ERNET INDIA

(an autonomous Scientific Society under Department of Electronics and Information Technology, Ministry of Communications and IT, Govt. of India)

Notice: Inviting bids for Procurement of items and services for ERNET India's VSAT Network

ERNET India is providing VSAT services throughout the country from its VSAT HUB located in Bangalore to the Education and Research Community in India.

It is intended to do "**Procurement of items and services for ERNET India's VSAT Network**". Interested parties may log on to our Website www.ernet.in and Central Public Procurement Portal http://eprocure.gov.in/cppp/ for further details/ tender document.

Registrar & Director(P&A)

Note: Above is published in the News Papers: Hindustan Times and Times of India dated 19.10.2015 (Delhi Edition)

TENDER DOCUMENT

Procurement of items and services for ERNET India's VSAT Network

Tender No: EI-D/Tech-050/6/2014-VSAT
Date: 19.10.2015

- Pre Bid : 27.10.2015 at 11:00AM
- Last Date for submission of queries, if any : 28.10.2015 (3:00PM)
- ERNET India's response on queries, if any : 10.11.2015
- Due Date of Bid Submission : 23.11.2015 (3:00PM)
- Date of Opening of Bids : 24.11.2015 (3:00PM)

Tender Fee : Rs. 2,000/- (Rupees Two Thousands)
EMD Amount : Rs. 55 lakh (Rupees Fifty Five lakh) valid for 225 days from 23.11.2015 and with claim period of 3 months

By

ERNET India
(Under Department of Electronics and Information Technology
Ministry of Communications & Information Technology
Government of India)
10th Floor, Jeevan Prakash Building, 25, K.G. Marg
New Delhi -110 001

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SECTION – A

ABOUT ERNET INDIA AND ITS NETWORK

ERNET India is an autonomous scientific society under Department of Electronics and Information Technology (DeitY), Ministry of Communications and Information Technology (MCIT), Government of India (GOI).

ERNET India is providing Internet and Intranet connectivity and other value added services to education and research institutions in the country. ERNET India has Captive VSAT CUG network license from DoT. ERNET India's VSAT network is operating in star topology on **normal C-band of INSAT series satellite**. The Hub (central site) is located at Bangalore and VSATs at various Government education and research, etc institutions / organizations spread all over the country. Presently, ERNET India is providing DVB-S/MFTDMA type Broadband VSATs based on SkyEdge-I IP technology of M/s Gilat Satellite Networks and SCPC VSATs based on Skylinx 8000 of M/s ViaSat.

The emphasis of ERNET India is to widen its network and to provide Internet/Intranet access, ICT infrastructure and Value-added ICT services to all Government education, research, etc institutions of the country.

SECTION – B

INSTRUCTIONS TO BIDDER

1. Tender

1.1 Tender consists of various sections and the Bidder shall go through all the sections of the Tender document and must comply with each section.

2. Compliance

2.1 Compliance in the form of **'Complied' or 'Not Complied'** shall be given against each clause and specification of Tender (compliance may also be given section/annexure wise or an undertaking on the letter head may be submitted for the compliance of entire tender). The relevant document wherever required may be enclosed.

2.2 Please note that any deviation from laid down requirement/specification shall be brought out separately in deviation sheets to be attached by the Bidder. Clause 14 shall also be referred.

2.3 Each page of the Bid and cuttings/corrections shall be duly signed and stamped by the Bidder. Failure to comply with this requirement may result in Tender being invalidated.

3. Availability of Tender, its Fee and EMD amount

3.1 The Tender Document is available on the web site of ERNET India (www.eis.ernet.in) and on e-Procurement web portal of Government of India (http://eprocure.gov.in/cppp/) and can be downloaded from either location till the due date of bid submission.

The bidder participating in the tender must submit the following tender fee and EMD amount along with the Technical Part of the bid:

Tender Fee	: Rs. 2,000/- (Rupees Two Thousands)
EMD Amount	: Rs. 55 lakh- (Rupees Fifty Five lakh)

Note:

(i) Tender Fee must be submitted in the form of Demand Draft or Banker's Cheque drawn on / issued by any Nationalized / Scheduled Indian Bank in favour of ERNET India, payable at New Delhi.

(ii) Earnest Money Deposit (EMD) of said amount must be furnished in the form of an irrevocable unconditional Bank Guarantee /DD /Pay order / Fixed deposit issued by any Nationalized/Scheduled Indian Bank in favour of ERNET India, New Delhi. The Bank Guarantee shall be valid for 225 days from the original "Date of submission of Bids" against Tender Document, i.e. 23.11.2015.

3.2 Bids placed in sealed envelopes should bear the following inscription:-

"Bid for the Procurement of items and services for ERNET India's VSAT network"

"Tender Enquiry No.: EI-D/Tech-050/6/2014-VSAT dated 19.10.2015
"Pre Bid Meeting: 27.10.2015 at 11:00AM
"Due Date & Time: 23.11.2015 at 3:00PM."
"Due Date & Time for Opening of Bids: 24.11.2015 at 3:00 P.M.

3.3 Bids placed in sealed envelopes/covers bearing the information as stated in para 3.2 should be received in ERNET India up to 1500 hrs on 23.11.2015 to the following:

Sh. Avanindra Singh, Additional Director
ERNET India
10th Floor, Jeevan Prakash Building, 25, K.G. Marg
New Delhi –110 001

For all matters relating to this tender, the bidder shall have to communicate in writing to the officer as mentioned above. The bidder must take the acknowledgement of their submitted written request from the officer.

4. Modification and Withdrawal of Bids

4.1 The Bidder may modify or withdraw its bid after the bids submission, provided that written request of the modification or withdrawal is received to ERNET India by the Bidder prior to the last date prescribed for the submission of bids.

4.2 The Bidder's modification or withdrawal request for his bid shall be sent by hand to ERNET India. Bidder must take its acknowledgement from ERNET India.

4.3 No bid shall be modified subsequent to the last date & time for the submission of bids.

4.4 No bid shall be withdrawn in the period between the last date & time for the submission of bids and the expiry of the bid validity period as per tender terms. Withdrawal of a bid during this period may result in the Bidder's forfeiture of its bid EMD.

4.5 In case it becomes necessary for the Bidder to make changes in their original financial bid (on account of technical clarification, deviations, etc. given by ERNET India and to bring the equipment in line with the required specification), the price adjustment or full revised financial bid should be submitted by the bidder in a separate sealed cover before the last date & time of bid submission, duly superscripted as:

"PRICE ADJUSTMENT TO PART-II, FINANCIAL BID, Against Tender No……. and his initial bid submitted on date …… (Bidder name:……"

5. Addressing, clarifications/ Amendment in the Tender Document

5.1 Any inquiries regarding clarification/interpretation/queries/contents in connection with this Tender should be sent **in writing only by hand** to Sh. Avanindra Singh, Additional Director, ERNET India at the address given at **para 3.3 latest by date 28.10.2015 by 3:00 PM. Any queries received after this date / time will not be entertained. The**

prospective Bidders must take acknowledgement of all inquiries/queries given to Sh. Avanindra Singh, Additional Director. Queries received through fax, e-mail, courier, registered post etc shall not be entertained.

