>		
2	It should have cable management arm(CMA) and the 16x RJ45 port KVM switch built in at the rear side of the LCD console tray to save the U space in Rack.		
3	<i>Both LCD console tray and the built-in KVM switch should have single/ separate power supply.</i>		
4	Vendor should supply 16 number of KVM cables with VGA, USB connectors.		
5	KVM cables should have LEDs to indicate Power and connection status.		
6	Built-in KVM switch should have 16 RJ45 port to connect KVM cable/dongle with CAT cable to extension at least up to 30Mt		
7	Supplied KVM cables should support Virtual media to map USB media devices to target servers remotely over TCP/IP and Smart Card(CAC).		
8	Built it KVM switch should have encryption 128-bit AES for keyboard, mouse and video signals and virtual media sessions, internal and LDAP external authentication.		
9	KVM Session should support Keyboard pass through.		
10	Built-in KVM switch should be cascaded with another KVM switch with max 30Mt CAT		

	cable.		
11	Built-in KVM switch should not have power on/off switch to avoid accidental and unnoticed power off. Deleted		
12	<i>Built-in KVM switch should have one/ two local console ports.</i>		
13	LCD display should support brightness 250 cd /m2, contract ratio 1000:1 and 16.7million colors.		
14	LCD console tray and built in KVM switch should support max resolution 1600 x 1200 at 60 Hz.		
15	Operating temperature and Humidity of LCD console tray should be 0°C to 50°C and 10% to 80%		
16	LCD console tray should have 103 key keypad with number pad and touchpad.		
17	It should have control buttons on the front of the monitor to adjust the characteristics of the image that is displayed.		
18	<i>It should have two independent USB 2.0 compliant pass through ports at front/rear side.</i>		
19	<i>LCD console tray should be global certified by most of the agencies like FCC, CE</i>		
20	Bidder should provide two (02) Ethernet cable with each KVM. It should be noted that of each Ethernet cable should be at least equal to the cater the distance two adjacent racks in left and two at its right side		
21	All the features asked should be available from day one		

43. Portable KVM console adapter

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
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Laptop USB Console (LUC) Port	1 x RJ45 Male		
KVM (Computer) Ports	1 x USB Type A Male		
	1 x VGA Male (Blue)		
LEDs	1 (Blue)		
USB bus-powered design and supports 1920 x 1200 @ 60 Hz video resolution	Yes		
Instant BIOS-level access and no software installation	Yes		

44. Monitoring and management tool for servers

S. No.	Specifications:	Marked/ Highlighted Reference Specification with reference page no.	Cross of with	Compliance (Yes/No)
1	The solution should be deployed at DC and DR working in HA and supplied with all the associated hardware			
2	Access device-level lifecycle management with a single click—no need to navigate among appliances with license to add up to 4000 servers			

3	User defined policy/ template based automated and simultaneous operations like: <ul style="list-style-type: none"> - OS deployment - Firmware update - BIOS update - Server cloning - Creation of Virtual disks along with RAID configuration - Network configuration - Web server and SSH and configuration - Secure erase of storage drives 		
4	Redfish, Restful API support for automated management		
5	Monitoring of multiple aspects of servers like: <ul style="list-style-type: none"> - Server power consumption - Health - Storage (Physical & Virtual) - Cooling - CPU - Intrusion - Network device(s) - Multiple components voltage readings (e.g. CPU, system board, PSU, etc.) 		
6	Integrated reporting to see server hardware & firmware inventory (of all hardware and software components), including associated firmware versions along with option to create customized reports		
7	Fault management: Get monitoring, pre-failure alerts, failure alerts, log (system events, lifecycle, troubleshooting, user session, etc.) monitoring & extraction, automatic call logging (configurable), status monitoring of trouble ticket and contract/warranty registration & display for each device		

8	<p>Should have management features like:</p> <ul style="list-style-type: none"> - Power management and configuration - Virtual Console with management features like boot selection, power on/off, virtual media, virtual clipboard, etc. - Asset Tracking - Server profile import/export - Role based user management with feature for integration with LDAP(AD),AAA - Time-zone/NTP 		
9	Blink LED to identify a particular server		
10	Software and Hardware for this Monitoring and management tool for servers shall be provided by the OEM of servers.		
11	All the features asked should be available from day one		
12	<p>Management of multiple Servers from single console with single source of truth for multiple sites., Automated infrastructure management for patch upgrades, version upgrades ,etc., Simplified management with analytics driven actionable intelligence., System tagging giving admin flexibility to provide metadata tags to each System to enable users to filter and sort systems based on user assigned attributes, Hardware Profile based deployment to multiple Servers simultaneously, Policy template for deployment of single policy to multiple Servers simultaneously, Platform inventory and health status, Server utilization statistics collection (including firmware updates and diagnostic tools), Should provide an alert in case the system is not part of OEM hardware compatibility test, Solution should be open and programmable providing Rest API, SDK for programming languages like Python , power shell scripts etc., Should have customizable dashboard to show overall faults/health/inventory for all managed infrastructure the solution should provide option to create unique dashboards for individual users. the user should be flexibility to select name for dashboards and widgets (viz. health, utilization etc.), Self-service portal deployment for automated provisioning, Real-time out-of-band hardware performance monitoring & alerting.</p>		

45. Fireproof Vault

Description	Specification	Marked/ Cross Reference of Specification with reference page no.	Highlighted Reference of Specification with reference page no.	Compliance (Yes/No)
Volume (Litres)	200 or more			
Type	Fire Resistant Safe, inner temperature remain at less than 118°C even while exposed to a flame of 1,030°C for an hour			
Lock type	Electronic			
Security	Dual Combination Mode(User Password & Mechanical Key)			
High Security Emergency Key	Yes(Unlock possible with mechanical keys when PIN lost)			
Auto Secure Mode	Yes (mechanical keys &Password)			
Certifications	UL Fire Rated, Conforms to UL Test Standards			

46. Degausser

Description	Specification	Marked/ Cross Reference of Specification with reference page no.	Highlighted Reference of Specification with reference page no.	Compliance (Yes/No)
Media Handling:	Standard PC, Laptop and Server 3.5", 2.5" & 1.8" Hard Drives.			
Longitudinal & perpendicular recording	Up to 2TB.			
All drive interfaces	IDE, SATA, SAS and Fibre Channel.			
Power Supply	220-240V 50Hz			
Degaussing Force	7000 Gauss			
Duty Cycle	20%			
Erase Depth	-75dB on 1500 OE Tape, -90dB on 750 OE Tape			

Throughput	20 Hard drives or 40 tapes per hour typical		
Controls	On/Off, Security Key		
Indicators	On/Off Erase Field, Coil Power Supply Warning Light		

47. Data Diode

Specification	Description	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Salient Features	Unique hardware bases one-way communication at physical layer. MAC address-based selection of source at Data Diode Promiscuous mode Easy to use GUI for configuration 19 inch Rack mountable		
Allowed MAC address	4 no. of source MAC		
Network Ports	01no. INGRESS and 01no. EGRESS Ethernet port. 1G optical Ports for INGRESS and EGRESS populated with SFPs (optical/electrical), 01no. MGMT/LOG Ethernet port		
Management/ Status	Ethernet based IP address configuration		
Input voltage	Input voltage 230VAC @ 50Hz , operating environment:10 deg C to 45 deg C		
EMI/EMC	FCC part 15 Class A/Common Criteria EAL 4+ certified/Master mother board should be FCC/ EU compliant		
Physical Security	Tamper Evident		
Logging	Syslog based		
Protocols Support	Protocol agnostic (any unidirectional), Syslog, Netflow /sFlow		

Feature Support	All the features asked should be available from day one		
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48. & 51. Intelligent Cabling

Cabling Structure is as follows at DC & DR:

Network-1,100G Network:

- i) There are Two Spine Switch-Primary and secondary.
- j) *In case Bidder/contractor offers to create a new PoD with its own spine switches for connecting new 70 racks, its bidder/contractor's responsibility to provide the intelligent cabling connectivity (in redundant mode) among spine and other related newly introduced and/or existing networking infra. Existing DC spine switch and its cabling will be done along with phase-1 equipment by CDAC.*
- k) *Each DR spine switch will have 144 X 100G port (Total 2 X 144, 100G port).*
- l) 48 MPO port to be established between Primary and secondary spine rack for connecting Network/routing devices.
- m) 48 each MPO port to be established within (Primary and secondary) spine rack for connecting Network /routing devices.
- n) At Server/storage rack end, there will be two nos of 24 port Leaf switches.
- o) *Each Leaf switch will have 2 X 100G MPO connectivity from Spine switch (Primary & Secondary). Total 4 X 100G connections per rack will connect to spine switches as two leaf switches are available in each Rack.*
- p) Each Leaf switch will have 24X 10G on fiber, to connect server/storage
- q) 2 X 16 LC Duplex connections will be extended to each Server/Storage via fiber shelf to enable intelligent solution.

Network-2,10GNetwork:

- k) There are Two Core Switch-Primary and secondary
- l) Core switch will have 48 X10G port
- m) 24 LC port to be established between Primary and secondary core rack for connecting Routing/Network.
- n) 24 LC port to be established within Primary and secondary core rack for connecting Routing/Network.
- o) At Server/storage rack end, there will be one 48 copper port edge switch to support 10G from core switch.
- p) *Edge (OOB) Switch will be connected in virtual chassis mode (4 edge (OOB) will made one chassis).*
- q) *Each OOB Virtual Chassis will have 4 X 10G LC connectivity towards core switch (Primary & Secondary). 2x10G for Primary and*

2x10G for secondary core Switch.

- r) Edge switch will have 48 X 1G on copper to connect server/storage to connect server/storage of the rack.
- s) 48 Copper connections will be extended to Server/Storage via copper panel to enable intelligent solution.

The Top of Rack (ToR) i.e leaf switch in the S/R will connect to the ***each*** Spine switch (in N/R) via 12F (2 x 12 MPO connectors on each side) MPO trunk cables on OM5. All MPO trunk cables and MPO cable assemblies shall be Method B polarity only. The adapters shall be compliant to TIA/EIA FOCIS 5, which is commonly referred to as “aligned keys” or “key-up to key-up.” Each link between the ToR and Spine shall support 100GBASE-SR4 application for the complete channel. Contractor shall check and guarantee the support of 100GBASE-SR4 application for the longest distance possible between the existing network rack and new server rack (part of the additional 70 S/R) inside the data center. All patch cords required to complete the connectivity shall be standard compliant. In the event due to unavailability of the patch cords, patch cords from other OEMs with similar specifications shall also work in the system.

- t) ***Each virtual chassis will connect to each core switch (N/W) via 12F (2 x 12 MPO connector on each side) MPO trunk cables on OM4.*** Each link between the edge and core Switch shall support 10GBASE-S application for the complete channel. Contractor shall check and guarantee the support of 10GBASE-S application for the longest distance possible between the existing network rack and new server rack (part of the additional 70 S/R) inside the data centre. All patch cords required to complete the connectivity shall be standard compliant. In the event due to unavailability of the patch cords, patch cords from other OEMs with similar specifications shall also work in the system.

GENERAL NOTE for all Active equipment(s): Bidder shall supply required quantity of fiber patch chords (Single mode/ Multimode), patch chord as per site requirements. All accessories for successful installation in rack should be supplied by Bidder.

Product specification for 100G MPO Connectivity- OM5 components

Deploy optical fiber pre-terminated solution consisting of trunk cables with pre-terminated MPO connector, cassettes, patch cords and optical fiber patch panels etc. as a standard configuration. The entire component shall be intelligent enabled solution. The fiber count per MPO trunk cable shall be 12F MPO pinned connectors on either sides) The application shall support up to 10/40/100/400G. The fiber shall be multimode OM5 fiber features extended bandwidth range of 850 to 950nm that enables it to provide optimal support to SWDM applications by enhancing its capability to transmit at least four low-cost wavelengths for longer distance, reducing parallel fiber count by four-folds and high-speed application of 400G. **Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.**

vii. Fiber Patch cord assembly OM5 MPO to MPO, Male/Female

S. N.	Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Fiber Type			
4	Interface Feature,			
5	Total fiber quantity			
6	Jacket color	Lime green		
7	Cable Product Type	Fiber indoor cable, Non-armored, Gel free		
8	Outer Sheath/ Environmental Space	Low Smoke Zero Halogen (LSZH), Riser, Indoor Single sheath jacket		
9	Flame Test Method	IEC 60332-3/ IEC 60332-1 , IEC 60754-2, IEC 61034-2		
10	Standards:	ANSI/ICEA S-83-596, Telcordia GR-409,		
11	Safety Standard	UL 1666, UL 1685 / BIS or equivalent Standards		
12	Insertion Loss Change, mating	0.3 dB		
13	Return Loss, minimum	27dB		
14	Insertion Loss Change, temperature	0.3 dB		
15	Insertion Loss, maximum	0.25 dB		
16	Intelligent compatibility	Patch cord shall be compatible for intelligent solution		
17	RoHS	RoHS Compliant		

viii. Fiber Distribution adaptor OM5, MPO Port

S. N.	Details	Standard Compliance	Marked/ Highlighted Cross	Compliance
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			Reference of Specification with reference page no.	(Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
	Interface Feature, rear			
4	Port Duct cover	No		
5	Standard	MPO distribution adaptor shall meet the most recent revision of TIA/EIA-568-C.3 standard, and its published addenda.		
6	Safety Standard	UL/ BIS or equivalent Standards		
7	Intelligent compatibility	Distribution adaptor shall be modular type and Intelligent enabled		
8	Fiber Type	OM5.		
9	Qualification Standards	IEC 61753-1 TIA-568.3-D		
10	RoHS	RoHS Compliant		

ix. Fiber Trunk cable assembly OM5 MPO (Male/Female) to MPO (Male/Female)

S. N.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Interface Feature,			
4	Total fiber quantity			
5	Panel compatibility			
6	Cable compatibility			
7	Fiber Type	OM5		
8	Jacket color	Lime green		

9	Cable Product Type	Fiber indoor cable, Non-armored, Gel free		
10	Outer Sheath/ Environmental Space	Low Smoke Zero Halogen (LSZH), Riser, Indoor Double sheath jacket for more protection		
11	Cable strength member	Ripcord and Aramid Yarn shall be included as cable protection		
12	Flame Test Method	IEC 60332-3/ IEC 60332-1 , IEC 60754-2, IEC 61034-2		
13	Standards:	ANSI/ICEA S-83-596, Telcordia GR-409,		
14	Safety Standard	UL 1666, UL 1685/ BIS or equivalent Standards		
15	Insertion Loss Change, mating	0.3 dB		
16	Return Loss, minimum	27dB		
17	Insertion Loss Change, temperature	0.3 dB		
18	Insertion Loss, maximum	0.25 dB		
19	RoHS	RoHS Compliant		

x. LC type fiber patch cords, OM5

S. N.	Specifications	Requirement	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Fiber type	Multimode OM5		
2	Construction	Two fiber duplex Cordage Non-armored gel free cable		
3	Cable Sheath	Low Smoke Zero Halogen (LSZH) Riser rated		
4	Connector type	LC/UPC to LC/UPC, Fiber patch cord 1.7mm / 3.5mm. Riser		
5	Cable Length	As per the BOQ		
6	Color	Lime Green color for cable and Gray color for connector		
7	Protection	Aramid yarn shall be provided around 250nm coating on fiber cable		

8	Minimum Bend Radius	38 mm (Loaded), 15mm (Unloaded)		
9	Tensile Load, maximum	20N (long term) 67N short term)		
10	Compression	10 N/mm as per IEC 60794-1 E3 test method		
11	Ferrule	Pre-radiused made of Zirconia		
12	Cable Qualification Standards	ANSI/ICEA S-83-596, Telcordia GR-409		
13	Flame Test Listing	<u>NEC OFNR-LS (ETL) and c(ETL) or equivalent</u>		
14	Flame Test Method	IEC 60332-3/ IEC 60332-1, IEC 60754-2, IEC 61034-2, IEEE 383, UL1666, UL 1685/ BIS or equivalent Standards		

xi. Intelligent fiber panel- MPO type, OM5

S. N.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Intelligent fiber Patch panel shall be modular, accept cassette type module and distribution adaptor pack for multimode (OM5) type fiber		
2	Standards	Intelligent panel should meet ANSI/TIA 568C.2 specifications and AIM standard such as ISO/IEC 18598 and TIA 606-B and ISO/IEC 14763-2.		
3	LC Port capacity	Intelligent pre-terminated fiber shelves shall be available in 1U sliding/fixed configuration to support up to 48 -duplex LC ports or 2U sliding configuration to support up to 144 -duplex LC ports		
4	MPO Patch connections	Intelligent fiber patch panels shall be available in 1Usliding configurations with up to 24/32 MPO ports, in 2U/4U sliding configuration to support up to 96 MPO ports. Requirement of 1U/2U/4U in each rack shall be assessed by bidder.		
5	Patch cord compatibility	<i>Intelligent patch panel shall provide a button and an LED indicator at every panel port/single button on panels to enable easy tracing and identification of patch connections in the telecom room.</i>		
6	Sensing Assembly	Intelligent patch panels shall be provided with all necessary system-connecting cable(s).		