5.2 Queries/clarifications sought by the bidder (which will be received within time frame as stated in para 5.1) along with ERNET India response will be posted on ERNET India website www.eis.ernet.in and CPP Portal by 10.11.2015. If there is any delay in posting the ERNET India's response to the queries/clarifications sought by the bidders, the information for the same will be posted on ERNET India's web site. Accordingly, all the bidders must refer ERNET India website and also CPP Portal for the clarification, if any, before last date/extended date of bid submission.

5.3 ERNET India may, for any reason, whether at its own initiative or in response to a clarification requested by prospective Bidder, modify the Tender Document by an amendment before last/extended date of bid submission. The same will be posted on ERNET India's website. Thus, all bidders must refer ERNET India website and also CPP portal pertaining to this tender before last date of bid submission.

6. Validity of the Bid

6.1 The bids shall be valid for a minimum period of 180 days from the **bid submission date**. During the said period of 180 days, the Bidder shall not be entitled to revoke or cancel the offer or to vary any term thereof. In case of the Bidder revoking or canceling the offer or varying any term in regard thereof, the Bidder's Earnest money deposit shall be forfeited by ERNET India.

In case, it is required to extend the bid validity period, it can be extended by mutual consent of bidders whose bid is under evaluation at that particular stage of time. In such case, bidder is required to extend the validity period of EMD for the extended validity period.

7. Language

The Bidder shall quote the rates in English language and international numerals. The rate shall be in whole numbers. In the event of the order being awarded, the language of all services, manuals, instructions, technical documentation etc. provided for under this contract, will be English.

8. Correction in Bid

All changes, alterations, corrections in the bid shall be signed in full by the person(s) signing the bid with date. No eraser and/or over writing is/are permissible.

9. Contents of Bid

9.1 The Bid will be in **two** parts:

(i) Part-I (Technical Bid)
(ii) Part-II (Financial Bid)

9.2 **Part-I - Technical Bid in one sealed cover containing:**

9.2.1 The Compliance Statements completed in all respects as given in clause 2 above.

9.2.2 Earnest Money Deposit (EMD)

9.2.3 Tender Fee

9.2.4 Power of Attorney/Authorization with a seal of the company, of person signing the bid documents.

9.2.5 All documents (signed and stamped) as per the **Qualifying criteria** as mentioned in **Section-E** of this tender must be enclosed. All the relevant information as per **Annexure-VII** must be provided with supporting documents. Bidders not qualifying to the eligibility criteria will be disqualified.

9.2.6 List of all clearances, approvals, licenses etc required from various agencies (like DoT, DoS, local bodies, etc) to purchase, establish, operate and maintain the new as well as existing VSAT Network items as per this tender should be mentioned in detail.

All types of coordination with various agencies to arrange these clearances, approvals, licenses, etc shall be done by Bidder. **Charges towards these coordination services, if any, should be included in Pricing Schedule.**

However, ERNET India will provide all necessary documents from its office required to get these clearances, approvals, licenses, etc and would pay/reimburse all charges/fee payable to Government Agency to obtain these clearances, approvals, licenses etc from them on submission of its documentary proof on actual.

9.2.7 Complete Bill of Material (un-priced) as per Bill of Material and tender should be quoted in all respect.

9.3 **Part-II (Financial Bid) shall be in another sealed cover containing:**

9.3.1 The Financial Bid shall include the price of all line items as given in the Bill of Material at **Annexure-IV**. The bidder shall quote the price of all items line wise, otherwise the bid is liable to be rejected.

9.3.2 Quotes of all imported items should be in US$ and bidder shall use the format as given in **Annexure-IV A**.

9.3.3 Quotes of all indigenous items should be in Indian Rupees and the bidder shall use the format as given in **Annexure-IV B**.

9.3.4 The list of all deliverables shall be fully reflected in the financial bid completed in all respect. In case of any missing information, the bid is likely to be rejected.

9.3.5 The prices of all the items shall be in line to the clause 10 of Section-B.

9.3.6 The financial bid shall be submitted in a separate sealed envelope marked **"Financial Bid - Part II".**

10. Price

10.1 The Bidder shall confirm that quoted prices shall be firm and fixed and subject to no escalation whatsoever till the validity period of the contract or as specified in tender. All imported items must be quoted in US $ and all indigenous items in Indian Rupees. In case of imported items, the full custom duty applicable to the Foreign Equipment (FE) component must be specified separately in the prescribed format. The rates applicable for statutory levies such as Customs Duty, Excise Duty, Octroi, Sales Tax, Service tax, VAT etc. must be indicated separately in the prescribed format. The prices must be quoted strictly in the prescribed formats at Annexure-IV.

Any ambiguity in the prices offered in the prescribed format will lead to rejection of bid.

10.2 ERNET India at its option, may place the order on the foreign party on FOB/CIF basis for imported equipment on the written advice of successful L-1 bidder.

10.3 Notwithstanding any of the Bidders specific formats for pricing, item-wise cost of each item shall be given to enable a comparative analysis to be made individually of all equipment and services for establishing the network.

10.4 The Bidder shall quote for all the items, services, etc as per the tender. Partial submission of bids will be liable for rejection.

11. Transfer of Bid Document

11.1 Transfer of Bid Documents by one Bidder to another is not permissible.

12. Procedures for Opening of Bid Documents

12.1 Part I containing technical part of the offer will be opened at 1500 hours on 24.11.2015 at the office of ERNET India, 10th Floor, Jeevan Prakash Building, 25, K.G. Marg, New Delhi -110 001. The bidders or their authorized representatives who submitted the bids may present during bid opening.

12.2 Part-I of the Bids, accompanied with requisite **Tender fee** and **Earnest money**, shall be scrutinized and processed by the ERNET India to ensure whether the same are in confirmatory with the tender requirements. Subsequent queries of ERNET India, if any, on the technical details, clarifications or any other information should be replied positively within the time specified, failing which Tenders shall be finalized on the basis of the information available in the bid. It shall, therefore, be in the Bidders' interest to give complete and comprehensive technical particulars/description and details in the bid.

12.3 The financial bid of only those bidders shall be opened whose technical bids have been examined and found technically acceptable. The date & time of opening of financial bid shall be intimated (through any means i.e. Phone/FAX/letter/e-mail, etc) to those bidders

whose technical bid have been found technically acceptable and such bidders or their authorized representatives may present during financial bid opening

13. Comparison and Evaluation of Bids

13.1 The Bids received to ERNET India will be evaluated by ERNET India.

13.2 First, Part-I/the technical bids will be evaluated. The technical bids meeting all terms and conditions of the tender, including all qualifying criteria for responsiveness of tender, shall only be accepted as technically qualified bids.

13.3 The Part-II/financial bid of technically accepted bids will only be evaluated. The financial bids shall be financially evaluated based on the bill of material. The Lowest bid (L-1) will be evaluated for total price of all the items mentioned in the Bill of Material.

13.4 Financial comparison of the bids for L-1 shall be made without taking custom duty component. However, the bidder shall indicate the rate & amount of custom duty as per format given at **Annexure-IV A**. At the time of actual purchase of items, ERNET India may pay custom duty component or may claim custom duty exemption applicable to ERNET India. For claiming custom duty exemption, ERNET India will provide required documents to the bidder when demanded by the bidder.

13.5 For financial comparison to evaluate L-1 bid, the cost of all items upto the site (i.e. on site price at ERNET India's user) inclusive of all components, like sales tax, service tax, VAT, entry tax, etc. shall be taken. Accordingly all components shall be indicated and taken in the financial bid. However, custom duty component will not be taken for financial comparison for evaluating L-1 bid.

The breakup of the prices shall be provided by the bidder in Annexure-IVA and IVB. (Annexure-IVA is for Dollar value component and Annexure-IVB is for Rupee value component).

It shall also be noted that bidders need to mention the correct rate of custom duty (and its amount) applicable to each items in accordance to its category & classification & Government guidelines. If it is found that custom duty mentioned by the bidder is higher than the value which should be as per the item's category & classification & Government guidelines, ERNET India reserve the right to direct the bidder to get it corrected and ERNET India will pay it accordingly.

13.6 **For financial comparison of the bids for L-1, the conversion rate of foreign currency into India rupees (as per RBI reference rate) will be taken on the date on which Part-II, financial bid will get opened for the purpose of commercial evaluation.**

14. Rejection & Return of Bid

14.1 ERNET India reserves the right to reject any or part of Bid without assigning any reason at any time. The documentation submitted by Bidders shall not be returned. ERNET India also reserves the right at its sole discretion, not to award any order under the

Tender called. ERNET India shall not pay any costs incurred in the preparation and submission of any Bid.

14.2 If the Bidder gives wrong information in the Bid, ERNET India reserves the right to reject such Bids at any stage or to cancel the contract, if awarded, and forfeit the Earnest Money and BGs.

14.3 Canvassing in any form in connection with the Tender is strictly prohibited and the Bids submitted by the bidders who resort to canvassing are liable for rejection and EMD will also stands forfeited.

14.4 If a Bidder has a relation or relations, employed in the capacity of an officer of ERNET India, the authorizing authority inviting Tender shall be informed of the fact along with the bid, failing which ERNET India, at its sole discretion, may reject the Bid or cancel the contract and forfeit the Earnest Money / BGs.

14.5 Bids from bidders without proper authorization from the manufacturers shall be treated as non-responsive and will be rejected. The format and list of such authorization required from the manufacturers of various items is given at Annexure-VI.

14.6 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If the bidder does not accept the correction of the errors, its bid will be rejected. If there is a discrepancy between words and figures, the amount in words will prevail.

14.7 The Bidder must quote price of each item of Bill of Material, otherwise bids are liable to be rejected.

14.8 Bids, in which any of the particulars and prescribed information are missing or are incomplete, in any respect and/or prescribed conditions are not fulfilled, shall be considered non responsive and are liable to be rejected.

14.9 No deviation in the required technical items will be accepted.

14.10 ERNET India may waive any minor non-conformity or irregularity in a bid which does not constitute a material deviation. ERNET India's decision in this regard shall be treated as final.

15. Earnest Money

15.1 The Earnest Money Deposit (EMD) amount of **Rupees 55 lakh (Rupees Fifty Five lakh**), shall accompany the bid. The EMD shall be furnished in the form of an irrevocable unconditional Bank Guarantee/ DD / Pay order/ Fixed Deposit issued by any Nationalized/Scheduled Indian Bank in favour of ERNET India, New Delhi. The Bank Guarantee shall be valid for 225 days from the original date of bid submission as mentioned in the Tender Document with additional **claim period of 3 months**.

15.2 The EMD of all unsuccessful Bidders will be returned within two months from the rejection of their bids or after expiry of the final bid validity, at ERNET India's discretion.

The EMD of the successful Bidder will be returned after 60 days of the signing of the Rate Contract (the validity of the EMD if required will need to be extended accordingly) subject to (i) submission of Bank Guarantee (BG-RC) and (ii) submission of BG-1 for POs issued during the validity of EMD, as per clause 16 of this section.

15.3 If the successful Bidder fails to enter into a rate contract with ERNET India within 15 calendar days (or extended time permitted by ERNET India) by submitting BG-RC after the date of issue of notice of acceptance of bid and /or fails to submit the Bank Guarantee (i.e. BG-1 as mentioned under clause 16) to ERNET India within one week (or extended time permitted by ERNET India) from the date of issue of PO, the EMD and Bank Guarantees amount shall be forfeited/en-cashed

15.4 Any Bid not accompanied with EMD will be considered non-responsive and rejected. The public sector companies will also have to deposit EMD as per **clause 15.1 above**.

15.5 No interest or any other expenses, whatsoever in regard to Bank Guarantee (deposited in any form) will be payable by ERNET India on the EMD in any manner.

16. Bank Guarantees

16.1 The Bidder, whose Bid is accepted, shall submit the following Bank Guarantees:

(i) The bidder will submit Bank Guarantee (say PBG-RC) of 2% (Two Percent) of the total equipment value of tender excluding services like AMC, etc for the period of rate contract to adhere its execution as well as other terms and conditions of tender. It will be submitted by the bidder to ERNET India at the time of signing of the rate contract.

(ii) The Bidder will also submit Bank Guarantee (say BG-1) of 8% (Eight Percent) of the total amount/value of the POs (Purchase Orders) issued for both indigenous and non-indigenous items, valid for one year to ERNET India, extendable to cover warranty period.

This Bank Guarantee will be further extended for the AMC (Maintenance) period (time-to-time) to also cover the AMC (Maintenance) of those items for which AMC purchase orders will be issued by ERNET India. In this case, the amount of Bank Guarantee may vary depending on the number of items for which AMC (Maintenance) POs will be issued on the bidder.

For BG-1, the cost of re-used/existing items (which are not procured by the bidder, like Hub antenna, HPA, etc) of sites shall not be accounted. For BG-1, also the cost of operation and AMC shall not be accounted.

Note: After completion of one year of rate contract (RC) and for purchase orders of total cumulative value up to Rs. 5 (five) lakh issued during six months time span, submission of BG-1 (i.e. 8% of PO value) is not mandatory. In such cases, 8% payment of PO value will be hold at the time of release of payment to adhere BG-1. This 8% payment will also be released if bidder submits BG-1 of equivalent amount.

(iii) In case of imported items, Purchase Orders will be placed by ERNET India on the Bidder and OEMs (as per the advice of bidder). In this case, the Letter of Credit (s) shall be opened by ERNET India through our Banker. The Bidder shall also be required to submit the Bank Guarantees (say BG-2) of the equivalent amount of the LC value (s) at the time of submission of PI to ERNET India valid for a minimum period of 6 months (extendable till the acceptance of the equipments as per ATP given in **Section-C**). The exchange rate for BG will be Telegraphic Transfer (TT) selling rate of the BG issuing bank as on the date of the issuance of BG and a certificate to this effect from the concerned Bank should also be submitted along with the PBG.

16.2 The bank guarantees shall be **deemed to govern the following guarantees** from the successful Bidder, in addition to the other provisions of the guarantee:

16.2.1 The successful and satisfactory supply (including installation, commissioning) of items, services, etc on turnkey basis in accordance with all terms and conditions of the tender and Purchase Order and/ or letters issued by ERNET India.