	Installation			
7	Connection of existing port	Intelligent fiber patch panels should allow for removal and replacement of sensing Assembly. Any fault in the sensor should not disrupt the operation of panel network port.		
8	Patch cord/wire manager	Panel shall have inbuilt rear cable manager and from patch cord manager including visible label plate. Separate Patch cord manager is also allowed.		
8	RoHS	RoHS Compliant		

xii. Any other item required to complete the OM5 Intelligent cabling – To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid

S. N.	Details	Standard Compliance	Compliance (Yes/No)
1	Any other item required to complete the OM5 Intelligent cabling	To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid	

Product specification for 10G MPO Connectivity- OM4 components

Deploy optical fiber pre-terminated solution consisting of trunk cables with pre-terminated MPO connector, Fiber modular cassette with LC interface, 2F LC -LC patch cords and Intelligent fiber patch panels as a standard configuration. The entire component shall be intelligent enabled solution. The application shall support up to 10/40G. The fiber shall be multimode OM4 fiber. **Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.**

vi. Fiber trunk cable assembly OM4 MPO (male/Female) to MPO (male/Female)

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type			

2	Interface and port	To be assessed by Bidder		
3	Interface Feature,			
4	Total fiber quantity			
5	Panel compatibility			
6	Cable compatibility			
7	Fiber Type	OM4		
8	Jacket color	Aqua Color		
9	Cable Product Type	Fiber indoor cable, Non-armored, Gel free		
10	Outer Sheath/ Environmental Space	Low Smoke Zero Halogen (LSZH), Riser, Indoor Double sheath jacket for more protection		
11	Cable strength member	Ripcord and Aramid Yarn shall be included as cable protection		
12	Flame Test Method	IEC 60332-3/ IEC 60332-1 , IEC 60754-2, IEC 61034-2		
13	Standards:	ANSI/ICEA S-83-596, Telcordia GR-409,		
14	Safety Standard	UL 1666, UL 1685// BIS or equivalent Standards		
15	Insertion Loss Change, mating	0.3 dB		
16	Return Loss, minimum	27dB		
17	Insertion Loss Change, temperature	0.3 dB		
18	Insertion Loss, maximum	0.25 dB		
19	RoHS	RoHS Compliant		

vii. Fiber Distribution fiber panel, Modular, OM4 LC

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type			

2	Interface and port	To be assessed by Bidder		
3	Interface Feature, rear			
	Panel compatibility			
	Cable compatibility			
4	Port Duct cover	Yes		
5	Standard	Fibre distribution fiber panel shall meet the most recent revision of TIA/EIA-568-C.3 standard, and its published addenda.		
6	Safety Standard	UL/ BIS or equivalent Standards		
7	Fiber Type	OM4 Multimode		
8	Intelligent compatibility	Fibre distribution fiber panel shall be modular type and Intelligent enabled		
9	RoHS	RoHS Compliant		

viii. Fiber Modular Cassette OM4 MPO – LC

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	To be assessed by Bidder		
2	Interface and port			
3	Interface Feature, rear			
4	Panel compatibility			
5	Cable compatibility			
6				
7	Port Duct cover	Yes, must required		
8	Standard	MPO cassettes shall meet the most recent revision of TIA/EIA-568-C.3 standard, and its published addenda.		

9	Safety Standard	UL/ BIS or equivalent Standards		
11	<i>Approximate dimension</i>	<i>OEM may asses the dimensions as per site requirement.</i>		
12	Fiber Type	OM4 Multimode		
13	Attenuation	1.00 dB/km @ 1,300 nm 2.20 dB/km @ 953 nm 3.00 dB/km @ 850 nm		
14	Insertion Loss Change, temperature	0.3 dB		
15	Insertion Loss, maximum	0.47 dB		
16	Intelligent compatibility	Fiber Cassette shall be modular type and Intelligent enabled		
17	RoHS	RoHS Compliant		

ix. LC type fiber patch cords, OM4

Sl. No.	Specifications	Requirement	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Fiber type	Multimode OM4		
2	Construction	Two fiber duplex Cordage Non-armored gel free cable		
3	Cable Sheath	Low Smoke Zero Halogen (LSZH) Riser rated		
4	Connector type	LC/UPC to LC/UPC, Fiber patch cord 1.7mm / 3.5mm. Riser		
5	Cable Length	As per the BOQ		
6	Color	Aqua color for cable and Beige color for connector		
7	Protection	Aramid yan shall be provided around 250nm fiber cable		
8	Minimum Bend Radius	38 mm (Loaded), 15mm (Unloaded)		

9	Tensile Load, maximum	20N (long term) 67N short term)		
10	Compression	10 N/mm as per IEC 60794-1 E3 test method		
11	Ferrule	Pre-radiused made of Zirconia		
12	Cable Qualification Standards	ANSI/ICEA S-83-596, Telcordia GR-409		
13	Flame Test Listing	<u>NEC OFNR-LS (ETL) and c(ETL) or equivalent</u>		
14	Flame Test Method	IEC 60332-3/ IEC 60332-1, IEC 60754-2, IEC 61034-2, IEEE 383, UL1666, UL 1685/ BIS or equivalent Standards		
15	Insertion Loss, maximum	0.3 dB		
16	Return Loss, minimum	27 dB		
17	Regulatory Compliance	RoHS 2011/65/EU compliant		

- x. **Any other item required to complete the OM4 Intelligent cabling – To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid**

S. N.	Details	Standard Compliance	Compliance (Yes/No)
1	Any other item required to complete the OM4 Intelligent cabling	To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid	

Product specification for 1G/10G Copper components

Deploy Copper cabling solution consisting of single ended copper patch cord with RJ45 male connector, intelligent Copper patch panel, reduced diameter patch cords for high density connecting servers as a standard configuration. The entire component shall be intelligent enabled solution. The application shall support up to 1/10G. The copper solution shall be Cat-6A U/UTP cabling. **Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.**

v. CAT 6A Intelligent Patch Panel

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Patch panel Unshielded / Unshielded Twisted Pair (U/UTP), Category 6A		
2	Standards	The panel should meet ANSI/TIA 568C.2 Category 6A Specifications		
3	Panel configuration	The panel shall be available in 24-port and 48-port configurations with universal A/B labelling and 110 connector terminations on rear of panel allowing for quick and easy installation of 22 to 24 AWG cable		
4	Material used	Panel shall be available in straight with made of Powder- coated steel. Color shall be Stain chrome		
5	Intelligent system	The panel must be an intelligent system		
6	Additional future for noise cancellation	Termination managers must be provided with the panel. These termination managers provide proper pair positioning, control, and strain relief features to the rear termination area of the panel.		
7	Third party certificate for Genunity	ETL four connector channel certificate for long distance and short distance test report.		
8	Rear cable manager	Panel shall have rear cable manger with proper design to hold all 24 cable. This shall provide strain relief for outlet and organization of cables being routed to the back of a patch panel.		

9	RoHS	RoHS Compliant		
10	Patch Panel Ports	To be assessed by bidder to connect 48 port OoB Switch and other respective units (server and Leaf Switch)		

vi. CAT 6A LSZH U/UTP RJ45 regular Patch Cords

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Unshielded / Unshielded Twisted Pair (U/UTP), Category 6A patch cords		
2	Standards	The Cordage should meet ANSI/TIA 568C.2 Category 6A Specifications		
3	Length	The cordage shall be available in different length based on the site requirement		
4	Conductor	Copper must be solid single strand copper conductor for panel termination		
5	Fire Safety standards:	LSZH		
6	Diameter Over Jacket	7.24 mm		
7	Safety Standard	UL 1863/ BIS or equivalent Standards		
8	Additional info	The cable and cordage shall be UTP components that do not include internal or external shields, screened components or drain wires that require additional grounding and bonding		
9	RoHS	RoHS Compliant		

vii. CAT 6A LSZH U/UTP RJ45 reduced dia. Patch Cords

Sl. No.	Details	Standard Compliance	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Type	Unshielded / Unshielded Twisted Pair (U/UTP), Category 6A patch cords.		
2	Standards	The Cordage should meet ANSI/TIA 568C.2 Category 6A Specifications		
3	Length	The cordage shall be available in different length based on the site requirement		
4	Fire Safety standards:	LSZH		
5	Diameter Over Jacket	4.95 mm 0.195 in		
6	Safety Standard	UL 1863/ BIS or equivalent Standards		
7	Additional info	The cable and cordage shall be UTP components that do not include internal or external shields, screened components or drain wires that require additional grounding and bonding		
8	RoHS	RoHS Compliant		

viii. Any other item required to complete the Copper cabling – To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid

S. No.	Details	Standard Compliance	Compliance (Yes/No)
1	Any other item required to complete the Coper Intelligent cabling	To be assessed by bidder & its OEM. Quantity and price of the same shall be included in bid	

49. & 52 Intelligent AIM system Monitor

Sl. No.	AIM System Monitor at Rack level	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	The AIM System Monitor shall be compatible with mounting on 19" (width) based hardware per EIA-310.		
2	The AIM System Monitor shall provide capability for a technician to communicate with AIM System Software component.		
3	The AIM System Monitor shall communicate with the AIM-enabled patch panels in the racks		
4	The AIM System Monitor shall be able to display live end-to-end tracing information on its screen during patching activities. The screen may be a fixed unit or portable unit fixed in the racks using suitable mount/brackets. Both network rack should have one dedicated (AIM) Intelligent system monitor. Bidder shall configure one Intelligent system monitor two Server racks.		
5	The AIM System Monitor shall be able to display on the screen information indicating if a traced panel port is assigned to a scheduled work order.		
6	The AIM System Monitor shall be able to display electronic work orders for moves, adds and changes (MACs).		
7	The AIM System Monitor shall have a configurable Ethernet LAN connection capability (10BASE-T, 100BASE-TX or 1000BASE-T) to enable communication with AIM System Software component.		
8	<i>Offered AIM System Monitor should be fully Integratable with existing AIM system software at DC for seamless operation.</i>		
9	Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.		
10	AIM monitor display system should have the capacity to monitor minimum two RACKs		
11	All the features mentioned above should be available from day one		

50. & 53 Intelligent AIM system Software

Sl. No.	Intelligent System (AIM) Software defined by the ISO/IEC 18598 standard	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	The AIM System Software component shall be web based.		
2	<p>The system should support:</p> <p>12000 ports or higher at DR.</p> <p>For DC, 10000 Ports from existing AIM System software OEM and upgrade the hardware as required.</p> <p>Or 15,000 Ports from New OEM Provider at DC. New OEM provider must integrate its AIM solution with existing AIM solution.</p> <p>AIM solution software and its hardware should be from same OEM.</p>		
3	<i>The AIM System Software component shall support REST APIs and Simple Network Management Protocol (SNMP) and support SNMP v1, SNMP v2c, and SNMP v3. Bidder/OEM needs to support integration with third party monitoring and management systems.</i>		
4	The AIM System Software component shall support IPv4 and IPv6 communications.		
5	The AIM System Software component shall support automatic and manual database backups.		
6	The AIM System Software component shall have capability to auto discover the installed AIM hardware component (intelligent panels and control systems) in		

	each rack/cabinet and to auto populate this information in its database.		
7	The AIM System Software component shall have the capability to auto discover networked devices that are connected to the pre-defined managed network switches (LAN and SAN environments) and then to auto populate that information in its database.		
8	The AIM System Software component shall provide end user with ability to define manual, automatic, or disabled mode for conducting discovery of networked devices. The automatic device discovery feature shall allow end user to determine a polling schedule, as well as the ability to automatically trigger the discovery process based on SNMP link-up traps from managed network switches.		
9	The AIM System Software component shall have the capability to auto discover IP address, MAC ID, WWN and Host Name information for networked devices and then to auto populate this information into its database.		
10	The AIM System Software component shall have the capability to auto discover networked devices with multiple MAC addresses (i.e., servers with multiple NICs, virtual machines, wireless APs, IP phone/computer pairs, etc.) and then to auto populate that information in its database.		
11	The AIM System Software component shall have the capability to auto discover VLAN ID information on managed network switches and then to auto populate that information in its database.		
12	The AIM System Software component shall provide the ability to define type of networked devices based on MAC or IP address range that could also be applied retroactively to already discovered devices. Once defined, each device upon its discovery shall be automatically labelled and represented with an appropriate icon in the database to correspond to the device type definition.		
13	The AIM System Software component shall have the capability to detect		

	configuration changes to managed SAN and LAN switches.		
14	The AIM System Software component shall have the capability to detect when a networked device has moved or changed its physical location.		
15	The AIM System Software component shall provide capabilities for defining a set of specific system conditions that need to be tracked.		
16	The AIM System Software component shall provide a dedicated service-provisioning feature for servers, including server templates, and graphics to allow for efficient planning and deployment of servers in the data center.		
17	The AIM System Software component shall provide a server decommissioning feature that ensures removal of all circuits connected to the server to eliminate “dormant” connections.		
18	The AIM System Software component shall have the capability to document various topologies (zone, pod, cell, etc.) for Data Center applications.		
19	The AIM System Software component shall have the capability to audit the switch ports.		
20	The AIM System Software component shall have the capability to send an email message to specified personnel, to automatically execute a designated program or to send a SNMP trap to a destination server each time a pre-defined system event is received.		
21	Complete Passive Components, Intelligent Cabling including AIM Monitor and Intelligent (AIM) System Software should be from Same OEM.		
22	The offered AIM Solution should be provided along with backup solution. All the Hardware required for backup should be provided by the bidder. The hardware should be sufficient enough to support the backup of at least 1 months. The time period of backup should be configurable		

23	All the features mentioned above should be available from day one		
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64. Smart Rack

S. No.	Description of Requirements	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Scope of Work		
1.1	Intelligent Integrated Infrastructure with inbuilt hot and cold aisle containment of 1 rack should cater IT load up to 6 KVA with minimum 24 U usable space available for IT equipment(s).		
2	Requirements		
2.1	Intelligent Integrated Infrastructure with inbuilt hot and cold aisle containment of 1 rack catering IT load up to 6 KVA .The Critical systems like rack-mounted air-conditioning & UPS systems should have N+N topology respectively.		
2.2	The support of all the components supplied and installed for smart rack should be serviced by the smart rack OEM .		
3	The Intelligent integrated Infrastructure shall have following components:-		
3.1	Rack based closed loop Air-Conditioning (6 kW – 02 nos. (1Working+1Standby))		
3.1.1	Rack based Air Cooling with indoor - out door design, SHR >0.9, 100% Duty cycle, auto controlled Compressor, 0U or rack mountable, Electronically commutated centrifugal/Axial evaporator fan , High Pressure & Low Pressure protection , Washable filter with 80% efficiency down to 20 micron , Hydrophilic evaporator coil, ON/OFF switch at indoor unit for emergency purpose, R407C/R410A Refrigerant.		
3.1.2	<ul style="list-style-type: none"> The Cooling Unit can consume U space while it should provide min 25 U usable space for IT. The redundant Cooling units ensure automatic changeover in the event of a failure of any one of the unit. It should be able to support indoor to outdoor piping up to 30 mtr		
3.2	UPS System – Total 02 Nos in N+N redundancy		

3.2.1	UPS should be of True On-line, Double conversion and IGBT 6 kVA capacity in N+ N topology, 1 Phase input & 1 phase output, rack mountable (≤ 2U) with unity power factor and efficiency up to 95%		
3.2.2	Input Voltage Range: 176Vac ~ 288Vac(Variation of +/- 10% allowed), at full load 100Vac ~ 176Vac (Variation of +/- 10% allowed), Input Power factor ≥0.99, at full load; ≥0.98, at half load		
3.2.3	Output Voltage : 220Vac/230Vac/240Vac (Single phase output) ; rated power factor as 1, Voltage harmonic distortion < 3% (linear load); < 7% (non-linear load)		
3.2.4	Frequency synchronization range: Rated frequency±3Hz. Configurable range: ±0.5Hz ~ ±5Hz		
3.2.5	Overload capacity for the UPS : At 25°C, 200ms		
3.2.6	Certification & Compliance : General and safety requirements - IEC/EN 62040-1 , EMC - IEC/EN 62040-2		
3.2.7	Surge protection for UPS : IEC/EN-61000-4-5, ANSI C62.41, 6kV/20hms		
3.2.8	UPS should be RoHS & energy star certified with IP20 Protection level. Noise level should be < 55dB		
3.2.9	Operating temperature for the UPS : 0°C ~ 50°C ; Relative humidity : 5%RH ~ 95%RH, non-condensing		
3.2.10	UPS system should support battery backup of 30 minutes on full load. Batteries to be placed in external battery racks.		
3.3	Racks & Accessories		
3.3.1	Rack is 42 U/48 U 19" mounting type with 2100/2350 (Height) x 800 (Width) x 1100/1200 (Depth) with safe load carrying capacity of 1400 Kg on enclosure frame and 1000 Kg on 19" mounting angles		
3.3.2	Front Glass door for complete 42U/48U height visibility and rear split steel door with stiffener and PU gasket for strength		

3.3.3	Cable entry provision from top & bottom both side of rack		
3.3.4	Cut outs with rubber grommet on top and bottom cover of rack for cable entry		
3.3.5	Vertical Cable manager on both LHS & RHS on rear side		
3.3.6	Thermally insulated cold aisle chamber		
3.3.7	Blanking panels to prevent air mixing		
3.3.8	Status based LED light to be provided on each rack		
3.3.9	Hybrid IPDU 02 no's per Rack(As per Specifications Given below)		
3.4	Safety & Security		
3.4.1	Access Control		
	The system deployed will be rack based access control system based on electronic Technology. The front rack doors should be operated with Biometric door access system and will operate on fail-safe principle through Biometric access control system. Front/Rear doors should be operated with auto lock opening system. Should have provision for auto opening of front/Rear Door in case of Emergency situations		
3.4.2	Rodent Repellent System		
	Racks to be covered with rodent repellent system		
3.4.3	Fire detection & Suppression System		
	Rack to be covered with Fire alarm system		
	The system should have fire suppression unit mounted internally / externally on the rack .		
	The fire suppression agent should be NOVEC 1230 Gas as per NFPA 2001 guidelines		
3.5	Monitoring		
	Detailed Monitoring & Diagnostics thru Rack Data Unit ,1U rack mountable, with redundant power supplies & capable of single window monitoring of all the environmental parameters i.e. IP based monitoring of temperature, humidity, water leak detection, smoke, etc through a single window dashboard." UPS , air conditioning & rack PDUs should be integrated & monitored in a single dashboard with the rack monitoring unit"		
3.6	Electrical System (POD Device):		

	19" rack mountable Power Output Device with essential breakers to be mounted in the rack.		
3.7	OEM Credentials		
A	The support of all the components supplied and installed for smart rack should be serviced by the smart rack OEM .		
B	(DX) Rack based air conditioning unit using refrigerant R407C/R410A. Test certificate shall be submitted prior to shipment		
C	The OEM must have executed minimum 5 Modular/Smart Rack Data Centre infrastructure projects during the last 3 years from the of bid submission date.		

- **Hybrid iPDU:**

S. No.	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
1	Each rack should have 2 IPDUs to be connected to the two different UPS sources A and B individually. The 2 IPDUs in each rack should have different chassis color for identification of UPS source. Electrical rating – Input – 230V, 32A, 1 Phase, 3-meter-long input cable with Splash proof IEC60309 input plug. high temperature grade, operating temperature up to 60°C.		
2	<i>Output - iPDU should have minimum 24 Nos or higher color coded/non colour outlets (Color coding w.r.t circuit breakers). Out of 24 outlets , OEM should provide 18 no. of outlets in hybrid nature which can be utilized as either C13 or C19 outlet. All outlets should provide high retention to avoid accidental dislodging of power cords. The IPDU hybrid outlets should meet electrical compliance and should be UL certified.</i>		
3	Monitoring parameters – The IPDU should have monitoring capability at the Strip level, phase level and Circuit/ Breaker monitoring.		

	<p>Following monitoring parameters should be included at input and phase level.</p> <ul style="list-style-type: none"> • Total Unit Monitoring (kWh, W, VA, PF) • Phase Monitoring (kWh, W, VA, PF, V, A) 		
Network & Security -			
4	Network communication – PDU should have dual gigabit Ethernet Network Ports 10/100/1000 Mbps. IPDU should support communication protocols including DHCP, HTTP, HTTPS (TLSv1.3), Ipv4, Ipv6, LDAP, NTP, RADIUS, RSTP, SSH, SMTP, SSL, SNMP (v1, v2, v3), Syslog, TACACS+ & TLS 1.3. Communication module should be hot-swappable.		
5	IPDU should have USB support for firmware upgrade, backup, restored device configuration or expand logging capacity via USB storage device. IPDU should have separate reset buttons for reset to factory defaults.		
6	IPDU should support strong password enforcement, where the user can select the minimum number of password characters, uppercase characters, digits, symbols.		
7	IPDU should support cryptographically signed firmware upgrades and must comply with FIPS 140-2.		
Certification & Compliances			
8	The IPDU should have approvals form RoHS, CE/UL.		
9	OEM or Manufacturer should be ISO 9001: 2000, ISO 14001 , ISO/IEC 27001:2013 and ISO 45001 certified.		
10	OEM Service Support for Major Equipment's / OEM or Manufacturer should have its own service centers in India.		

65. Non Smart Rack with Redundant IPDU

Specification	Marked/ Highlighted Cross Reference of Specification with	Compliance (Yes/No)
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	reference page no.	
<i>Rack should be single pahse 32 A</i>		
Front doors in Steel fully perforated curved steel		
Rear doors in steel dual split, fully perforated		
The rack should be powder coated to avoid rusting and damage.		
Vented top cover with cable entry provision		
Bottom Cable entry		
Fully reversible 19" mounting angles at front and rear		
Rear 19" mounting angles supplied as split pairs to allow easy adjustments for equipment of different depths.		
Side panels with Slam latches and Indents for improved strength and aesthetics		
Side panels 2000Hx1200D (set)		
Comfort handle with lock & Key		
Rear door mount Fans		
Cable management Duct with 1U Cable managers		
Earth conduit kit with Rail		
Captive hardware pack of 20 Secure Screws		
Component Shelf 720mm Depth - 2 Nos		
Baying Kits		
Racks should be with all requisite accessories and parts.		
2 numbers of Hybrid iPDU (as per annexure) Metered PDU with minimum 24 sockets each and power cord, with ability to monitor power consumption of individual servers and network equipment.		
Supply and installation/laying of all the required electrical cabling to the racks shall be carried out by the bidder as per standards. All accessories for successful installation of rack should be supplied by Bidder.		

66. LED Display

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Product type	LED		
Panel Technology	IPS		
Screen Size	65"		
Resolution	3840 x 2160		
Connectivity	HDMI, USB, Ethernet		
Design	Bezel-less/ Narrow		
Number of HDMI Ports	3		
Number of USB Ports	1		
Number of Ethernet Ports	1		
Speaker	10W x 2		
Operation Temperature	0°C to 40°C		
Power Supply	AC 100-240V~, 50/60Hz		
Smart Energy Saving	Yes		
Remote	Yes		
ACCESSORY	Basic: Remote Controller, Power Cord, QSG, Regulation Book, Phone to RS232C Gender Optional: Stand, Wall bracket, VESA Adapter		

67. Heavy-duty workstation

Description	Specification	Marked/ Highlighted Cross Reference of Specification with	Compliance (Yes/No)
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		reference page no.	
Processor	Intel 12th Generation Core i7 Processor or AMD Zen 3 Ryzen 7 series		
OS	Windows 10 Pro/11 with Latest Microsoft Office License (Perpetual) along with Antivirus (for 3 Years)		
RAM	64GB, DDR4, 3200MHz		
Storage	512GB Solid State Drive (Boot) + 1TB 7200 RPM Hard Drive (Storage)		
Monitor	23" inch or higher FHD IPS (1920 x 1080) Anti-Glare Narrow Border Infinity Touch/ Non-Touch Display		
Camera	FHD Camera in monitor		
Ethernet	Dual 1000BASE-T Ethernet Adapter		
Ports	1 HDMI / VGA, 1 Audio-in / out, 1 USB 2.0, 1 USB 3.0		
Keyboard	Standard Wired USB Keyboard (same OEM Make)		
Mouse	Two button scrolling wired USB Optical Mouse (same OEM)		

68. Mobile Workstation (Heavy Duty Laptop)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Processor	12th Generation Intel® Core™ i7 Processor or AMD Zen3 Ryzen Series or Apple Silicon Pro Series		

OS	Windows 11 or Mac OS with Latest Microsoft Office License (Perpetual) along with Antivirus (for 3 Years)		
RAM	32GB, 3200MHz or above		
Storage	1TB Solid State Drive		
Monitor	14" inch FHD (1920 x 1080) or Higher		
Ethernet port	Ethernet port In built or External		
USB Ports	USB 3, USB 2.0 or USB Type-C		
HDMI Port	Yes		
Wireless	802.11ax 2x2 Wi-Fi + Bluetooth 5.0		
Camera	FHD Camera		
Speakers	Yes		
Battery	Fast Charging, Minimum 8 Hrs backup with Standard Usage		
Accessories	Bag and Fast Charger		

69. Heavy Duty Color Printer

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Type	All In One, office Jet		
Device Function	Print, Copy, Scan		
Print Type	Colour		

Minimum Speed per Minute as per ISO/IEC 24734 in A4 Size-Monochrome	25		
RAM	2GB		
Original Document Feeder Type	ADF, DADF/RADF, SPDF Or higher		
Scanning Feature Availability	Yes		
Wi-Fi	Yes		
Duplexing Feature Availability	Yes		
Networking Feature Availability	Yes		
Compatible OS: Win 10, Win 7	Windows 10 Pro/11 ,Win7		

70. 10G SFP SR of appropriate OEM server(s)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-SRTransceivers		
SFP Mode	Multi		

Compatibility with OEMs Products	All		
Fibre Cable Type	MMF		
Maximum Data Rate	10 Gbps		

71. 10G SFP LR of appropriate OEM server(s)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no	Compliance (Yes/No)
Type of Transceiver	SFP+10GBase-LR Transceivers		
SFP Mode	Single		
Compatibility with OEMs Products	All		
Fibre Cable Type	SMF		
Maximum Data Rate	10 Gbps		

72. 5% patch cords

Description	5% patch chords (as described in BoM) Specification	Compliance (Yes/No)
5% patch cords	5% refers to 5% of each type of patch cord supplied in the solution e.g. if 1000 number of 1m & 300 number of 3m patch cords are supplied in total with the solution, then 50 number of 1m and 15 number of 3 m patch	

	<p>cords are required to be supplied as a part of item number 60. The 5% patch cords of remote locations are required to be supplied at DC.</p>	
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73. Layer 3 Access Switch (48 Ports)

Description	Specification	Marked/ Highlighted Cross Reference of Specification with reference page no.	Compliance (Yes/No)
Number of 1000Base-T Ports	48 or higher		
Number of 10G SFP+ Port(Uplink)	2 or higher		
Stacking Bandwidth	Minimum 20Gbps of stacking/MLAG/MCLAG bandwidth with stacking/MLAG/MCLAG ports from day 1 (along with its transceivers ,if required)		
Switching Capacity / Forwarding Bandwidth (Non-Blocking) (Gbps)	136 or higher		
Number of VLAN Supported	512		
Layer2 Protocols	802.1QVLAN,LAG,LACP,STP,MSTP,RSTP,IEEE802.3x,VLAN		
Basic Layer-3 Protocol from day1	Static Routing, PBR		
Advance Layer-3 Protocol support	OSPFv2,OSPFv3		
Premium Layer-3 Protocol support	VRF Lite, VRF, VRRP		

Security Feature	RA Guard or equivalent, DHCP Snooping, Dynamic ARP Inspection(or similar security feature which validates ARP packets and prevents attacks such as MITM/(Control Plane Policing (CoPP), ARP cache poisoning or Similar		
Management Protocol	GUI/Web,CLI,Telnet,TFTP,,SNMPv1,SNMPv2/V2C,SNMPv3,NTP, RMON,SSHv2, IP Based Management		
QoS	802.1p,SP,Queues per port, WRED /WTD, Sflow/Netflow, Shaping, Policing/Rate Limiting, Strict Priority Queueing or Low Latency Queueing		
Stacking	Should be supplied on day1with stacking/Inter-connect cable of 5 meter length		
Redundant Power Supply	Internal Redundant Power Supply fully loaded day 1		
Redundant FAN	Redundant FAN fully loaded from day 1		
Feature Support	All the features mentioned above should be available from day one		

PART B

1. Data Center Infrastructure Management (DCIM), RF Id Based Rack Level Live Physical Asset Tracking & Heat Humidity Sensor Solution

S. No.	Specifications for Data Center Infrastructure Management (DCIM), RF Id based Rack Level Live Physical Asset Tracking, Heat and Humidity Sensor based Solution	Marked/ Highlighted Cross Reference of Specification with reference page no. in bid.	Compliance (Yes/No)
1	<p>The DCIM may be pre-integrated with EMS solution from single OEM or the DCIM solution may be from different OEM than EMS OEM. Integration of RF Id based Rack Level Live Physical Asset Tracking Solution (including its asset tags), Heat and Humidity Sensor based Solution (including its sensor tags) & DCIM should be the responsibility of DCIM OEM and bidder.</p> <p>The Unified Data Center Infrastructure Management Solution should provide real-time visibility & access across all IT and facility resources including DC & DR.</p> <p>These resources comprise of:</p> <ol style="list-style-type: none">Existing 32 RACKs at DC location installed & commissioned during phase-1 stage-1 of this project.Non IT and IT equipment such as NEs and Servers being installed & commissioned at DC during the phase-1 stage-1 of this project.New RACKs being installed & commissioned at DC and DR via this bid.Non IT and IT equipment such as NEs and Servers to be installed & commissioned at DC and DR via this bid.		

2	<p>It should be a comprehensive SSL 256-bit secure web based & an enterprise grade solution, consisting of all enterprise grade industry standard features. Bidder holds the responsibility to ensure the complete integration and testing of these modules before proposing an integrated solution in the bid.</p> <p>The solution should include a RFID based Rack level live physical asset tracking and monitoring solution(RLPAT). It should also include a Heat and Humidity sensor solution. The RF Id based Rack level live physical asset tracking solution and Heat and Humidity sensor solutions may be separate modules in themselves, but must be well integrated with DCIM solution as per specs & scope of work. These two modules must also be integrated with proposed EMS solution in this bid.</p> <p>RF based Physical Asset Tags and Humidity and Temperature Sensor Tags should also be provided for the existing racks supplied in phase 1 at DC besides the equipment supplied & installed in this bid.</p> <p>It may be noted that RFID based live asset tracking is not required at Remote Locations, the assets / inventory should be tracked & audited manually at these locations by the system integrator as a scope of work. The complete solution should have a perpetual license.</p>		
3	<p>The solution should be able to detect, collect, register and manage information on infrastructure elements related to Power, Temperature, Cooling, Rack space, rack PDUs , Assets tags of data center. It shall show available power, available space, heating and cooling on floors in racks, and network ports and power connectors on the UI/dashboards readily, depending upon the interfaces. There will be an existing BMS system, bidder must scope & plan to integrate with BMS (if the access/permissions are provided) for any of the relevant data for any of such systems.</p>		

4	<p>Solution should provide mapping of assets on the state level, city level, building level , floor level rack level etc. so as to pinpoint the asset location and area. In case the solution has any geo-maps, the solution should not connect with Internet for this or any of such feature, the maps must be in-built. The solution should support 2D and 3D based visualization for Areas, Buildings, Floors, Rack Aisles, Racks, equipment level views. These views should be able to show the interfaces of all device types, storage, I/O. The solution should be bundled(in-built) with Symbols library for OEM icons, Device maps, and Item shapes and Icons etc. Should have capability to upgrade this symbol's library as well. It should integrate with EMS in a way so as to present the alarms per equipment level in this visualization view. Overall, the solution will not have privileges to connect to internet, it must support any updates via non Internet based mechanisms.</p>		
5	<p>The solution should support the:</p> <ul style="list-style-type: none"> i. Counting of Rack Aisles, Rack space etc. ii. Power Consumption Monitoring for Elements in racks of DC and DR iii. Display of Heat map view 		
6	<ul style="list-style-type: none"> 5. The solution design and deployment architecture should meet the availability requirements ensuring that the deployed solution should be distributed or has a load balanced implementation of application(s) to ensure that availability of services is not compromised at any failure instance. 6. The complete solution should be provided in High Availability mode. There should be seamless automatic successful switchover/handover (in case of failure) between the two instances. Each instance of applications/modules should execute at different physical servers. The servers should be of industry standard and data center compatible. Each instance should be able to manage & monitor complete infrastructure at DC and DR. 7. SI must ensure the automatic sync of all relevant data amongst the different data bases of the instances. There shouldn't be any data loss during or after completion of sync. 8. The SI must budget to provide the relevant hardware / software (if any) which can 		