16.2.2 Bank Guarantee shall cover the entire obligations of the successful Bidder in regard to this tender and rate contract.

16.2.3 In case of any problem, successful bidder will depute his supervisor(s)/engineers to site to resolve problems as per SLA & tender and will remove all defects at Bidder's cost.

16.2.4 In case of any violation of any above condition, the bank guarantee is liable to be en-cashed/ invoked without giving any reason/prior notice to the Bidder. For invocation of PBG, consent of the Bidder shall not be taken.

16.2.5 The bank guarantee (BG-1) will be returned to the successful Bidder at the end of the warranty and AMC (Maintenance) period without any interest. But, the Bank Guarantee (BG-2) submitted by bidder against the imported items and LC opened for these items by ERNET India will be returned after the supply and acceptance of all equipments ordered inclusive of indigenous items pertaining to that PO.

16.2.6 In case submitted Bank Guarantees need to be extended as per the tender terms and the bidder is unable to extend it for further period, the available bank guarantee with ERNET India will be liable to be en-cashed, without giving any reason to the bidder.

16.3 All Bank Guarantees shall be in the form of an irrevocable and unconditional Bank Guarantee on a Nationalized/Scheduled Indian bank in Indian rupees, as per **Proforma attached at Annexure-V. The claim period of all BGs shall be minimum three months.**

Note: Performance Security, PBG, BG and Security Deposit wherever used in this tender document has been used interchangeably.

17. Acceptance of bid

17.1 ERNET India will enter into a Rate Contract with successful Bidder whose financial bid has been accepted as lowest financial bid (L-1) for awarding the work.

17.2 The acceptance of the Bid will be intimated to successful Bidder by ERNET India either by the e-mail or fax or letter or like means.

17.3 ERNET India shall be the sole judge in the matter of acceptance of work and the decision of ERNET India shall be final and binding.

17.4 The Bidder shall complete the awarded work on turnkey basis meeting tender conditions.

18. ERNET India's Right to purchase and vary quantities at the time of Award or purchase.

18.1 After acceptance of the lowest financial bid (L-1), ERNET India will sign the rate contract with the successful bidder as per tender terms. The cost of all the items as per the lowest bid shall be indicated in the contract. ERNET India may purchase the items from this rate contract during its validity period subject to the clause 19 of this Section.

18.2 ERNET India reserves the right at the time of award of work/purchase order, to increase and/or decrease the quantity of items (goods and services) and/or drop items from the items specified in the Bill of Material (BoM) of tender and Rate contract (which will be signed with L-1 bidder) without any change in price and other terms and conditions of the rate contract. ERNET India has right to purchase any items, services, etc as mentioned in the tender (in part or full) and rate contract, during the validity period of the contract on the terms and conditions of the tender and Bidder will be bound to supply these items, services, etc to ERNET India at the cost quoted in their bid meeting all terms and conditions of the tender and bid. ERNET India shall also have the right not to purchase any items (hardware, software, services, etc) against this tender and bid and rate contract.

19. Rate Contract period for Supply of VSAT equipments

19.1 ERNET India will sign the Rate Contract with the successful L-1 bidder for the supply (which includes delivery, installation, commissioning, etc) of items (including hardware, software, services, etc) as per the tender.

19.2 The Rate contract shall be valid for a period of eight and half (8 ½) years from the date of signing of the contract and the validity of purchase of items from this rate contract will be as below:

(i) The rates of all items quoted by the bidder shall be valid for a period of three (03) years from the date of signing of contract. This three years period may be extended for a further period of one (01) year through mutual consent. ERNET India may purchase any of the items from the Bill of Material with maximum increase of 20% in its quantity during this period.

(ii) The rates quoted by the bidder for the services, like operation, AMC, site survey, consultancy, shifting, de-installation, installation, etc shall be valid for eight and half (8 ½) years from the date of signing of this rate contract.

(iii) The total of warranty and AMC period of items will not exceed eight years during the validity period of this rate contract.

However, on mutual consent, the AMC and Hub Operations services may be extended for one year, by extending the Rate contract validity period.

(iv) During the warranty and AMC (maintenance) period as mentioned above, any item which will be required to make the link/system/network functional (which may have gone faulty due to damage, burnt, etc and if such damage is not covered in comprehensive AMC) may be purchased by ERNET India through this rate contract.

19.3 ERNET India reserves the rights to purchase the items from the rate contract as mentioned above and the Bidder shall be bound to supply the items during the aforesaid period on the same rate and terms & conditions as agreed in the contract.

20. Standard Conditions

20.1 All prices should be quoted as final. Commercial negotiations may be held after opening of commercial offer to the extent permitted by CVC guidelines.

21. Address for Correspondence

21.1 The Bidder shall authorize one officer along with the official email id and official mailing address to which all correspondence shall be sent by ERNET India.

22. Liquidated Damages and Penalties

22.1 The successful bidder shall complete the awarded contract (work) on turnkey basis as per terms and conditions of the tender. If the successful Bidder fails to complete awarded work in time, bidder shall pay to ERNET India without prejudice to any other rights or remedy as may be available to ERNET India, a compensation amount calculated @ 1% of the total value of the awarded work per week subject to a maximum of 10% of POs value. In case of unacceptable delay in execution and completion of work, ERNET India may consider to cancel the awarded work order at any point of time.

23. Force Majeure

23.1 ERNET India may grant an extension of time limit set for the completion of the work in case the timely completion of the work is delayed by force majeure beyond the contractor's control, subject to what is stated in the following sub paragraphs and to the procedures detailed there is being followed. Force majeure is defined an event of effect that cannot reasonably be anticipated such as acts of God (like earthquakes, floods, tsunami etc.), the direct and indirect consequences of wars (declared or un-declared), national emergencies, civil commotions and strikes (only those which exceed a duration of ten continuous days) at successful Bidder's factory. The successful Bidder's right to an extension of the time limit for completion of the work in above mentioned cases, is subject to the following procedures:

a) That within 15 days after the occurrence of a case of force majeure but before the expiry of the stipulated date of completion, the Bidder informs ERNET India in writing that the Bidder considers themselves entitled to an extension of the time limit.

b) That the successful Bidder produces evidence of the date of occurrence and the duration of the force majeure in an adequate manner by means of documents drawn up by responsible authorities.

c) That the successful Bidder proves that the said conditions have actually been interfered with the carrying out of the contract.

d) That the successful Bidder proves that the delay occurred is not due to his own action or lack of action

23.2 Apart from the extension of the time limit, force majeure does not entitle the successful Bidder to any relaxation or to any compensation of damage or loss suffered.

24. Arbitration and Laws

24.1 In the event of any dispute or disagreement under or in relation to this tender and contract or over the interpretation of any terms hereinabove contained or any claim or liability of the party, the same shall be referred to the sole Arbitrator to be nominated by mutual consent of both parties therein. The intending party will serve notice in writing upon the other party notifying its intention for appointment of Arbitrator. Should both parties fail to agree on by mutual consent, then ERNET India will appoint the sole Arbitrator. The provisions of Arbitration and Conciliation Act, 1996 will apply. The arbitration proceedings will be held in New Delhi, India. The Arbitrator will give reasons for his award and the award passed by the Arbitrator shall be final and binding upon the parties herein. Such reference shall be deemed to be a submission to arbitration under the Indian Arbitration and Conciliation Act, 1996, or of any modifications or reenactment there of including the rules framed there under.