	<p>sync DCIM & its module's data from DC to DR and vice versa (DR to DC sync is applicable in special cases when DC went down or DC's Link to MPLS Network goes down and comes back & vice versa for DR's Link too). The software must only sync the delta (i.e. changed part) every time to maintain whole database sync.</p>		
	<p>6. It must be noted that HA is provided within two instances running on different physical servers.</p> <ul style="list-style-type: none"> h) SI must ensure to provide another third instance at DR, which will remain passive until complete DC is down and/or DC's Link with MPLS Network is down and/or as per any other defined scenario. i) When the link between DC and DR and/or DC to MPLS network goes down & DC's instance is monitoring - managing the DC's infra, the instance at DR must monitor - manage DR infrastructure. j) Also, when the link between DR to MPLS network or DC and DR goes down & DC instance is still in active state monitoring the DC equipment, the instance at DR must begin to monitor and manage DR infrastructure. k) The data (such as alarms and/or application etc.) received/generated at DR must be synced with DC instance, when DC-DR link comes back or DC/DR join back the MPLS network. Also on such occasions/scenarios, whenever the DC and DR instance are running actively at same point of time, solution should not require any additional licenses. Sufficient licenses for the solution should be provisioned to handle such scenarios i.e. ensuring DC and DR instance can run without the need for any extra license. l) However, it must be ensured that no duplication of alarms from DCIM happen at EMS irrespective of the design that's chosen. m) Overall & in General, DC and DR are at physically different locations, two different subnets. DC, DR and Remote locations are connected on MPLS Network. Our Main requirement is HA should be provided on different physical servers, none of our data centres (i.e. DC and DR) go unmonitored and unmanaged and sync of data between all the instances provided should be maintained. Design for HA has been proposed in this spec, other design may be suggested by bidder adhering to all our requirements. n) SI must create Standard operating procedure document for replicating the data (from all of the supplied modules) from DC to DR on regular basis with a 		

	periodicity allowed to be defined (between 30min to 5 days).		
7	Solution should connect and integrate with the Facility (Non-IT), IT infrastructure & Internet of Things (IoT) based systems in the same unified platform. The UI should remain unified for operators. Should be able to show faults/alarms from IT/IoT systems added to the platform.		
8	It should get integrated with EMS (proposed in this bid) for Alarms/Events, Change Management, IT helpdesk/Service desk (for any requests/authorizations) etc. using REST APIs, SNMP Traps etc. The DCIM application should be 64-Bit Application and run on 64-bit architecture.		
10	The system shall have visual capability of 3D color-coded, floor map overlays, power, cooling, and capacity data, drilldown from floor map view to contents inside cabinets, thermal real time data.		
11	The system shall support preconfigured chart widgets, performance graphs, filters.		
12	The system shall allow to analyse KPIs and gain data center business insights from chart widgets with drilldowns across multiple dashboards that address most common reporting needs.		
13	The system shall have drilldown capability allows easy access to the data that drives charts.		
14	The system should be a RBAC (Role-based Access Control) based system with fine control over access and restrictions on monitored objects, groups, system elements. The UI should support and provision the operators to configure the settings. The system should be ready for AAA / LDAP based integration for RBAC. Bidder must do the AAA / LDAP integration as a part of scope of work for achieving these requirements.		
15	The system shall allow to track detailed information on data center IT equipment.		

16	The system shall allow to quickly search, locate & help to map server(s), network, and storage equipment etc. . It must provide various search / advanced search and filtering mechanism/criteria's. It should also allow to reserve the capacity by allowing to enter parameters such as RU height & Rack, no. of data connections and power connections etc. while reserving a capacity. It should be able to show reports about the reserved capacities.		
17	The system shall have pre-configured and pre-integrated dashboards views for the DCIM, & Operations Management System. The operators should be able to browse seamlessly across the platform.		
18	The system should allow to take intelligent decisions help in efficient data processing and data analysis		
19	The system shall have pre-configured dashboards display charts by category such as : Overall health, Overview, Custom Health Parameters, What-If, Inventory, Space, Power, Cooling, Connectivity, Change, Tabular Reports.		
20	The system shall have feature to visualize floor plan drawings and rack views in real time on the Dashboard.		
21	The system shall easily show real-time capacity, consumption for all the data-center physical infrastructure on the Dashboard.		
22	The system shall have rich filtering allows quick search by several asset parameters.		
23	Apart from the trending feature , overall System proposed shall support Root-Cause Analysis so as to Isolate and pinpoint the problem area before it impacts the overall DC operations & business continuity while suppressing down the unwanted events.		
24	The search-locate-map option should also help to identify , vacant spaces in any of the racks in the data-center, for insertion of newer servers/networking devices etc.		
25	Integration of Solution with Helpdesk and EMS: Whenever a fault arises in the monitored/managed infrastructure/ or its own solution, a ticket should automatically get logged as an incident in the service desk. The Alarm/Fault should be visible into the Integrated EMS system being proposed by SI in this bid. As a process, the ticket should be assigned with predefined/preconfigured SLAs to the concern team/team members.		

26	The system should help in optimizing power usage vs cooling on racks. Should also be able to determine the optimum placement of new equipment on the racks. Should be able to identify and calculate Stranded capacity i.e. installed capacity (cooling, power, space) which cannot be used to support the critical load.		
27	Should allow to effectively monitor the Power consumption of the infra, subject to the permission granted/availability of same interfaces for integration of DCIM/EMS with iPDUs installed (as iPDUs supply would not be the scope of work of this bid). Though upon permission, Bidder must provide integration with all iPDUs, RACK PDUs (Socket Level / Strip Level) . Also, should be able to monitor/manage per device level power failures as alarms (provided that the rack level PDUs allow the monitoring and / or management).		
28	Solution should provide a real look and feel of the layouts & equipment exactly as they are placed in the racks or on the floor. This must be shown on the exact floor and building layout .		
29	The client Web browser GUI shall provide a comprehensive user interface. It shall be constructed to function as an application and provide a complete and intuitive mouse- or menu-driven interface. It shall be possible to navigate through the system using a Web browser. The Web browser GUI shall (as a minimum) provide a navigation menu for navigation, and a pane for display of graphics, alarms/events, active graphic setpoint controls, configuration menus for operator access, analytics and reporting actions for events. All system graphics are to be HTML 5 compatible. The GUI shall at least support browsers as : Microsoft Edge , Google Chrome , Mozilla Firefox etc.		
30	The Web browser GUI shall make extensive use of color in the user interface to communicate status information about the equipment being monitored.		
31	Equipment view - The equipment view shall show the status of applicable equipment such as rack, rPDU and so on. The view must allow users to drill down into equipment pages to view alarms and equipment information in full detail, including individual status of all associated device points.		

32	<p>Floorplan views must provide geographical navigation and are flexible to show local data center specific views of site/location hierarchy. Components of the floorplan view must include:</p> <ul style="list-style-type: none"> • Ability to import image to match level of hierarchy being viewed (map, data center, etc.) • Add groups, devices, racks, points, labels, or other devices to the floorplan view. • Ability to add a heatmap view, capable of showing hot spots and cold spots for environmental or power data • Visualization of alarms • When racks are added, a dropdown view selector to allow : alarm status, free front/rear rack U space, max contiguous front/rear rack U space, max rack temp, max rack kW load percent, total rack kW, heatmap view etc. 		
33	The user must be able to create, edit and add boards, dashboards and floorplan views		
34	<p>Graphics shall show each piece of equipment monitored or controlled at :</p> <ul style="list-style-type: none"> • Each building (DC/DR), • Each floor , • Each room , • Each rack , etc. 		
35	Events and alarms associated with a specific system, area or equipment shall be displayed on the main view and/or within an embedded alarm console. The solution must have native capability to show alarm on all connected devices. Users must be able to drill down through views to locate alarm sources. The alarm should be accessible from the device level. Multiple configurable severity levels for Alarms must be supported. System should support separate Rule Engine based alarms apart from the generic threshold(min, max and average values).		
36	The alarms generated in DCIM for the components should also be reflected in the EMS system.		
37	The user shall be able to view events across the system. Depending on access level, it should also be able to manage the event through acknowledgements, deletions, sorting rules and viewing alarm notes.		
38	<p>The system should support following two methods for third party integrations i. REST APIs (PUSH & PULL methods) ii. SNMP Trap Forwarding</p> <p>In case required bidder must be ready to perform an integration w.r.t Generated Log File (used for writing alarms / events) to achieve the overall functionality.</p>		

39	<p>Role based access / User Management</p> <ul style="list-style-type: none"> • Permissions: The Permissions field allows administrators to set access level for different users. Permissions should be role based permissions include options such as : <ul style="list-style-type: none"> o Read/Write: Full read access and full write access to the entire system. o Read Only: Full read access but no writes or changes may be done. o Read/Acknowledge: Full read but no write or changes may be done, except to alarm database for acknowledging alarms. System owner shall have the ability to assign combinations of roles and privileges to users that define access levels. <p>The UI should support and provision the operators to configure the settings. The system provide a LDAP based integration while configuring users for Role based access.</p>		
40	<p>Audit History: A log shall record operator activities and some system level activities per user, such as configuration changes ,etc.</p>		
41	<p>Histories/Trending: Histories shall be user-configurable and displayed via GUI. Trends shall comprise native points, along with calculated points (collections of point data). A trend log's properties shall be editable within the GUI.</p> <p>The operator shall have the ability to view trends with a time series line chart by using the history database or by selecting a specific point within the GUI. The line chart must be exportable within the pop-up window to Microsoft Excel and able to be saved as a visualization to be used within the Analytics tool. Historical records shall be saved to match the "configurable" user-defined polling interval per device. Each trended point shall have the ability to be trended at a unique interval as specified by the user.</p>		

42	<p>IT Assets: The solution includes an asset database. IT Assets are representations of a physical rack assets that will be associated to IT Racks within the software. These assets are created within a dedicated assets feature. The assets feature contains a detailed list view of assets. The asset feature shall provide the following capabilities:</p> <ul style="list-style-type: none"> • Asset database which is sortable, filterable and searchable by key asset data • Add assets – manually or via CSV import • Edit assets individually or by group • Support of assets within assets (blade server enclosures, as an example) • Export & import of existing asset database • Ability to assign IT assets to IT racks • Asset tab within the Rack View to visually display IT assets within each IT rack 		
43	<p>Maintenance: The solution must provide users with a feature to manage device maintenance events. This feature will silence all alarms on specific equipment or multiple pieces of equipment for the duration of the maintenance event.</p> <ul style="list-style-type: none"> • Users must be able to place a device into maintenance mode instantly or schedule maintenance within the interface, for single or multiple grouped devices at a time. • Users have the option to receive email notification for the start and end of maintenance events. • Maintenance events must include start and end dates, devices and task descriptions. • Users must be able to view maintenance history. • The solution shall allow users to add, edit and delete maintenance tasks. Events that have completed cannot be deleted. 		
44	<p>Vendor must integrate DCIM solution & its modules with proposed EMS, Change Management, IT Helpdesk solution under this project. The bidder may integrate or also have to integrate this solution with other necessary (proposed) modules as desired to accomplish the required functionality.</p> <p>Bidder must also ensure that all the hardware of various different OEMs proposed in this solution by the bidder must be managed, monitored by the proposed DCIM+EMS solution. The proposed solution should be able to show the alarms from all sub-system & system components planned to be supplied in this bid including Phase-I and other bids referred in this tender. In general solution should be OEM agnostic & should by default support integration with major OEMs of Network and server equipment and natively support SNMPv3 for other devices.</p>		

	Humidity and Temperature sensor Solution & RLPAT Solution		
1	<p>Humidity and Temperature sensor tags are required which need to be mounted on each RACK placed at DC and DR only. The sensor should be able to provide both temperature and humidity from a single sensing tag and not two different devices. The sensors should stick to the RACK. Three sensors per RACK, with two in front and one at the back are required. Actual location on the RACK will be confirmed during Installation. The sensors must be operating in free ISM unlicensed RF Frequency bands. The solution shouldn't use 2.4/5Ghz bands (Wi-Fi/Bluetooth) instead use Sub Ghz bands. For completeness of requirements & efficient solution design, the solution may use the same Communication Gateway device (Proposed with RLPAT Solution) . The same Communication Gateway device shall be configured and integrate with Humidity and Temperature sensor tags and Asset Tags (supplied with RLPAT solution) in a Star Topology. The communication Gateway device may further connect with EMS/DCIM over SNMP/REST API or other possible mechanisms for accomplishing the requirements. The exchange of data amongst these devices should be in an encrypted form.</p>		
2	<p>The Humidity and Temperature sensor software Solution should be able to manage and monitor the Humidity and Temperature sensor tags, should be able to work as a standalone solution as well as should get integrated with DCIM to provide completeness of DCIM solution & scope of work. It should be a web based solution deployable as a standalone on a hardware or on a VM.</p>		

3	Proposed sensors must allow in maintaining the environment within threshold defined via configuration at EMS/DCIM. The Humidity and Temperature sensor Solution should get integrated with DCIM/EMS solution. Overall these sensors should help the DCIM/ EMS in bringing the floor's heat map view / each RACK wise heat view. The alarms generated via the sensor hardware supplied should be visible at DCIM and EMS solution supplied. The data(generated/configured) related to temperature & Humidity should be supplied to both EMS and DCIM e.g. the temperature data should be used at DCIM for the purposes of generating heat maps (visualization) etc. This is to note that this data (both temp and humidity) will also be required at EMS to generate any alarms such as whenever temperature / humidity goes beyond a configured threshold. Humidity and Temperature sensor Tags should also be provided for the existing racks supplied in phase-1 at DC. No Humidity and Temperature sensor Tags are required at remote locations.		
4	After integration with DCIM, the Solution should allow proactive identification of potential areas which may need attention (including cooling, power, storage, temperature etc.) .		
5	Real time heat & humidity measurement for equipment's on the racks should reflect on the central dashboard of DCIM.		
6	Sensors should not be larger than 35mm x 55mm x 8mm without enclosure and a should not exceed 76mm x 40mm x10mm with enclosure . Total weight of an enclosure should not exceed 75gms. The enclosure must be stuck on Rack using VHB tapes. The enclosure must be Tough, impact resistant and temperature stable.		
7	Sensors should have accuracy of +/- 1degree Celsius and +/- 3 for relative humidity. They should be operatable within -20 °C to +70 °C & Operating Humidity levels < 95% RH non-condensing .		
8	Proposed solution must have an inbuilt feature to support multiple internal departments by mapping them against tenant ID, thus it should provide information regarding power used, capacity used by a tenant.		
9	The system should be a RBAC (Role-based Access Control) based system with fine control over access and restrictions on monitored objects, groups, system elements.		
10	The system should be integrated with IT Helpdesk solution proposed by the SI via the DCIM or directly.		

11	<p>Solution should provide Rack level Physical IT Asset Tracking to optimize and keep a check on Data-center IT inventory Tracking and audits.</p> <p>The software solution supplied to manage and monitor the Rack level Physical IT Assets Tracking should be able to work as a standalone solution as well & should get integrated with DCIM.</p> <p>It should be a web-based solution deployable as a standalone on a hardware or on a VM.</p> <p>The solution should be integrated with proposed EMS and IT Helpdesk solution by the SI via the DCIM or directly.</p>		
12	<p>RLPAT Solution should be able to collect the information of IT assets and upload to a central database server provided. Near Real time monitoring of the assets location up to rack level by addition of tracking via asset tags so as to notify / alert the user(s) if an asset is added, moved, removed in an authorized or unauthorized manner. For completeness & compactness of the solution, the Live Asset Tracker are also required to be integrated with Communication Gateway to send the information to EMS/DCIM. They should use encrypted communication techniques for communication with Gateway</p>		
13	<p>Communication mechanism in RLPAT Solution should be wireless in nature & working on RF frequency (Unlicensed Band). The solution shouldn't use 2.4/5Ghz bands (Wi-Fi/ Bluetooth) and instead use Sub Ghz bands. This will be responsibility of the bidder that frequencies used in this solution should not interfere with any of the supplied equipment frequency or hamper any of their operations.</p>		
14	<p>RLPAT Solution's Asset Tag form factor & mounting - Form factor of asset tags should be small enough to be able to easily attach to a IT asset but it should also be noticeable to naked eye. Should not be more than 76mm x 40mm x10mm with enclosure.</p> <p>No cables and wiring should run between asset tag to any hardware or RF / Controllers gateways. The Asset Solution should support OTA (Over the Air) upgrade of its components. The tags should be tough, impact resistant and temperature stable .</p>		
15	<p>RLPAT Solution's Asset tag & Heat and Humidity Sensor's battery Life - their battery should have Operational Life for at least 3 years from date of acceptance of the solution. In case the battery life of tag is less than 3 years, SI shall provide the battery replacements until 3 years (from the date of acceptance) duration for each of the supplied tags.</p> <p>The SI needs to also budget for a mandatorily replacement of battery (as a preventative</p>		

	maintenance of all asset tags with fresh battery in the last quarter of 3 rd year of O&M .		
16	<p>RLPAT Solution's Asset tag Features - Should be able to alert in real time, if an unauthorized movement of asset is made or an asset falls or there is an attempt to remove or forceful removal of tag from asset or has a low battery.</p> <p>The solution must be an integrated solution with IT helpdesk, Change Management, DCIM etc., so as e.g. movement of asset can be authorized change request, whose time taken for a change may be tracked via the Helpdesk manager.</p>		
17	<p>RLPAT Solution's Alarms & Notification from the Asset Solution- Solution should be able to provide real Time alarm & event notification. Should be able to Generate Alert in at least the following conditions:</p> <p>Addition & removal of Asset , movement of Asset from a RACK, Cage area, Store Room, FLOOR & DC/DR , Falling of an asset or there is an attempt to remove asset or a forceful removal of tag from asset or if an asset tag has a low battery & needs battery replacement or Out of Warranty Alarm of the asset . Accordingly to the locations defined (such as RACK, Cage area, Store Room, Floor , DC,DR etc.) bidder may ascertain & accordingly include the number of Communication Gateways required)</p>		
18	RLPAT Solution's Built in Local Indicator on Tags - All tags should have in-built indicators to reflect working status		
19	RLPAT Solution's Asset solution should support TLS & SSL, adheres to FIPS, access is protected through username & password. The OEM needs to provide an undertaking for FIPS adherence.		
20	RLPAT Solution's should have RoHS Certification		
21	RLPAT Solution's should have Capability -Locate IT asset accurately with Rack Level Accuracy		
22	RLPAT Solution's Battery in Asset tags must also be replaceable in nature & Tags should be reconfigurable/re-writeable		
23	RLPAT Solution's Asset solution should have Scalability - System should support minimum of 5000 tags in an area of 30,000 sqft.		
24	Assets Tags in RLPAT Solution should have a 2D barcode to allow ease of configuration or physical audits. Supplied Handheld Tag readers should be able to read, configure these 2D		

	<p>barcodes and save the information into the system about the asset if required. It should be compatible and integrated with the solution. It should have at minimum following communication interfaces, 4G LTE, WLAN, Bluetooth, NFC . It should have Environment specs with IP65 compliant and at least 1.5mtrs Drop tested. It should have a minimum of 7000mAH battery & at least 3GB RAM with 32GB Flash.</p> <p>The bidder is also required to provide two numbers of compatible 2D barcode / QR code printer along with consumables (Cartridge, DK Rolls stick able labels etc.) for 3 years duration. The Printer should have at least 300dpi printing resolution, should have WLAN, RS232 and USB interfaces. Should support DK Rolls (DK die cut labels / DK Continuous Tape).</p>		
25	<p>RLPAT Solution's Integration - Should integrate with DCIM, EMS, Helpdesk/Service Management etc. modules of the system for various of its features such as authorization process of movement of an asset, raising alarms for unauthorized access/movement / tracking the assets .</p> <p>If an instruction is given to system to find an asset, it should be possible to locate that asset and give a beep sound locally on tag.</p> <p>e.g. If there was a request to move an asset from a RACK To another RACK in the IT Helpdesk system, this will be tracked via a ticket/service desk ticket. Any change needs to undergo via change management workflow , which means this request will be reviewed and approved by different users. Upon approvals a change becomes an authorized change.</p> <p>Similarly, if there is an alarm that arises in RF based physical asset system due to movement of an asset, this alarm must be sent to EMS. An alarm in EMS will auto raise a ticket in IT helpdesk (based on certain criteria). The ticket may be closed by a user by referring / adding remarks to the ticket id w.r.t a ticket generated for authorized movement of asset as above. The alarm may be also acknowledged with this ticket id.</p> <p>The bidder needs to create such processes and perform similar integrations</p> <p>Data Integration - proposed solution should be able to route the data to DCIM/EMS by forwarding SNMP traps e.g. Alarm generated via an unauthorized movement of asset should be sent to EMS or any other alarm generated w.r.t Asset Management Functionality should be seen in EMS.</p>		
26	<p>RLPAT Solution's Inventory Management module should be able to manage assets inventory as individual or bulk items, set re-order levels and amounts and keep a history of transactions. Able to provide ability to account for assets and components in inventory and facilitates maintaining appropriate levels of stock .</p>		

27	RLPAT Solution's Inventory management module should record OEM, Make, Model, Serial Number, Contract Details, Maintenance Details and link/maintain it in DB to each asset. User should be allowed to search the records/inventory based on any of fields / attributes .		
28	The system should allow to generate the reports containing inventory details as mentioned above and including the other details such as current assigned IP, device type, device name, location , RACK etc.		
29	Asset record detail: Provide a general tab that stores specific information about the device depending on the device type.		
30	Provide a Components tab that stores sub-components information of the asset, E.g. ID, Serial Number, Licenses, Version, Status, Category, Type, Item, etc. and also should support in SLA management , assist in a Help Desk call.		
31	Provide a tab that stores information about different types of contracts and helps in Support, Warranty, Software, Maintenance , SLA, EoL, EoS etc.		
32	Provide a People tab / column that stores custom fields per asset such as individuals or groups who are owners and users of the asset.		
33	Should be able to provide the asset's inventory details along with details such as location, rack, IP details (where ever applicable). It should support both IPv4 and IPv6 stack.		
34	Deployment Mode of the overall Solution: The DCIM, RLPAT software module , Heat Humidity Module / Application(s) provided should be capable to be deployed on physical server and/or on virtual servers. They should all run in HA mode. The solution supplied should have a perpetual license.		
35	Updating of Patches, Bug Fixes within support period, upgradation of version during the support period is the responsibility of the SI. SI must ensure to update the patches or provision the upgrades via the non-internet modes i.e. by following local update/upgrade mechanisms using HDDs/USBs .		
36	In case the solution consists of separate independent modules or as a single solution, each of them or the overall solution should be capable to run on Linux or Windows or on their VM . The solution with all modules, must run in HA mode in either case.		
37	The proposed solution (DCIM, Humidity and Temperature sensor & RLPAT Solution) should include hardware(s) and software(s) (including web application stack, database, any servers, any other relevant software etc. required for accomplishing the scope of work and requirements) with operating system(s). Bidders must keep in mind the future and		

	<p>scalability of requirements before deciding for a hardware configuration.</p> <ol style="list-style-type: none"> Also, the sizing of the computing in the proposed hardware should be sufficient enough to cater to futuristic projection of IT & Non-IT equipment mentioned in this bid. Moreover, the specifications of the proposed computing hardware must be chosen so as to ensure that only 70% of the CPU and RAM are utilized at any point in time. In case a higher CPU / RAM than this defined threshold is observed for more than an aggregated 60 minutes per day, the bidder shall upgrade/replace (with higher specifications) the hardware within 31 working days. Otherwise, equipment/solution will be considered down and SLA/Penalty will be applicable. The specifications of the proposed computing hardware and overall solution must be sufficient enough to handle infrastructure of such 3 additional data centres (i.e. 3 times the sought items of BoM). The proposed solution (hardware + software) must be scalable in future. <p>The proposed solutions/Modules for the sought requirements should be able to run on latest versions of Microsoft windows and Linux operating systems. All the updates and upgrades of the proposed solutions/Modules must also be supported on the upgraded / updated versions of OS during the entire contract period. The bidder also needs to provide the relevant software(s)/licenses to ensure security of the provided hardware, software/ system.</p> <p>In case of any updates/upgrades of base OS, the supplied solution(s) must be updated/upgraded free of cost during the entire contract period. Also any bug fixes within support period must be supported.</p>		
38	The proposed solution should provide a secured single sign-on and unified console for seamless cross-functional navigation for all functions of components/modules offered across multiple areas of monitoring & management.		
39	Proposed solution should provide current and historical reports for various statistics monitored. The solution must also allow for generation of customized reports in addition to default reports as per templates. System should be able to generate the current alarm/assets etc. reports for entire inventory or per device basis. Reports should be allowed to be generated for the historical data with custom time period. Should allow sending out(emailing) of all types of reports on custom schedule such as daily, weekly, monthly basis etc. Reports should be allowed to be generated in various templates such as excel, csv, pdf etc.		

40	The SI is required to provide a clean VAPT report of the complete solution at the time of acceptance testing, where all categories of vulnerabilities are fixed in the deployed solution. Additionally, periodic VAPT's must be done yearly from the date of acceptance and additional VAPT should be done , upon any major upgrade in solution or solution's respective modules.		
41	Integration of RF Id based Rack Level Live Physical Asset Tracking Solution (including its asset tags), Heat and Humidity Sensor based Solution (including its sensor tags) & DCIM should be the responsibility of DCIM OEM and bidder		
42	OEM(s) should be ISO 9001, ISO 14001,ISO 27001 certified.		

7. EMS Solution

S. No.	Specifications for Enterprise Management Solution(EMS) , Asset Manager , IT Helpdesk Manager , Change Management, Configuration Management , IPAM	Marked/ Highlighted Cross Reference of Specification with reference page no. in bid.	Compliance (Yes/No)
	General Requirements		
260.	It should be a comprehensive SSL 256 bit secure web based IPv4 and IPv6 compliant solution, consisting of all standard features/modules of Enterprise Management Solution (EMS) such as fault management, performance management, configuration management, event management, an IT helpdesk/service desk to perform SLA management , Configuration Management Database(CMDB) ,incident, problem, document/knowledge management, schedule, asset management and has a inbuilt syslog server / capability to integrate a syslog server / or an integrated syslog server, so as to act as a sysLog aggregator, EMS solution (including its various modules) should provide traffic analysis , service management & their respective functionality on all the Non IT and IT (network and server) infrastructure procured and/or deployed at following different physical locations:		

	<p>i. 32 RACKs at DC location & its 15 remote locations including the Non IT and IT equipment such as NEs and Servers at these locations from the phase-1 stage-1 of this project.</p> <p>ii. New RACKs being installed & commissioned at DC, DR and its remote locations including the Non IT and IT equipment such as NEs and Servers to be installed and commissioned at these locations via this bid.</p> <p>iii. IT Equipment being purchased via the bid “GEM/2022/B/2183782” titled as “Selection of System Integrator for Setting up of ICT (Security) Infrastructure at 18 Remote Sites”.</p> <p>The solution in general should be able to manage/ control/ configure/ integrate/ view alarms from all of infrastructure from above equipment commissioned at these sites.</p> <p>The complete solution should have a perpetual license.</p>		
261.	<p>The proposed EMS solution can be from a single OEM or final EMS solution with IPAM including Switch Port Management may be an integration of OEMs to fulfill the sought requirements, in other words, EMS solution and all modules (e.g. Configuration Management, network monitoring, server monitoring, asset management, IT Helpdesk , Change Management etc.) must be from a single OEM whereas the IPAM Solution may be from a different OEM to fulfill the sought requirements & functionality. Bidder holds the responsibility to ensure of testing the functionality of these components/modules before proposing a solution in the bid.</p> <p>The proposed solution should be able to manage and monitor all the devices mentioned & planned as per requirements and scope of project.</p> <p>Solution OEM(s) should have a development/development support center in India to facilitate quick issue / bug resolution/ any custom requests and upgrades. EMS Solution should be a GUI based support portal with all features mentioned in EMS Specifications</p>		

262.	<p>Proposed solution must provide role based access for each user / user groups. The access & privileges of users/user groups should be possible on per module/application basis. The users/user groups access should be possible on features within the modules/applications on Read only or Read-Write basis per feature.</p> <p>The role based read/read-write privileged user /user groups should also be possible for various solution module(s) sought , device level groups(network groups, server groups etc.)</p> <p>The RBAC (Role-based Access Control) system with fine control over access and restrictions on system elements/modules/functionality should be supported for all the supplied modules/applications. The module/application UI should support in provisioning the operators to configure these settings via an administrative login.</p> <p>Integration: The system should be ready for AAA and AD based integration to support these features. Bidder must do the AAA and LDAP integration as a part of scope of work for achieving this role based requirements and AAA integration for authentication between EMS and Network devices must be performed prior to acceptance.</p> <p>The users should have same login credentials to access these various modules while navigating across the solution. The access to various modules should be dependent upon privileges defined per user per module.</p>		
263.	<p>The proposed solution should include hardware(s) and software(s) (including web application stack, database, any servers etc. required for accomplishing the scope of work and requirements) with operating system(s). Bidders must keep in mind the future and scalability of requirements (mentioned in these specs) before deciding for a hardware configuration.</p> <ol style="list-style-type: none"> 5. Also, the sizing of the computing in the proposed hardware should be sufficient enough to cater to futuristic projection of IT/Non-IT equipment mentioned in this bid. 6. Moreover, the specifications of the proposed computing hardware must be chosen so as to ensure that only 70% of the CPU and RAM are utilized at any point in time. In case a higher CPU / RAM than this defined threshold is 		

	<p>observed for more than an aggregated 60 minutes per day, the bidder shall upgrade/replace (with higher specifications) the hardware within 31 working days. Otherwise, equipment will be considered down and SLA/Penalty will be applicable.</p> <p>7. The specifications of the proposed computing hardware and overall solution must be sufficient enough to handle infrastructure of such 3 additional data centres (i.e. 3 times the sought items of BoM).</p> <p>8. The proposed solution (hardware + software) must be scalable in future. The application should be 64-Bit Application and run on 64-bit architecture. However, it may be noted by bidder before proposing the solution that no server or any other hardware is allowed to kept at remote locations for monitoring or management i.e. w.r.t EMS.</p>		
264.	<p>The overall solution should be provided in High Availability mode. There should be seamless automatic successful switchover/handover (in failure cases) between the two instances. Each instance of applications / modules should execute at different physical servers. The servers should be of industry standard and data center compatible. Each instance should be able to manage & monitor complete infrastructure at DC, DR & Remote Locations.</p> <p>SI must ensure the automatic sync of all relevant data amongst the different data bases of the instances. There shouldn't be any data loss during or after completion of sync.</p> <p>The SI must budget to provide the relevant hardware / software (if any) which can sync EMS & its module's data from DC to DR and vice versa (DR to DC sync is applicable in special cases when DC or DC's connectivity with MPLS Network went down and comes back). The software must only sync the delta (i.e. changed part) every time to maintain whole database sync.</p> <p>It must be noted that HA is provided on two instances running on different physical servers, SI must ensure :</p> <ul style="list-style-type: none"> • To provide another third instance at DR, which may remain passive (or active) until complete DC is down and/or DC disconnects from the MPLS network and/or as per any other similar/ required scenario. 		