24.2 This contract shall be governed by the Indian laws.

25. Import License

25.1 ERNET India is an autonomous scientific society under Department of Electronics and Information Technology, Ministry of Communications and Information Technology, Govt. of India. It is registered with Department of Science & Technology for custom duty exemption. Any or all items, services, etc may be purchased by ERNET India with full custom duty or by taking relaxation from paying custom duty, as per the discretion of ERNET India (the same will be mentioned in the Purchase Orders). In case nothing is mentioned in the PO regarding custom duty, then the bidder shall take its clarification from ERNET India within two days from the issuance of POs.

25.2 Bidder will be responsible for clearance of all the imported items from the customs, etc. This will include coordination with the agencies for obtaining Import license, related clearances, approvals, licenses, etc. ERNET India will provide all the necessary documents for the same signed by his office (details of documents and their filled draft copy shall be provided by the Bidder). Custom duty (as applicable to ERNET India and on the imported items) paid by the Bidder for the goods imported will be reimbursed on production of its documentary proof on actual basis.

26. Assignment

26.1 The Bidder shall not assign to others , in whole or in part, its obligation to perform under this contract, except with ERNET India's prior written consent.

27. Sub-Contract

27.1 The Bidder shall notify ERNET India in writing of all sub-contracts awarded under the contract, if not already specified in his bid. Such notification, in his original bid or later, shall not relieve the Bidder from any liability or obligation under the contract.

28. Delays in the bidder's Performance

28.1 Delivery of the goods (items, services, etc) and performance of service shall be made by the bidder in accordance with the time schedule specified by ERNET India in its Time Schedule and as per SLA.

28.2 An un-acceptable delay by the bidder in the performance of its delivery obligations shall render the bidder liable to any or all of the following sanctions: forfeiture of its performance security, imposition of liquidated damages, and/or termination of the Contract for default.

28.3 If at any time during performance of the Contract, the bidder or its sub-contractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the bidder shall promptly notify ERNET India in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the bidder's notice, ERNET India shall evaluate the situation and may at its discretion extend the Bidder's time for performance.

29. Termination for Insolvency

29.1 ERNET India may at any time terminate the Contract and Purchase Orders by giving written notice to the bidder, without compensation to the bidder, if the bidder becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to ERNET India. Under this circumstance, BG will be en-cashed/ forfeited.

30. Termination for Convenience

30.1 ERNET India may by written notice sent to the Bidder, terminate the Contract and Purchase Orders, in whole or in part (for any item, services, etc) at any time for its convenience. The notice of termination shall specify that termination is for ERNET India's convenience, the extent to which performance of work under the Contract and Purchase Order is terminated, and the date upon which such termination becomes effective.

The notice period in case of termination for convenience shall be 30 days.

In case of Termination for convenience, ERNET India shall make 100% payment for the items and services delivered as per the Purchase Orders (POs) subject to the following:

-The items and services shall be delivered meeting time guidelines, technical specifications and their acceptance as per the tender.

-The payments for the items and services which will be delivered partially (against the POs) shall not be made.

In case of remote VSAT AMCs, ERNET India may terminate the AMC of VSATs (either in whole or in part) at any time without mentioning any conditions and as per the convenience of ERNET India with a notice period of one week.

31. Termination for Default

31.1 ERNET India may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the bidder, terminate the Contract and Purchase Orders (POs) in whole or in part:

(a) If the bidder fails to deliver any or all of the goods including services, installation, commissioning, integration with all terms & conditions mentioned in the tender within the time period specified in the Contract/tender/POs, or any extension thereof granted by ERNET India pursuant to **Clause 23**: OR

(b) If the bidder fails to perform any other obligation(s) as stipulated in the rate contract/ tender /POs.

31.2 In the event ERNET India terminates the rate contract/POs in whole or in part, pursuant to Clause 31.1, ERNET India may procure, upon such terms and in such manner as it deems appropriate, goods similar to those undelivered, and the bidder shall be liable to compensate ERNET India for any excess costs for such similar goods (it shall be maximum upto POs values). However, the bidder shall continue performance of the Contract/tender/POs to the extent not terminated.

32. Price Fall

32.1 During the rate contract period, if bidder reduces the sale price of items & services than the price chargeable under the Rate Contract, bidder shall forthwith notify such reduction of sale price to ERNET India and the price payable under the contract for the items and services supplied after the date of coming it into force of such reduction shall stand correspondingly reduced in the rate contract / POs.

33. Passing of Property

33.1 Ownership shall not pass to ERNET India unless and until the system has been delivered, installed, commissioned, operationalized, functional and accepted, in accordance with the terms and conditions of the tender and to the entire satisfaction of ERNET India.

34. Domestic Manufacture Clause

34.1 Preference will be given to Domestically Manufactured **E**lectronic Product in procurement. Guidelines as per Govt. notification No. 8(78)/2010-IPHW dated

10.2.2012, and subsequent amendments/clarifications will be followed for implementation. Bidders must submit an undertaking on notarized Rs. 100/- stamp paper as per **Annexure-XI** mentioning the percentage of domestic value addition (in terms of BOM) for each quoted product under a schedule to avail any applicable preference at the time of placing of purchase orders.

34.2 The above preference will be subject to satisfying eligibility criteria, technical specifications / technically qualified bid and matching the L1 price by the bidder (s), etc.

34.3 Bidders who do not provide the undertaking shall not be considered for receiving this preference.

34.4 The bidder quoting false information will be cancelled and the EMD will be forfeited.

35. Black-listing of bidder

35.1 In case of any serious breach by the bidders pertaining to this tender as well as violation of norms and guidelines of tender procedures of Government of India, ERNET India will have the right to black-list the bidders & firm, as per rules.

36. Cancellation of the tender

36.1 ERNET India at any time during the tender proceedings /process and without giving any reason shall have full right to terminate and/or cancel the tender. The bidders shall not have any right for any claim on ERNET India in such case. In such case, only the Security Deposits submitted by the bidders (without any interest) will be returned to them within two months from the termination/cancellation of the tender.

SECTION – C

TENDER REQUIREMENTS AND GENERAL TERMS & CONDITIONS

1. Purpose

1.1 This Tender document includes requirement in respect of description/specification of items and their quantity, delivery, installation, commissioning, integration and maintenance and operations services. The purpose of the tender as detailed in various sections is as below:

(i) Supply of items to upgrade the existing DVB-S (TDM/FTDMA) based Baseband at Hub to DVB-S2 ACM CCM /MFTDMA type Baseband
(ii) Supply of items to upgrade the existing DVB-S/FTDMA (Skyedge –I IP) based VSATs to DVB-S2 ACM CCM /MFTDMA based VSATs for remote sites
(iii) Supply of SCPC VSATs and related items
(iv) Maintenance of Hub side equipments
(v) Maintenance of remote VSATs
(vi) Operation of the Network

Supply of items as mentioned above (the list of all items is mentioned in the Bill of Material at Annexure-IV) will include equipment delivery upto the concerned sites, their installation/commissioning/integration and activation of the system/link showing their good functionality for Internet, Intranet access and related applications.