	<ul style="list-style-type: none"> • When the link between DC to MPLS network or DC and DR goes down & a DC instance is still in active state monitoring the DC equipment, the instance at DR must begin to monitor and manage DR infrastructure and remote locations. • Also, when the link between DR to MPLS network or DC and DR goes down & DC instance is still in active state monitoring DC equipment and remote locations, the instance at DR must begin to monitor and manage DR infrastructure. • The data (such as alarms or application data etc.) received/generated at DR must be synced with DC instance, when DC-DR link comes back or DC/DR join back the MPLS network. Also on such occasions, whenever the DC and DR instance are running actively at same point of time, overall solution should not require any additional licenses. Sufficient licenses for the solution should be provisioned to handle such scenarios i.e. ensuring DC and DR instance can run without the need for any extra license. • SI must create Standard operating procedure document for (if required) replicating the data (from all of the supplied modules) from DC to DR on regular basis with a periodicity allowed to be defined (between 30min to 5 days). <p>Note1: Each instance of the application provided e.g. One instance of the EMS solution while working in HA mode (as an example) should be able to manage and monitor the 100% of the infrastructure (mentioned above i.e. all Infra at DC, DR & remote locations and already existing phase-1 infra and its remote locations, etc. as per scope of work) irrespective of its location of execution on a physical server .</p> <p>Note 2: Bidder may propose an alternate design / solution in combination full-filling the sought requirements, if required. SI may add any other third party components (such as a backup solution etc.) to achieve this requirement.</p>		
265.	<p>The proposed software and hardware should be scalable to accommodate network growth of upto 5,000 IT Devices (~1500 Networking Devices , ~3500 Servers, etc.) and 5,000 non-IT devices. The hardware (servers/ databases/ respective storage and computing) planned to be supplied with the EMS solution should be capable to handle the data from these many number of IT and Non IT devices (including their alarms, backups, configurations etc. for duration of contract without any upgrade). The solution should allow 50 simultaneous (concurrent) users while performing the CPU & RAM intensive operations and a capability to support futuristic scalability requirements.</p>		

266.	The OEM/OEM(s) should have their own IP rights on the solution being supplied, so as any customization required in solution may be possible by them. This will include integration with third-party Non-EMS / EMS applications over REST APIs /any other interface. The integration should be bi-directional in nature.		
267.	The solution should be bundled with adequate cyber security measures by including 3 rd party security software or by having in-built security measures to alert/ prevent any cyberattacks on the provided solution.		
268.	Should have the Asset management module which should be able to manage the all IT devices and Non IT devices. This asset management solution should be a comprehensive solution that allows to manage all devices as assets.		
269.	Should be able to provide the change request (CR) management module.		
270.	The solution should be accessible via the intranet and internet in the secured manner. However, the solution i.e. any of the modules should not connect to Internet for accomplishing any required features asked in this solution e.g. fetching geo-maps for any functionality, and not even for the updates / upgrades etc. It should have in-built or capability to use custom maps as background and the updates/upgrades of the solution should be possible via non-internet mechanisms. Solution be bundled with Data base /Data store encryption for Documents encryption and decryption using AES 256 bit cipher. The solution should only be accessed by secure browser supporting SSL 128 bit and SSL 256 bit encryption ciphers and without SSL there should be restriction/control on the solution so as to prevent malware attacks, virus attacks, browser based attacks, ransomware attacks. The encryption should be performed via an industry standard ciphering algorithm. The solution must have in-built AES 256bit encryption for monitoring data and session within the platform.		
271.	Deployment Mode of the Solution: The Module / Application provided should be capable to be deployed on physical server and/ or a virtual server.		

272.	Bidder must ensure that all the hardware of different OEMs proposed in this bid and other bids referred in this bid's scope of work must be managed, monitored by the proposed DCIM & EMS solutions. The proposed solution(s) should be able to show the alarms from all system components envisaged to be supplied in this bid, including Phase-I and other bids referred in this tender. In general, solution should be OEM agnostic & should by default support integration with major OEMs of Network and server equipment and natively support SNMPv3 for other devices.		
273.	Enterprise Management Solution (EMS) Specs		
274.	The solution should work without any agent installation for most (90%+) of the use-cases/requirements mentioned in this document, however specific uses-cases that are not supported without agent , are allowed by using agent-based deployment. All the uses-cases/updates should be fulfilled without any requirement of internet connection. The agent or agent-less communication should be secured.		
275.	Should integrate with a proposed Automated Infrastructure management(AIM) solution (Comprising of Intelligent Cabling Management and other features) using REST APIs / SNMP so as the alarms, events can be monitored & managed from EMS. Bidder must also integrate with an already existing (Phase-1) AIM solution at DC (refer Scope of work for details). Integration should be on API level/SNMP without any requirement of installing any 3rd party software.		
276.	Should provide Network performance monitoring (NPM) via reports and dashboards. It should support the reporting, status , threshold breach reports for all monitoring parameters for servers, Network elements. It should have features for proactive monitoring of network performance. Additionally, the diagnostics module of EMS should support ping check, telnet or ssh access, traceroute route checking and Device logs analysis .		

277.	<p>The proposed solutions/Modules for the sought requirements should be able to run on latest versions of Microsoft windows or Linux operating systems. All the updates and upgrades of the proposed solutions/Modules must also be supported on the upgraded / updated versions of OS during the entire contract period. The bidder also needs to provide the relevant software to ensure security of the provided hardware, software/ system. In case of any updates/upgrades of base OS, the supplied solution(s) must be updated/upgraded free of cost during the entire contract period. Also any bug fixes within support period must be supported.</p> <p>SI must ensure to update the patches or provision the upgrades via the non-internet modes i.e. by following local update/upgrade mechanisms using HDDs/USBs .</p>		
278.	<p>Should allow & perform integration with other third-party applications (such as AIM, DCIM etc.) through APIs. It must be ensured that all alarms arising out of any module of the solution should be sent to EMS and its database. e.g. If there is an alarm that arises in DCIM, it must be sent to EMS . The EMS must serve as an all alarm and event data base. Also, there should be a provision for Northbound and Southbound Integration Adaptors , gateways or CLI based integration for seamless integration and customization possibilities.</p> <p>System should have Node Tags for device grouping and resource/interface tagging for element grouping. Apart from Node Tags additionally system should have options to do device grouping based on default fields and customer fields. No restriction in the number of level of grouping for the devices. provides the option to create the grouping based on the service offered to customer and map all the devices involved in the specific service till the component / resource level.</p> <p>It may be noted that "node tags" refer to - a tag whereby devices having similar characteristics can be grouped inside it for the devices at DC, DR and Remote locations.</p>		
279.	The current performance state of the entire network & system infrastructure shall be visible in an integrated console of proposed solution		
280.	It should provide a secured single login with unified console for seamless cross-functional navigation for all functions of components/modules offered across multiple areas of monitoring & management.		

281.	Should be able to monitor network traffic by capturing flow data from network devices, such as but not limited to Cisco NetFlow v5 or v9, Juniper J-Flow, IPFIX, sFlow, sampled NetFlow data and Cisco ASA NetFlow.		
282.	Should support Network device or configuration management by supporting with Automated Backups of configurations, Change management in Real-Time , Allow execution of special Scripts (e.g. execute sequence of commands in different devices for troubleshooting & creation of such scripts) , Compliance auditing & Automation of repetitive configuration management tasks. The scripts should be allowed to run on single NE or can be issued in bulk on different set of NEs. The scripts may be used for upgrading the Firmware in NEs. Additionally, the scripts functionality may be used for changing configurations, running and executing commands for troubleshooting or, so as it can automate configuration management , device management etc. by giving convenience to an operator / user for executing self-created scripts.		
283.	Should also provide a feature of Remote Firmware upgrade on single or bulk devices		
284.	Should monitor hardware and software health for Data Center Network & Server Equipment and should allow alarms, alerts and reports on hardware and software monitoring e.g. over system resource use beyond threshold limits, fault / alarm upon excessive network usage. May perform Hardware monitoring using Trap based integration with existing hardware monitoring solutions or element management solution supplied / asked from OEMs in this bid's scope of work.		
285.	Should be an integrated solution for managing & monitoring devices , bandwidth utilization, configuration management.		
286.	Should be able to perform Real-time monitoring of each of the alarms and resources (but not limited to such as CPU, Memory, Disk, IO, network etc. aspects) of physical and virtual servers including the other network devices		

287.	The solution should have self-monitoring ability to track status of its critical components & parameters such as Up/Down status of its services, applications & servers, CPU utilization, Memory capacity, File system space, database Status, status monitoring between primary and secondary system and event processing etc. It should provide this information in real-time through graphical dashboards, events/alarms as well as in the form of historical reports. Reports shall contain visualizations utilizing the applicable graphic types such as Bar Chart, Gauge , Pie Chart, Scatter Plot, Simple Value, Table, Time Series, User Image, User Text etc.		
288.	The proposed solution should be able to monitor Physical Servers running UNIX , Linux ,windows or any other operating systems & also Virtual Servers on VMware or any other Hypervisor-based Virtual Network Function infrastructure network management must also be supported .		
289.	Supplied Solution should monitor the devices/VMs continuously and identify & capture the faults/alarms from each of it.		
290.	<i>There should not be any agent on the managed node(s) . However, in case the sought usecases / requirements are not achievable on servers and require agents to be deployed on servers. Hence, OEMs may be required to customize agents &/or overall solution and provide agent's deployment at servers to suffice requirements. Such use cases will not exceed more than 10% of the use cases / requirements sought . The overall solution must provide the system performance data. For event management it should be able to prioritize events, perform duplicate suppression ability to buffer alarms .</i>		
291.	<i>Users must be able to choose the thresholds (high and low) for when an alarm and/or warning will activate, along with the points for the severity level. Users must be able to acknowledge and filter alarms. User should have a way to prioritize more important alarms. The solution shall include an alarm history page where all system alarms are stored. Users should be able to search for previous alarms by site, device, or point. User should be able to manage and display alarms/events/alerts, store them and should allow creation of new alarms/events/alerts from with new (customizable) threshold limits. The threshold may be applied to any valid parameters which are being monitored per device .</i>		

292.	<p>Should Support Assignment of Alarms/events/Alerts to System Administrators for processing and completion via a Helpdesk / Service Desk feature. It must also allow the logging/recording of solution/Actions during Alarm/event/Alert Completion/closure.</p> <p>As an hypothetical example, after the analysis of Alarm/event/Alert, if solution requires a change in configuration at a Network Element(NE), this change in configuration should flow via the change management system for ensuring appropriate approvals and recording . A ticket for this alarm should be created in helpdesk, which should trigger a Change Request in Configuration Change Management system. Upon various approvals, the CR is implemented in the system and only then CR , ticket and alarm are closed . CMDB is updated with this configuration change for future records. User must also be able to map an Alarm/event/Alert with a ticket as well as CR.</p>		
293.	Should support to have various actions that can be taken, including but not limited to, sending out emails, forwarding SNMP traps, sending SMS text alerts, playing sound, emailing any type of reports generated etc.		
294.	Should Support Incident/ Alert Escalation through defined Escalation Metrics		
295.	Should Generate Green Alerts / automatic update the alert status as down / indicate the new status after successful alert processing		
296.	Should support variables in alert email messages to make message self-explanatory		
297.	Should be able to define relationships (based on topology, etc.) between servers and applications to avoid false-positive email alerts in case of outage		
298.	Proposed monitoring solution should provide current and historical out-of-the-box reports for various statistics monitored. The solution must also allow for the customized reports in addition to default reports as per templates. System should be able to generate the current alarm reports for entire inventory or per device basis. Same for the historical data with custom time period.		
299.	Should allow advanced customization in reports allowing options to extract custom data from database		

300.	Should allow sending out (emailing) of all types of reports on custom schedule such as daily, weekly, monthly basis etc., i.e. allow to Schedule Report Generation. It shall allow to schedule execution of tasks allowing automation.		
301.	Should allow Creation of Customized dashboards as per requirement		
302.	Solution should provide feature that facilitates suppression/reduction of alarms displayed by means of alarm suppression feature. For example, during a maintenance, it should allow to suppress alarms from devices. The system must support filtering options by alarm status , device type/category to facilitate quick actions .		
303.	The proposed system shall integrate network , servers or other equipment alarm/performance information in a single console/dashboard and provide a unified reporting interface for each category of components.		
304.	Alarms should be mapped to the live topology views and real time updates to topology based on alarm occurrences. System can support one click alarm masking capability.		
305.	Should trigger (pre-configured and customized) automated actions based on incoming events / traps. These actions can be automated scripts/batch files. Scripts/batch files should be customizable.		
306.	Should support out of the box network Trap Analytics		
307.	Tool should support automated Change Plans including but not limited to: Conditions to validate, Pre-Change Validation, Change Script (similar to legacy Command Script), Post-Change Validation, Rollback Script		
308.	Should provide the comparison views for configuration versions e.g. Original Configuration Vs Latest Configuration		
309.	Should provide Compliance Model w.r.t Configuration, Software, Running State		
310.	Should provide Risk Visibility Dashboards of network infrastructure		
311.	EMS solution proposed should have capability to fetch / receive alarms from other Network Monitoring tools / Systems monitoring tools / other domain monitoring tools like AIM , DCIM solutions supplied as a part of this bid and including equipment from other locations / bid as defined earlier in this document and /or as per scope of work.		

312.	Alarm Filtering should allow flexible filtering rules for users to filter the alarms by category, severity, elements, duration, by user, by views, by location or by any other custom field of choice present in the alarm object		
313.	The discovery processes may be configurable to perform continuous and auto discoveries. Should be able to auto discover, monitor devices installed and commissioned at different Physical locations		
314.	Should have an Asset management system for maintaining and managing the all assets as defined in the scope of work .		
315.	The EMS solution should be integrated with DCIM solution detect physical assets movement from racks and receiving alarms from DCIM / RLPAT Solution.		
316.	Should be able to integrate with modules serving other monitoring/ management purposes and consolidate the information into a single view such as should be able to integrate with the AIM solution over REST APIs/other mechanisms to receive alarms from AIM.		
317.	Should be scalable to allow the addition/integration of new instances of devices to be added in future		
318.	Should allow information from multiple instances of application to be consolidated into a single view		
319.	The EMS solution should integrate with Network Equipment's OEM supplied Element Management systems. Bidder needs to provide the Network Equipment's OEM supplied Element Management systems along with the NEs. Also, SI may budget to integrate the proposed EMS in this bid with other Element Management Systems / Network Management Systems solutions supplied earlier w.r.t other Phase-1 bids / Infra referred in this bid.		
320.	It should monitor performance across heterogeneous networks		

321.	<p>The tool should automatically discover different type of heterogeneous devices (all SNMP supported devices i.e. Router, Switches, Servers etc.) and map the connectivity between them with granular visibility up to individual ports level. The tool shall be able to assign different icons/ symbols to different type of discovered elements. It should show live interface connections between discovered network devices.</p> <p>It must support auto Discovery of network inventory and create a network topology</p>		
322.	<p>The solution should allow for discovery to be run on a continuous basis which tracks dynamic changes near real-time in order to keep the topology always up to date. This discovery should run at a low overhead, incrementally discovering devices and interfaces.</p>		
323.	<p>EMS should provide the compliance management report in the integrated view showing network topologies. Proposed DCIM & EMS should adhere to guidelines so that the CERT can stay compliant with its current day industry standards like HIPAA/ SOX/ PCI or equivalent standards. The minimum security guidelines to be adhered are:</p> <ol style="list-style-type: none"> 1.) All the data stored or getting communicated over LAN should be encrypted as per encryption level mentioned in detailed technical specifications. 2.) The data communication for replication between DC-DR (for HA system) should be encrypted as per encryption level mentioned in detailed technical specifications. 3.) Malicious code test certificate to be provided. 4.) VAPT – Ensure VAPT is done immediately after the software is deployed but before taking the system into production. 5.) To provide regular hot fixes/updates to ensure the system security. 6.) The Software to be integrated with AD and AAA as well to ensure the strong access control measures. <p>The SI is required to provide a clean VAPT report of the complete solution (i.e. including all modules) at the time of acceptance testing, where all categories of vulnerabilities are fixed in the deployed solution. Additionally, periodic VAPTs must be done yearly from the date of acceptance and additional VAPT should be done , upon any major upgrade in solution or solution's respective modules.</p>		

324.	EMS's Network Configuration Analysis feature should allow Network Configuration Analysis Reports that help to diagnose and resolve faulty configurations such as reports on all network devices that have a start-up-running conflict (don't have a sync) as well as the ones that have their start-up and running configurations in sync. It should also be able to provide reports on Configuration Change Trend –a report that provides the historical trend of all configuration changes during a specific time period , aiming to allow to manage network better by performing extensive / in-depth configuration analysis on all device types in network.		
325.	The system must be able to build and visualize network topology using SNMP, information in ARP tables from routers, MAC tables from layer 2 switches. The discovery should be automated and continuous.		
326.	It should support various discovery protocols to perform automatic discovery of all L2, L3 Network devices across MPLS and or any further Network connectivity's planned in future.		
327.	The tool should support dual-stack (IPv4&IPv6) shall be able to discover IPv4 only, IPv6 only as well as devices in dual-stack. In case of dual stack devices, the system shall be able to discover and show both IPv4 and IPv6 IP addresses.		
328.	The tool shall also be able to work on SNMP v1, v2c & v3 based on the SNMP versions so as proposed solution is able to monitor and manage the supplied equipment/devices as per the RFP. It shall provide an option to discover and manage the devices/elements based on SNMP as well as ICMP. It should also support extensive discovery mechanisms and must easily discover new devices using mechanisms such as SNMP Trap based discovery.		
329.	Solution must also allow for inclusion and exclusion list of IP address or devices from such discovery mechanisms		
330.	The proposed solution must provide a detailed asset report, organized by vendor name, device type, listing all ports for all devices.		
331.	Should be able to create and allow management of Service requests by integrating with the IT Helpdesk solution/module. Must have Email-to-Incident feature, allowing automatic conversion of emails to tickets if a person sends an email to helpdesk. Must maintain a history tab against all the communication happened on		

	a ticket and/or maintains a thread not only on per ticket Id basis. but also on email sender, cc responses to that email chain.		
332.	<p>Must have the following Device (especially for Networking Devices) Monitoring Capabilities. Should be able to generate alarms based if any of the parameters being monitored goes out of threshold range.</p> <p>These parameters should be allowed to record in a report for a selected time duration.</p> <p>The reports should be allowed for performance issues observed while monitoring during a specified period of time (performance reports).</p> <p>The performance reports should also be allowed for only a specified group of devices.</p>		
333.	i. Device Monitoring parameters such as a Device status and Availability , b CPU Load Data , c Device Disk Space Data ,d Memory Utilization etc.		
334.	ii. Device Hardware Monitoring such as a Device Fan Monitoring , b Device Temperature Monitoring ,c Power Supply Monitoring etc.		
335.	<p>Link Monitoring: Graphically represent the various links over geographical maps. Each link's information on status and latest alarms generated shall be presented to give a quick bird's eye view of entire link health.</p> <p>These parameters should be allowed to record in a report as well.</p> <p>Should be able to generate alarms based if any of the parameters being monitored goes out of threshold range.</p>		
336.	Solution should allow per link parameters such as a Link Availability Monitoring b Average Response Time Data for each link(optional) c Bandwidth Utilization Monitoring d Network Latency Data e Network Topology f Packet Loss Data g Network Discard Data, Error Rate etc. Note - optional meaning that if this parameter is there in the MIB or provided by the respective element management system, this has to be implemented at EMS.		
337.	Should allow to generate Link Monitoring Reports with parameters such as a Performance Data Analysis ,b Performance Data Collection , c Performance Report Generation ,d Traffic Analysis e Utilization and Error Rates .		
338.	Should support Bandwidth Monitoring with parameters such as : a Network flow analysis ,b Netflow collector , c Sflow collector d Jflow collector e Real time monitoring f Bandwidth Utilization etc.		

339.	Should support bandwidth Monitoring Reports with parameters : a API for data extraction , b Single click instant reports ,c Usage history based on hours minutes days , d Top talkers report , e Top Listeners report , f Top users report , g Top hosts report , h Protocol/Application level reports , i Interface level reports , j Customised reports , k Customised email alerts, l Application Mapping, m Device Grouping etc.		
340.	<p>Solutions should allow to maintain Logs such as: a Historical Logs in respective modules, b Interface Error Data/ logs ,c Syslog Messages</p> <p>Solution should have an inbuilt feature of an integrated SysLogServer, i.e. EMS solution should be configured to receive individual syslogs from different systems/solutions/devices. It should be able to parse the SysLogs based on the parameters defined/configured and is able to show the alerts/critical/alarms etc. as per configuration in EMS.</p> <p>In case of no inbuilt feature of a SysLog Server, the OEM may integrate an enterprise grade Syslog server, test and create a customized solution for above requirement.</p>		
341.	It should be able to capture, track & analyze traffic flowing over the network via different industry standard traffic capturing methodologies viz. NetFlow, jflow, sFlow, IPFIX etc. required as a part of Network Traffic Flow analysis system.		
342.	It shall provide key performance monitoring capabilities by giving detailed insight into the application traffic flowing over the network.		
343.	Should monitor Virtual Private Networks (L3, L2), VLANs, MPLS service availability and inventory. It should support in end to end management and view of IPSec tunnels. It should support monitoring of connectivity of all the network elements / servers / other IP equipment as per scope of work		
344.	Should provide inventory view of L3 VPNs, detailed views per L3 VPN. Should be allowed to be exported to reports		
345.	EMS solution must have the capability to import MIBs of 3rd party Data Center components so as trap monitoring can be enabled.		
346.	Access Privileges and Roles for different users/operators		

347.	Each user/ operator should be allowed to provide with user roles that should include operational service views enabling operators to quickly determine impact and root cause associated with events.		
348.	The system should integrate with Helpdesk / Service desk tool for automated incident logging and also notify alerts or events via e-mail or SMS besides GUI/browser.		
349.	Permissions and Features to access the system should be defined within the roles / based on roles and access privileges definer per user basis.		
350.	Should be able to send e-mail or Mobile –SMS to pre-defined users for pre-defined faults.		
351.	Solution should visualize server, network, storage, and logical application environments and dependencies and compliance state.		
352.	Besides the alarms per device the solution should be able to provide per device virtual visualization of interfaces, management interfaces, interface status, link status etc.		
353.	In addition, provided the device's MIB supports, the solution should be able to provide the power(ON/OFF) status of each supplied device in the bid. In case of multiple power modules per device, multiple power status per device should be shown wherever the MIB allows this feature.		
354.	Provides Layer 2 and virtual LAN (VLAN) network information. Should be allowed to be exported to reports		
355.	Should provide out of the box Reporting such as: • Site-to-site quality-of-service reports using any inbuilt tools within supplied modules. • VPN / IPSec reports		
356.	EMS module shall allow all types of reports to be exported to .pdf & comma-separated values (.CSV) formats.		
357.	Reports generation should be customizable , so as to allow to choose the fields/columns/parameters per report.		
358.	Should provide agentless discovery and shall use Industry-standard protocols such as WMI, SNMP, JMX, SSH etc. to perform discovery		

359.	The solution must have the ability to add network devices into inventory via auto discovery or the auto discovered devices into the inventory (if not yet added to inventory)		
360.	Network Traffic Flow Analysis System		
361.	It shall be able to capture, track & analyse traffic flowing over the network via different industry standard traffic capturing methodologies viz. NetFlow, jflow, sFlow, IPFIX etc.		
362.	It shall provide key performance monitoring capabilities by giving detailed insight into the application traffic flowing over the network.		
363.	It shall be able to monitor each interface status per device, network fault at device level, per device basis - network traffic utilization, packet size distribution, protocol distribution, application distribution, top talkers etc. for network traffic. It should be able to generate reports for above stats.		
364.	It shall collect the real-time network flow data from devices across the network and provide reports on traffic based on standard TCP/IP packet metrics such as Flow Rate, Utilization, Byte Count, Flow Count, TOS fields etc.		
365.	The platform must provide complete cross-domain visibility of IT infrastructure issues		
366.	The platform must consolidate monitoring events from across layers such as Network, Server, Database, 3rd party tools (monitoring solutions to monitor key DC elements like wires / cables etc.)		
367.	The solution should support single console for automated discovery of enterprise network components e.g. network device, servers, virtualization, cloud, application and databases		
368.	The solution must support custom dashboards for different role users such as Management, admin and report users		
369.	The solution must allow creating custom data widgets to visualize data with custom preferences		
370.	The solution must support multiple visualization methods such as gauge, grid, charts, Top N etc.		
371.	The solution should provide top level view of infrastructure health across system, networks, application and other IT Infrastructure components into a consolidated, central console		

372.	The reporting and dashboard module of the solution must have capability to integrate with 3rd party data center monitoring solutions. Bidder needs to integrate EMS with proposed DCIM solution, Element Management solutions provided by OEM's w.r.t NEs proposed in this bid & NEs of phase-1 bid (if element management system is available via phase-1 bid) & also incorporate the MIBs of NEs proposed in this bid.		
373.	Upon the integration with DCIM solution, the EMS solution should have the capability to present critical metrics w.r.t Data Center infrastructure in the form of a dashboard to gain visibility into overall health of the other infra components.		
374.	The solution must support visually representing network outages and other error conditions on the topological map. In General , Solution should be able to generate alarms based on if any of the parameters being monitored goes out of configured threshold / threshold range.		
375.	Provision the following Device Performance Monitoring Capabilities for Servers (Application/Historical /others) & Integration with OEM's Element Management solutions to achieve described monitors from installed servers, is also the scope of requirements.		
376.	1 Physical Server Monitoring parameters such as a. Server Status and Availability , b. CPU Utilization c. Memory Utilization d. Process Monitoring e. File System Monitoring f. Disk Utilization etc.		
377.	2 VMware and ESXi Host Monitoring parameters such as a. Status and Availability b. CPU Utilization c. Memory Utilization d. Monitoring of Virtual Hosts e. Disk Utilization f. Network Utilization g. Hardware Monitoring h. Performance Dashboard i.VM Replication Monitoring etc.		
378.	3 Linux server Monitoring parameters such as a. Server Status and Availability , b. CPU Utilization , c. Memory Utilization ,d. Process Monitoring ,e. File System Monitoring ,f. Disk Utilization ,g. Network Interface Monitoring , h. services, i. applications , j. open ports etc.		
379.	4 Windows server Monitoring such as a Server Status and Availability b CPU Utilization c Memory Utilization d Process Monitoring e File System Monitoring f Disk Utilization g Network Interface Monitoring h Event Log Monitoring etc.		

380.	5 Database Monitoring parameters such as a Database Availability b Database Process and Logs c Locks and Buffers d Tablespace/Database e Sessions/Connections f Database Memory h SQL Statistics i Database Jobs etc.		
381.	6 SSL Certificate Monitoring or SSL Certificate Inventory Management for its attributes such as a. expiry b. Availability c. Validity d. Certificate Information		
382.	7. SLA Management parameters such as a Customized SLA for Applications , b SLA escalation ,c SLA Reporting feature to provide downtime per equipment , link etc. primarily for cases, where tickets due to alarms are sent to ticketing tool etc.		
383.	EOL and EOS Management - Keep track of all devices (networking, servers and other equipment) for their end of Life , end of Sale, and end of Support.		
384.	Should be able to integrate with Service Desk module to support and handle large volume of incident, event, service requests, changes, etc.		
385.	Network Configuration Module		
386.	Should allow Network Configuration change management on multiple vendor devices for all the hardware equipment as stated in the 'General Requirements' of this document. Change management should include the tracking and version maintenance of configuration changes in real-time on each of them.		
387.	It should allow to audit configurations and deploy configuration updates in single or multiple devices at once. From the scalability perspective, purposed solution should support managing configurations of hardware of more than 180 different OEMs , including all major OEMs .		
388.	It should have enhanced network security by preventing unauthorized configuration changes and notifying the admin about any changes .		
389.	The proposed management solution's network configuration module, should be able to automatically backup configurations (for both text based and binary configuration files etc.) on routers, switches, and other network devices. The trigger to automatic back up may be setup in EMS such trigger could be upon a detection of a configuration change and/or an automatic timer based. The configuration change should be recorded with the date-time stamp along with the user info. The EMS must integrate with Firewall and Access point OEM's EMS to bring the backup of these configuration files for Firewall and Access Point,		

	provided OEM's Element Management System allows a automatic mechanism and a standard interface for backup of configuration files from Access Points and Firewall, then these files must be brought to proposed EMS.		
390.	Should be able to backup, compare and restore network configuration for all the networking devices defined as per scope of work of this tender. Backup system should allow to store for at least 1 year of historical data. Further, it should be a provision on the tool for configuring the data retention and log archival so that operator(s) may be able to control as per its discretion.		
391.	Should be able to make single or bulk configuration changes across multiple devices. For example: such as change community strings, update ACLs etc. Also, in case a user changes the configuration on a NE, the EMS's Configuration change management module should be able to detect this change per user basis. It should be able to display the new configuration , show its difference with old configuration version and also show which user made the changes at what time etc.		
392.	The system should be able to clearly identify configuration changes / policy violations / inventory changes across the network of networking devices from multiple OEMs .		
393.	The system should support secure device configuration capture and upload and thereby detect inconsistent “running” and “start-up” configurations and alert the administrators.		
394.	The proposed system should be able to administer configuration changes to network elements by providing toolkits to automate the administrative tasks (such as mentioned below) of effecting configuration changes to network elements: a) Capture running configuration b) Capture start-up configuration c) Upload configuration d) Write start-up configuration e) Upload firmware		

395.	The proposed solution must able to merge configuration changes & load it to multiple network devices		
396.	Should allow automated and scheduled backups of configuration files , it should tend to eliminate manual configuration management , by allowing features such as and not limited to - scripts , automation etc.		
397.	Should allow to Encrypt and store configuration files in enterprise standard and internationally complaint standards. The users session and data on the storage should also be encrypted including the support terminal session or shell session .		
398.	Should allow to setup / mark a configuration as the best working "Baseline Configuration" , so as to allow for a quick backup during a disaster / crisis event.		
399.	Should provide configuration mechanisms that allow roll back to a selected 'marked' working configuration version or any baseline configuration whenever any configuration change is unsatisfactory.		
400.	Should follow configuration versioning and comparison between saved versions		
401.	Should support Network Configuration Analysis: Should allow through in-depth analysis of configurations.		
402.	In the integrated Configuration Analysis module it should allow to perform configuration analysis for network equipment's like router's and switches. The configuration management module should also be integrated with AAA/AD server for providing RBAC. The solution should be completely multi-tenant in every module for allowing RBAC. There should be logging of each command performed at any NE by the users . This should be logged and reported at AAA server.		
403.	The system should be able to capture the configurations in the database/datastore.		
404.	The system should be able to differentiate the old and current configuration with version control.		
405.	The system should be able to capture exact configuration change with color coded highlights, and date and time of addition, modifications, removal or change in the configuration.		

406.	The system should be able to provide the reports for various actions described under Network configuration management feature. The reports may include status and summaries of different activities such as device configuration details, changes in configuration (within a specified period / per user basis), network inventory, conflict between start-up and running configuration, device audit details, policy compliance details etc.		
407.	The system should be able to export the configurations in TXT , CSV , PDF formats.		
408.	Description for IPAM & Switch Port Management Specs		
409.	The IPAM Solution must support 65,000 IP Address Management for both IPv4 & IPv6 together. It should be scalable upto 1,80,000 without any hardware change.		
410.	The solution must be agentless can be an pre-integrated module of EMS or it could be a separate module. It may be noted that the functionality and specifications sought via IPAM and Switch Port Management Module may be fulfilled as an integrated module of EMS.		
411.	The IPAM solution must be run on high availability as per previously suggested architecture for HA in this document.		
412.	The solution must be flexible to allow the creation of custom fields for objects in IPAM. This must be configurable via the Web GUI.		
413.	The solution must include an application programming interface (API) in order to interface with IT Helpdesk / network and/or asset management systems, a configuration/change management database (CMDB) solution or other applications. In General, the overall system should support REST APIs(PUSH and PULL) for integration with 3rd party systems such as EMS or otherwise the proposed IPAM module may be a part of EMS system itself.		
414.	The IPAM solution should be able to seamlessly integrate with DNS and DHCP records.		
415.	It should support the features such as : Creating groups, Subnet ,Adding subnet to group , Automatically detect devices , Manual / Automatic allocation of IP to the nodes, Support in Manual/Automatic assigning the IP to the device interface via EMS, Manually adding the device, Display Interface name with IP address , Scanning devices in the network , IP address scanning within the subnet or IP address scanning within the group etc.		