1.2 The overall commissioning and integration of the supplied items as well as their integration with the existing network items into one seamless good functional network so as to meet the performance of the entire network including all VSATs satisfying all technical and functional requirements as per the tender.

1.3 The equipment should meet all the specifications and performance tests as mentioned in the tender.

1.4 The scope of the Tender is covered in **Section - D**.

2 Obligation during Warranty

2.1 All goods or material shall be supplied strictly in accordance with the specifications. The goods/materials supplied and used by the successful Bidder and its workmanship should be of proper quality so as to fulfill in all respects the operating conditions and other requirements specified in the tender.

2.2 If any trouble or defect originating with the design, materials, workmanship or operating characteristic of any materials arise any time during the validity of the warranty period; the Bidder, at his own expense and at no cost to ERNET India, should

as promptly as possible make such alterations, repairs and replacements at site as may be necessary for the functioning of the equipment in accordance with the specifications**.**

2.3 ERNET India may at its own discretion remove / replace such defective material at the Bidder's expense, if the Bidder does not act reasonably within maximum of four weeks time, after being informed.

3 Factory Inspection

3.1 If required, ERNET India or its representative shall have the right to inspect or to test the items to confirm their conformity to the ordered specifications at any time. The supplier shall provide all reasonable facilities and assistance to the inspector at no charge to ERNET India. In case any inspected or tested goods fail to conform to the specifications, ERNET India may reject them and supplier shall either replace the rejected goods or make all alterations necessary to meet specification required, free of cost to ERNET India.

4 PATENTS, SUCCESSFUL BIDDER'S LIABILITY & COMPLIANCE OF REGULATIONS

4.1 Successful Bidder shall protect and fully indemnify the ERNET India from any claims for infringement of patents, copyright, trademark or industrial design rights arising from the use of the Goods or any part thereof.

4.2 Successful Bidder shall also protect and fully indemnify the ERNET India from any claims from successful Bidder's workmen/employees, their heirs, dependence, representatives etc or from any other person(s) or bodies/companies etc. for any act of commission or omission while executing the order.

4.3 Successful Bidder shall be responsible for compliance with requirements under the laws and shall protect and indemnify completely the ERNET India from any claims/penalties arising out of any infringements. The Bidder shall also be responsible in fulfilling all norms, criteria of Department of Telecommunications, Government of India as well as also bound with the DoT letter no 815-66/2011-DS dated 03.06.2011 including any amendment thereafter.

The Bidder shall also ensure that the items/ goods(items or goods means – all h/w, all s/w, all services, etc) they supply are safe to connect in the network, have been checked thoroughly for risks and vulnerabilities, all addressable vulnerabilities have been addressed, non-addressable vulnerabilities have been listed with remedial measures and precautions provided. The Bidder shall cover all aspects related to security of supplied items, services and cases of breach, particularly the security breaches pertaining to supplied items and services, as per Indian regulations.

5 Substitution & Wrong Supplies

5.1 Unauthorized substitution or materials delivered in error of wrong description or quality or supplied in excess quantity or rejected goods shall be returned to the successful Bidder at his own cost and risk.

6 Insurance, Freight & Part Supplies

6.1 Arrangements to be made by the bidder to transport equipment by road/air/sea and deliver the same at the **site (the address to be indicated by ERNET India)**.

6.2 The supply of goods/items ordered should be fully completed at the user remote site in 1 (one) shipment within the stipulated delivery schedule (in case two or more part shipment is mandatorily required, prior written permission from ERNET India shall be taken by the successful bidder). Partial shipment at the remote site is not allowed unless and until instructed/allowed by ERNET India.

6.3 The bidder shall be responsible for all types of loss, damage, etc to the supplied items till the supplied items have not been successfully installed, commissioned, activated and accepted by ERNET India.

7 Dispatch & Delivery of equipments

7.1 The successful Bidder shall provide /forward **two sets of proof of dispatch and delivery documents** to the Sh. Avanindra Singh, Additional Director, ERNET India, Ministry of Communications and Information Technology, 10th Floor, Jeewan Prakash Building, 25, K.G. Marg, New Delhi -110 001, by hand with acknowledgement.

8 Installation, Commissioning and Acceptance of the equipment

8.1 The bidder shall be responsible for installation, commissioning and System integration of the equipments supplied/re-used as part of tender with the existing equipments at the Hub, Bangalore and at the remote sites and to configure the VSAT network for operation and comprehensive maintenance and for the full functionality of the network system.

8.2 The bidder would undertake civil works for installation of antenna at remote user sites with non-penetrating mount and IFL cable conduiting from antenna to the IDU. Any other civil work like power cabling, site preparation etc. for commissioning of the VSAT Network sites shall be the responsibility of the ERNET India. Other civil works, like concrete platform, earthing, etc shall be done as per the purchase orders.

8.3 The upgraded VSAT Hub, remote VSAT, VSAT network System, new VSATs and any other items supplied through this tender should finally conform to the all terms and conditions as mentioned in this tender.

8.4 The acceptance test (which can confirm technical specifications as desired by ERNET India), which involves the operation of the complete Goods/items/services, etc integrated with the existing equipments, shall be conducted by the bidder in the presence of authorized representative of ERNET India. All expenses for special devices if required, if any, for installation, commissioning and acceptance of the Goods/items/Services, etc shall be borne by the bidder.

Mainly, the acceptance test of the equipment shall be conducted at/from Hub location for Upgraded hub baseband with few TDMA remotes, SCPC VSATs network, RF equipments, any others, etc. However, if desired by ERNET India, the tests shall also be

conducted at few selected remote locations and the bidder is liable to conduct and show the desired test.

8.5 The bidder shall describe in advance the acceptance process, tests and the system on which bidder proposes to demonstrate the correct working of the equipment supplied both individually and as an integrated system. The acceptance process and test will be as per the mutually agreed terms.

8.6 The above tests shall demonstrate the satisfactory operation of all equipment as an integrated VSAT Network covering full range of the functions of the equipment. All simulation equipment shall be provided by the bidder wherever necessary, to simulate all input and output functions on the test configuration. ERNET India shall provide Personal Computer, Local Area Network equipment at HUB and at remote user sites, if required.

8.7 All test facilities required for factory acceptance tests at the manufacturer's premises, in case desired by ERNET India, shall be made available by the bidder.

8.8 In order to pass the acceptance test, the VSAT Network must, as a complete system, operate for fifteen (15) consecutive days, 24 hours a day, at 99.9% up-time efficiency. Up time is defined as productive and error-free time of the HUB equipment and VSAT equipment at remote users using the Manufacturer's standard test procedures. Any un-utilized time, during the tests, will also qualify as up-time provided there are no hardware malfunctions.

8.9 In case the required Performance is not obtained, the equipment will be run for an additional number of days till the efficiency of 99.9% is achieved. This will be evidenced by a certificate of acceptance duly signed and/or counter-signed by representatives of the ERNET India which shall be deemed to be acceptance of the equipment. The bidder shall send such certificate to ERNET India.

8.10 The bidder shall conclude the Acceptance test not later than 30 days from the installation of the VSAT Network in the presence of person(s) or agency designated by ERNET India. The bidder should intimate the date of successful installation of VSAT Network to ERNET India.

8.11 If the Acceptance Tests do not conclude as per agreed acceptance test procedure to the satisfaction of ERNET India within the duration specified in the implementation plan, ERNET India shall notify the same to the bidder. The bidder shall replace, at his cost, the whole or any part of the equipment and VSAT Network as may be necessary for conclusion of the acceptance tests to the satisfaction of ERNET India within a further period of sixty (60) days. In this case, LD clause shall be applicable.

8.12 Again, if Acceptance Tests do not conclude as per agreed acceptance test procedure to the satisfaction of ERNET India after the expiry of sixty (60) days (as mentioned in above clause 8.11), ERNET India shall have the right to reject the equipment in respect of which the acceptance tests are not satisfactorily concluded and to terminate this contract to the extent it relates to such equipment and in that event ERNET India shall have the right to invoke all the remedies available to them under this Contract. In addition, the bidder shall also pay to ERNET India, a penalty at the rate of 10% on the entire cost of the equipment

supplied as part of this Contract, from the date the payment was made by ERNET India to the bidder till the date of invocation of Bank Guarantee and recovery of amount.

8.13 ERNET India shall, however, have the right to reduce the period of 15 consecutive days, 24 hours a day prescribed for acceptance tests.

8.14 In case the bidder conducts the acceptance test successfully to the satisfaction of ERNET India and notifies the same to ERNET India and ERNET India does not accept or respond otherwise, within 90 days from the day the bidder notifies to ERNET India about successful completion of the acceptance test, the VSAT Network and the equipment would deem to be accepted by ERNET India.

8.15 Apart from ATP, the bidder shall also meet the following:

8.15.1 The Bidder shall be responsible for arranging & maintaining all **test and measuring instruments** required for proper functioning, on-site maintenance and operation of the network at his cost even after acceptance of the equipment. The Bidder will also keep ERNET India informed well in advance for support infrastructure required, if any.

8.15.2 During the installation and acceptance of network items, adequate number of engineers (for 24x7x365days support) identified by the Bidder shall be made available at the Hub station to coordinate the installation, commissioning, integration and acceptance of the equipment. The engineers deputed at hub will receive and handle the complaints of remote sites and will coordinate to resolve them in stipulated time.

8.15.3 The Bidder should specify the infrastructure requirements for the installation of VSATs during site-survey at the site. The site survey work shall include the work to collect and provide all data to obtain WPC, SACFA and operating license for VSATs or its related items. The bidder shall also provide all help to fill up the applications and coordination to get the above mentioned approvals in time. Bidder should submit one copy of site-survey report to ERNET India user and one signed copy to ERNET India HQ.

8.15.4 The Bidder shall be responsible for installation and commissioning of all supplied network items (including all hub and remote VSATs) at ERNET India and user sites as well as their integration with the existing network items (the details of existing network items are given in the tender). All items (including VSATs) installed should meet the performance test (as in Section-F).

8.15.5 The installation shall be carried out in conformity with the local fire rules and regulations as applicable.

8.15.6 The performance test shall be carried out by the Bidder in the presence of ERNET India or its user or any other person(s) or agency designated by ERNET India at the time of installation and commissioning of VSATs at the user sites.

8.15.7 The VSAT will be accepted after the satisfactory establishment of VSAT link meeting terms and conditions with respect of Purchase Orders. The Bidder has to submit its installation and commissioning report. Format of Installation and commissioning report of VSATs is at **Annexure-IX**.

9 Time: The Essence of Contract

9.1 The bidder shall comply the Time Schedule as mentioned in tender and at Annexure-III.

10 Delay & Non Conformance

10.1 In case the above time schedule including levy of liquidated damages for late delivery of equipment is not being adhered to, ERNET India has the right to cancel the order wholly or in part without any liability to cancellation charges and procure the goods elsewhere in which case the successful Bidder shall pay the difference, the cost of goods procured elsewhere and price set forth in the order with the successful Bidder.

10.2 In the event of rejection of non-conforming goods, the successful Bidders shall be allowed to correct the non-conformities without extension in delivery period (excluding the time as specified in clause 8.10 of this section). If successful Bidder fails to do so within stipulated time, ERNET India shall have the right to take recourse to clause 10.1 and invoke all remedies available to him under this Contract.

11 Spares

11.1 The Bidder shall maintain required spares at its various regional offices spread over the country for remote VSATs during the warranty and AMC period to meet Service Level Agreement (SLA).

11.2 All the spares for the equipment under the contract will strictly conform to the specifications, quality and will be identical to the corresponding main equipment/components at the sites and shall be fully interchangeable.

11.3 The successful Bidder shall warrant that all spares supplied will be of same make, model, specifications, working conditions, performance at the sites and in accordance with the contract document and will be free from defects in design, material and workmanship.

11.4 For all new items supplied under this tender, the successful Bidder shall guarantee the long-term availability of spares (including sub-items as well as similar new item to replace it) to the ERNET India for minimum 09 years period from the date of publish of this tender. Or full life of the equipment, whichever is higher.

Subject to above, the successful Bidder shall guarantee that before going out of production of spare parts of the equipment covered under the contract, successful Bidder shall give ERNET India at least six (06) months advance notice so that ERNET India (if desired) can purchase those spares/items in bulk or in any quantity.

12 Payment Terms

Payment to the supplier shall be made in the following manner:

(i) **In case of imported items,** the Letter of Credit would be opened by ERNET India through our Banker. However, the bidder would be required to submit the Bank Guarantee (BG-2) as mentioned under **Clause 16 of Section-B.**

(ii) In case of Rupee Value items: 100% of cost of equipment, accessories, services, etc after their acceptance (meeting all tender terms and conditions) shall be released subject to the submission of BGs (BG-1) as mentioned under **Clause 16 of Section-B and** as per the tender conditions.

(iii) Payment towards on-site comprehensive AMC and operations: Payment towards services like on-site comprehensive AMC, operations, etc will be released on quarterly basis after completion of each quarter period subject to providing satisfactory services as per the tender terms and conditions and meeting SLA.

Note: Payment will be subject to TDS and /or WCT, applicable as per Government norms.

13 Deductions

13.1 Payments, as envisaged in **Clause 12**, shall be subject to deductions of Tax / levy / any amount, for which the Bidder is liable under the agreement against this tender.