416.	The IPAM solution should be able to create its own widget / report to display customized subnet reports that should include details such as free IP, used IP and per IP Address details such as DNS name, Last alive time, Status(Used, Unused) etc. i.e. any other custom fields added		
417.	The IPAM solution should have the ability to locate the available subnets inside a Supernet. This is to provide assistance to users when creating subnets inside an aggregated Network. IPAM system should support VLSM (Variable Length Subnet Masks)		
418.	IPAM user interface must be web-based without specific browser vendor requirements		
419.	In General , the history and backup data w.r.t IP Address Management Tool and Switch Port Management Tool should be saved for at least 1 year and The IPAM shall have inbuilt adequate security tools to avoid any unauthorized access to the system in particular and solution as a whole .		
420.	IPAM system should be able to export reports in PDF, CSV format and in any other formats		
421.	IPAM system should have support for workflow process for various administrator roles and should include a change approval oversight capability. It must allow to create different user profiles with different level of permissions. Preferably, it should integrate with AAA/AD to achieve this feature.		
422.	The system's audit records should contain a timestamp, username and record modified.		
423.	The system's reporting engine should include audit reports.		
424.	The system should support granular rights administration, limiting the functions and rights to user and/or Zone level by integrating with Active Directory.		
425.	The tool should show up and map the devices plugged into each switch port in real-time		
426.	Should allow admins to find out which devices were connected to a particular switch at a specified period of time		
427.	Advanced search mechanisms should allow the devices searching by MAC, IP Address, DNS Name etc.		
428.	Allow grouping of switches for easy identification and control		

429.	The IPAM tool should be able to perform and track address space allocations in accordance with routing topology to model and support optimize route aggregation via EMS..		
430.	Should provide notifications upon Switch port status changes		
431.	Should allow to Manage Switch Port using SNMP by allowing administrators to block or unblock a switch port		
432.	The IPAM component must perform host discovery using a variety of methods including ping, TCP port 80 connections, Address Resolution Protocol (ARP), cache data, and device OS mapping etc.		
433.	MAC Address Scan – The tool must have the ability to scan a given range of IP Addresses and display the MAC addresses for various devices available in the given range. Also must display the IP address, port number, community, MAC address, DNS name, system name (<i>optional</i>), and system type (<i>optional</i>).		
434.	DHCP Scope Monitor – The tool must be fully integrated with the DHCP system and support the capability to fetch all the scopes that are defined in the DHCP Server and display the total, used, and available IP Addresses in each scope. When the number of available IP addresses falls below a defined value, the display should indicate the criticality.		
435.	The IPAM must have the capability to find free address space across a range.		
436.	The IPAM must scan multiple subnets simultaneously. It should be able to make out which IP address have been assigned statically .		
437.	It must provide the requisite information to EMS to build and visualize network topology using information in ARP tables from routers. It may also use the information of MAC tables from layer 2 switches as well for this feature.		
438.	The system must have the capability to group the subnets in a hierarchical tree format		
439.	It should be able to handle Device/Network templates (Creation, Deletion, Modification & Uploading) and the system must automatically discover the network's subnets or import them from a CSV file		
440.	DNS Resolver – The IPAM tool must provide the host name of any node whose IP Address is known and vice versa with additional details like the default net mask, network type, and the status for the forward and reverse lookups		

441.	DNS Scan – Using this tool one must be able to scan a range of IP addresses to see whether the forward and reverse lookup actions are working fine for the devices. It may also show the response time. In cases where an IP is not used in the network, the tool must prompt that the system does not exist in the network.		
442.	The IPAM shall support appropriate logging functionality on itself as well as on external source like Syslog servers. All the activities made by administrators must be logged inside an Admin Audit Log Report.		
443.	The IPAM must provide integration with Vmware, HyperV, Openstack etc. and discover the VMs with clientless integration. The solution must provide details of virtual servers / VMware server running Linux or Windows as deployment of a virtual appliance		
444.	Asset Inventory Monitoring & Management		
445.	An asset management module should be in-built part of proposed EMS from same EMS OEM.		
446.	System shall have an ability to track (automatic/manual/via integration with other modules of overall system) and manage all data center and remote location assets including but not limited to IT/IoT/Non IT/Software(s) - Racks, Network equipment, IT equipment, Intelligent PDUs, sensors, application(s) etc.		
447.	System should allow to search / locate a data center asset based on various filters/fields, it should also provide detailed information about the assets. It should allow a provision / feature with ability to define down time for Assets to conduct Maintenance activities.		
448.	The solution should allow for discovery to be run on a continuous basis which tracks dynamic changes near real-time in order to keep the topology always up to date. This discovery should run at a low overhead, incrementally discovering devices and interfaces.		
449.	Should provide the compliance management report in the integrated view showing network topologies.		

450.	The tool shall be able to work on SNMP v1, v2c & v3 based on the SNMP version supported by the device. It shall provide an option to discover and manage the devices/elements based on SNMP as well as ICMP. It should also support extensive discovery mechanisms and must easily discover new devices using mechanisms such as SNMP/ Trap based discovery. Solution should be able to integrate with EMS to auto discover the IT Assets via its scan/discovery process		
451.	Solution should allow to manage the physical aspects of all IT assets & Non IT Assets —from request of movement , to their end of Life , Sale, & Support related timely triggers, making it easier to optimize costs, mitigate security, and compliance risks.		
452.	Assets and Non IT Assets will include category of devices as defined in scope of work such as Network switches, routers, firewalls, application servers, historical servers, packet brokers, etc.		
453.	The Asset system should allow Role based access.		
454.	While performing discovery, solution must also allow for a feature that allows to include and exclude IP addresses / subnets or devices from auto discovery.		
455.	The proposed solution must provide a detailed asset report with different filters mechanisms, organized by vendor name, device type, listing all ports for all devices. Should be able to create Service requests for each of the asset.		
456.	Tool should provide the information about equipment's dependency on each other. This affects the overall performance of the data-center. Performance data of each equipment in the data-center should be available for analysis. Thus any product vendor for an underperforming asset can be alerted and the inventory is either repaired to perform or replaced in time. Alerts for such scenarios should be generated in EMS system		
457.	It must easily and automatically discover newly add devices to the n/w.		
458.	The system shall provide an easy method of searching and locating assets and asset groups		
459.	The system shall support an importing of asset list from a 3rd party tool in CSV format into an asset database. If a specific asset in not defined, the tool shall be able to create it.		

460.	The system should allow the user to create Asset profile with unique serial no, asset tag, asset owner, asset life, details of assets etc. The assets must be searchable with any of the parameters such as serial number, asset tag . It must allow to list out assets based on owners , location etc.		
461.	The system should allow the user to search & track assets at any time to know the status of an asset – location, assigned to which user, contracts/warranty/AMC renewal for maintenance etc.		
462.	Overall system's solution should support virtual installation or server based installation. This should not be a proprietary hardware based or embedded based solution.		
463.	Change Management (CM) Module Requirements		
464.	The CM solution could be a module within EMS supplied. The CM solution should be web based, must also work in HA mode.		
465.	Solution should allow to create different roles (preferably after integrating with AAA/AD) with different privileges such as Change Requester, Change Record Authorizer, Change Implementer , Change Advisory Board Member , Change Manager , Post Implementation Reviewer , Customer Approver , Customer Tester , Work-Flow Administrator etc. This will ensure the restricted access to devices. Different privileged users should be able to play the role of implementers, reviewers, approver etc., so as to allow a workflow w.r.t change request. Change management must be implemented in conjunction with configuration management, so as wherever required, a view of the infrastructure may be provided to assess an impact of a change.		
466.	CM should allow to Create, View , Edit the Change Requests (CRs) .		
467.	Each CR must be allowed to follow a chosen / predefined work-flow . The solution may also allow to create work flow for CR.		
468.	The solution must facilitate Assigning of roles to ensure that a change process workflow is started, managed, and implemented by the right people .		
469.	The solution must provide Change history: Captures the change history of all the fields and can be viewed for each record. Audit trails like changes done by the user, modification time, current value and previous values.		

470.	The solution should have CR correlation: Linking of CRs to related incidents, problems, assets, Cis		
471.	CRs must support Multi Stage custom based approvals.		
472.	The solution should Achieve complete visibility into which CIs have changed.		
473.	The solution must have defined Standard Reports		
474.	CRs should be authorized by Authorizer before taken up further in CM system		
475.	Change Advisory Board Member is able to sign-off, reject, or recommend changes necessary for anything that need to be processed.		
476.	Should be able to provide the status of all CRs (Open, Close, etc.) in a view. It should be filterable per user basis .		
477.	The system shall have integrated ITIL v3 or higher processes complied Operations Management System for Helpdesk, Ticketing, Maintenance and Configuration Management Database (CMDB). The system shall enforce best practices workflow and meet ITIL framework guidelines. All monitoring elements should be stored and accessed from a central datastore. This also should be have RBAC.		
478.	Change Implementer Implements the change and updates the status. In General, the status change of a CR triggers the email request to its configured workflow owners and assigns the new 'action owner'		
479.	Change manager is able to review all the CRs, sets Change Record Authorizers, forwards the CRs to the CAB, issues Change Schedules related with CRs , reviews all the implemented CRs, and Generates Regular Reports		
480.	Customer Approver(s) is able to review and approve the CR before the CR is implemented.		
481.	Customer Tester is able to update the result for a CR		
482.	The solution must Assign downtime time start and end for a CI(Configuration Item)		
483.	The solution should be able to allow Assign Priority, impact, urgency and risk to CRs		
484.	Solution should have its own application and data base. It should be a web based portal hosted in an on premise manner.		

485.	CM Module should allow the end users to create, update, search and get status update of change requests. It should allow the attachments of documentation (such as pdfs etc.) with the CM requests		
486.	It should be able to use IMAP, POP3, SMTP protocols to provide email integration and able to send emails for CRs status as configured . The solution must be able to use IMAP, POP, protocols & should be able to automatically convert service request emails into help desk tickets.		
487.	CMS should be integrated with overall solution or be in-built as a part of EMS.		
488.	Supplied solution should have a standard search , advance search mechanism on the fields for enhanced productivity.		
489.	Should be able to well integrate with the supplied IT Helpdesk / Service Management solution to achieve the overall functionality. This is to ensure that a mapping between Ticket & CR can be made. On same lines, in case the CR is created in the Change Management Solution it should trigger an automatic Ticket creation in IT Helpdesk solution.		
490.	Supplied solution should be able to generate insightful reports on changes, compliance, inventory and other vital network parameters.		
491.	Supplied solution should allow at least backup / history database maintained for at least 1 year including but not limited to configurations, alarms, services , assets, asset locations, network performance related database		
492.	The EMS system as a whole should be able to send notifications on GUI, email and SMS		
493.	The supplied CM solution should be provided with a hardware capability to support 15000 service requests in a day with at least 50 simultaneous users. Hardware supplied should be capable enough to store data at least for 1 year.		
494.	Features for IT Service Management (ITSM) / IT helpdesk solution for managing the day to day Operations		
495.	The solution should have its own IT Service Management (ITSM) / IT helpdesk solution which is based on ITIL best practices. Should provide an GUI interface w.r.t emails. The ITSM system shall be capable of assigning, tracking tickets to users manually as well as automatically based on predefined rules, and shall support notification		

	and escalation over email. E.g. A ticket with 'Network fault' as a keyword(s) tickets gets automatically assigned to a user whose role is configured network technician.		
496.	IT Service Management solution must be an industry standard, enterprise grade web based solution that enables end users to create service requests and must be placed in High Availability Mode as sought in General requirements.		
497.	The ITSM solution proposed should be designed & architected so as to allow to use ITIL framework and processes across sought modules including DCIM / EMS, Alarm / Incident Management, Asset Management , CMDB etc. , so as unique data and workflows can be maintained for overall solution. The ITSM solution should automatically provide suggested knowledge base articles based on Incident properties/attributes/tags/keywords etc. The ITSM solution must integrate with all the supplied and required modules such as DCIM,EMS,AIM,IPAM,CMS,RLPAT solutions etc.		
498.	There should be a database in place to store data w.r.t integrated Tickets, Alarms, Incident & Problem management, Service Level management/ targets , configuration data base etc. The ITSM tool should allow to export the ticket reports in different formats such as HTML,PDF ,Excel etc.		
499.	The ITSM solution should support multi-tenancy with complete data isolation as well as with ability for analysts based on access rights to view data for one, two or more organizational units.		
500.	The system should be able to create service desk tickets/ work orders/approval receipts for any work to be done in data center. For example - mounting a new server, connecting it to specific ports on network, powering it ON from specific outlets of the iPDU etc. This workflow should have various pre-defined approvers/reviewers / implementers etc., who should be able to approve/ disapprove/ comment(add remarks etc.) . The tickets templates should be customizable .The system should allow to edit , assign , search and track these tickets. It should allow to provide dash boards with different filtering options that also allow to take out customized reports such as w.r.t ticket status , groups / user wise assignments etc. System should also allow to search a ticket and track its historical details of various actions performed on same.		

501.	The ITSM solution should provide to browse through Configuration Management Database (CMDB) which should offer powerful search capabilities for configuration items (CIs) and services, enabling to quickly find Configuration Item as well as their relationships to other CIs.		
502.	Configuration item should get automatically attached with the ticket to enable the support team for faster resolution.		
503.	ITSM solution should provide an option for adding new workflows/catalogues with custom SLAs & multistage approvals. The workflows / catalogues may be based on hierarchy, roles, category of service request per catalogue. It should include notification and escalation capability if approval is not performed within the defined time period. Tool should be able to send alerts via SNMP Trap. Also, Optionally, it may support XML notifications, Pop-up window and Audio alert.		
504.	The ITSM Solution should be a web based solution and should be accessible via the browser.		
505.	ITSM solution should provide out-of-the-box categorization, as well as routing and escalation workflows that can be triggered based on criteria such as SLA, impact, urgency, CI, location, or customer. Solution should be able to provide the aging reports of the tickets based on various types/categories of tickets. The Notification mechanism should allow administrator to define notification channel per time of day and trigger multiple notifications per person.		
506.	Solution should provide modern data analysis methods for insights and adding value to service desk .		
507.	The solution should be able to record the actions of users per session basis including details such as time stamp etc. as per user for audits and records purposes.		
508.	Integrates with any underlying service management solution including Service Desk, Change Management, Service Level Management and CMDB for request fulfilment.		
	General Features II		
509.	The EMS solution should be able to group devices into different categories.		
510.	The EMS solution must display the topological information in graphical form representing nodes and groups of nodes on a realistic/custom static geographical map.		

511.	Uses the communications channel with enhanced security features, audit logs, and access control policies to provide direct connections to servers in any location.		
512.	The system (IT Helpdesk system, etc.) shall allow to create request i.e. Tickets or work orders (and approvals) with customizable task details and timelines so as to allow measurement of the time taken for a task/work completion or equipment / service downtime and hereby allowing the calculation of SLA and penalties via the tool. The IT Helpdesk system should allow the attachments of documentation (such as pdfs etc.) with the CM requests .		
513.	The IT Helpdesk system should also be integrated with AD/LDAP for providing the access to users		
514.	The system should support filtering options to search and list down tickets.		
515.	The system should have a SLA Management module. The system should provide the operator ease of access on SLA creation for nodes and services. Escalation should be configurable and optimized for day-to-day operations. It should allow to add formulas for helping any calculation in SLA / downtime . SLA module should be customizable to provide the penalty details as per SLA criteria mentioned in the tender. The provided reports are ready to be used for penalty calculations.		
516.	Document Management/Collaboration and Knowledge-based module - The system should also have knowledge-based module built in for the operators for quick issue identifications and resolution, thus minimizing the time and efforts. This will should server as a historical database of documents and can be used for training of new recruits, resolution of alarms, resolution of certain specific issues. Users should be able to add information, categorize it, add files to it. The proposed storage for Collaboration and Knowledge-based module artifacts should be scalable. It must sufficient enough by default to store data for the complete contract period. In case of any shortage of storage , SI will be required to immediately(within 1week notice) provide the double the original capacity storage base.		
517.	The applications (solution) per hardware should be installed as follows and must work in High Availability Mode: The bidder may also suggest the optimized solution for effective/smooth execution of modules/application. However, it will be decision of ERNET India will be final in this regard.		

	<p>Server#One to host apps: DCIM+RLPAT Solution+ Solution for Heat and Humidity Sensors</p> <p>Server#Two to host apps: EMS (including its all components such as Network Device Management, Device Configuration Management, Network Performance Management, IPAM, Switch Port Management, Change Management, Network Asset Management etc.) .</p> <p>Server#Three to host apps: IT Helpdesk Tool.</p> <p>Server#Four to host apps: AAA Server & Automated Infrastructure Management etc. The AIM is also allowed to be installed on a separate server as well.</p> <p>Server#Five to host apps: Active Directory (with DNS, DHCP etc.) - may be combined in Server # Four in a VM based configuration.</p> <p>A replica of above is to be provided at DR.</p> <p>OEMs having all required modules of EMS in a single software, is allowed to provide all EMS modules on a single server.</p>		
518.	OEM of EMS Solution should be ISO 27001&ISO 27034 certified		

PART –C Manpower Specification

Minimum Qualification, Relevant Experience & Certifications at DC/DR & Shastri Park, Delhi

Sl. No.	Role	Min. Qualification, Relevant Experience & Certifications	Compliance (Yes/No)
1	Project Manager	B.E./B.Tech/MCA 8 Years relevant experience in IT/ITeS (minimum 6 years' experience for managing large data centers) + CCNP-DC/ JNCIA-DC or equivalent Certified	
2	Security Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience in IT Network Management + Certification: OEM certified engineer on proposed security equipment Such as JNCIP- SEC, Fortigate NSE 4, CCNP Security or equivalent	
3	Network Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience in IT Network Management + OEM certified engineer on proposed networking equipment Such as JNCIP, CCNP or equivalent. Must have 5 years of work experience on leaf and spine architecture	
4	Network Engineer	B.E./B.Tech/MCA in Computer/IT / Electronics + 4 Years relevant experience in Network Management + OEM certified engineer on proposed networking equipment Such as JNCIP, CCNP or equivalent. Must have 3 years of work experience on leaf and spine architecture	
5	System (Server) Specialist	B.E./B.Tech/MCA in Computer/IT / Electronics + 8 Years relevant experience of different flavors of OS with Storage + Must have 5 year of experience on	

		offered OEM Servers.	
6	System (Server) Engineer	B.E./B.Tech/MCA in Computer/IT / Electronics + 5 Years relevant experience of different flavors of OS with Storage + Must have 3 year of experience on offered OEM Servers.	
7	EMS & DCIM Engineer	B.E./B.Tech/MCA + 3 Years relevant experience + Proposed EMS certified engineer, if any or Should have CCNA/JNCIA or equivalent certification.	
8	Help Desk Support Staff	B.E./B.Tech/ MCA in Computer/IT / Electronics with 3 Year relevant experience.	