SECTION – D

SCOPE OF THE TENDER

1. Introduction

ERNET India operates a C-band VSAT Network having its VSAT Hub located in the premises of STPI, Bangalore. The RF spectrum being used is on the Normal C-band transponders of INSAT satellite (presently, it is INSAT-3C). In brief, the VSAT Network of ERNET India comprises of the following basic components:

At Hub side:

(i) RF Chain with 9.2 meter antenna, LNAs, HPAs (TWT type), Up /Down converters, Antenna tracking unit, splitters/combiners, etc
(ii) Baseband of SkyEdge-I with NMS from M/s Gilat Satellite Networks for providing SkyEdge IP Broadband VSATs to the users/sites
(iii) Baseband of Skylinx 8000 with NMS from M/s ViaSat for providing SCPC VSATs to the users/sites

At Remote sites:

(iv) 180 numbers of SkyEdge IP Broadband VSATs in various academic, research institutions, etc spread throughout the country
(v) 05 numbers of SCPC VSATs in various academic, research institutions, etc spread throughout the country

2. Scope of the tender

2.1 ERNET India intends to procure the following items and services:

(i) Items and services required to upgrade the existing DVB-S/MFTDMA type SkyEdge-I baseband to DVB-S2 ACM, CCM/MFTDMA type baseband at ERNET Hub.
(ii) Items and services required to upgrade the existing 170 Skyedge-I IP type DVB-S/MFTDMA VSATs to DVB-S2 ACM, CCM/MFTDMA type VSATs at remote user locations.
(iii) New DVB-S2 ACM CCM/MFTDMA type VSATs.
(iv) SCPC VSAT items for both Hub and remote (user) locations.
(v) Maintenance of Hub side RF chain equipments for a period of eight years (generally renewed on annual basis on the basis of performance).
(vi) Maintenance of upgraded DVB-S2 ACM CCM/MFTDMA type Baseband for a period of eight (08) years including warranty period of new supplied items (generally renewed on annual basis on the basis of performance)
(vii) Maintenance of new DVB-S2 ACM, CCM/MFTDMA types VSATs and upgraded VSATs (existing ones) for a period of eight (08) years, including warranty period.

(viii) Maintenance of SCPC VSATs (both hub & remote side items) for a period of eight years, including warranty period.
(ix) Operation of the Network for a period of eight years (generally renewed on annual basis on the basis of performance)
(x) Miscellaneous items and services

All procured items, accessories, services, etc should meet all specifications, terms & conditions and performance as specified in tender.

3. General Conditions:

3.1 For Hub side items: The bidder shall deliver, install, commission and integrate (with the existing hub and other network items) all hub side items ordered to them for the full functionality of all network items for providing Internet, Intranet access and its related applications to the remote VSAT sites.

3.2 Remote side VSAT items: The bidder shall deliver, install, commission and integrate (with the existing remote side equipments and with Hub) all remote site items for the full functionality of the VSAT link for providing Internet/Intranet access and its related applications to the remote VSAT users.

3.3 The bidder shall ensure to quote and supply all required items and their installation, commissioning, integration with the existing network items so that the entire network seamlessly offers high level of services and meets the Performance tests and other conditions as specified in the tender for providing connectivity to the remote VSAT sites.

3.4 The Bidder will provide the on-site comprehensive warranty and on-site comprehensive AMC services for the new supplied VSATs as well as on-site comprehensive maintenance of existing upgraded VSATs and Hub side equipments (including all hardware, software, accessories, cables, connectors, etc) with required Performance, SLA and meeting tender conditions. The bidder will also provide Hub operations services on 24x7x365 days basis for the entire VSAT network. The Bill of Material required is mentioned at **Annexure-IV**.

3.5 The operation and maintenance services shall be renewed generally on annual basis at the sole discretion of ERNET India.

SECTION–E

QUALIFYING CRITERIA FOR RESPONSIVENESS OF TENDER/BID

The Bidder must meet all of the following eligibility requirements. The bids of non-compliant Bidder will not be technically or commercially evaluated and reflected.

The Bidder should have expertise and "hands on" experience in the field of Satellite Communication (including Wide Area Network design involving Broadband VSATs, Satellite Gateways, system integration, feasibility studies, supply, installation, commissioning, comprehensive on-site maintenance of VSATs as well as VSAT Hub and VSAT Network operations etc.) at least for a period of **Four years** and deploying the latest State-of-the-art technologies.

1. Bidder must have (i) supplied, (ii) installed, (iii) maintained and (v) operationalized at least two Broadband VSAT network (including Hub with RF chain) in the country with a total base of at least 500 Nos. of remote Broadband VSATs. (Captive network of the Bidder is permissible).

2. Bidder must have supplied, installed, maintained and operationalised at least 100 DVB-S2 ACM, CCM/MFTDMA type VSATs and 10 normal SCPC type VSATs in the country of the same type.

   Bidder must have experience of Hub operations, Hub maintenance and remote VSAT maintenance of at least one DVB-S2 ACM, CCM/MFTDMA type of VSAT Network in the country of the same type.

   The Bidder must be engaged in providing above mentioned continuously at least from last one year.

3. The Bidders must have a total IT staff of at least 40 technically qualified personnel in providing the managed VSAT services in the last 2 years. The Bidder must have qualified technical staff deployed all over the country for installation and maintenance of remote VSATs. The Bidder shall have at least 10 support offices including their support channel partners spread throughout the country. Also, the bidder must have at least one support office located in each of the region, i.e., North, South, West and East, which directly belongs to them.

4. The Bidder should have prior experience during last four years in successful execution of VSAT network implementations of at least 2 projects whose individual value is not less than Rs. 200 lakhs.

5. A list of purchasers of DVB-S2 ACM, CCM /MFTDMA type VSATs, normal SCPC type VSATs and High capacity type VSATs (of the same type which are quoted against this tender) through the Bidder as well as through its OEM or its channel partners in the last three years along with quantity must be enclosed.

The list must show at supply of at least 500 DVB-S2 ACM, CCM /MFTDMA type VSATs; 10 normal SCPC types of VSATs and 10 high capacity type VSATs (of the same type which are quoted against this tender) in the last three years with documentary proof in support (mandatory). If this is not provided, the bid stands disqualified.

6. The annual turnover of the Bidder for the last three years should be a minimum of Rs. 100 Crore from Indian Operations (in each year).

7. The Bidder may be Indian or Foreign Company (registered in India under Company Act 1956) but must have office and firm arrangement in India to supply, install, commission and provide support, comprehensive on-site maintenance services and operations of the network on turnkey basis. Any Joint venture /Consortium is not permitted to bid, if found, will disqualify for tender process without any prior notice.

8. The Bidder shall be authorized **DEALER** and shall be in possession of a **DEALER POSSESSION LICENSE** (DPL) and meet norms of DoT for procurement & supply of items as per this tender.

9. The bidder must provide copy of PAN in respect of firm, TIN or Service Tax Registration Certificate allotted by concerned authorities.

10. The bidder must provide a copy of declaration on letter head stating that the bidder is not black-listed on the date of bid submission by any Government Ministry/Department/Organization.

11. The bidder must comply with the Integrity Pact (IP) as declared by CVC, Government of India as a preliminary qualification and sign the Integrity Pact (IP) as give at **Annexure-XII** of the tender.

12. Bidders must submit (i) Tender fee and (ii) Earnest money deposit (**Refer Section B**).

All the above Eligibility Criteria must necessarily be supported by relevant documentation such as Details of VSATs supplied & maintained, Authenticated VSATs list, VSAT n/w operating license, Purchase order copies, Annual reports and balance sheet of the last three years , Project sign-off document, Customer reference list along with contact details, List of Purchaser of similar equipments, number of VSATs installed of same equipment as quoted in the tender (along with their list), operation of VSAT Network, maintenance of VSAT Hubs etc. along with the Technical Part of the Bid.

The Bidder should supply, install and support the VSAT network directly. In case of subcontracting required for civil works, etc, the Bidder shall be solely responsible for the deliverables from these subcontractors and under no circumstance shall transfer the subcontractor's liabilities to ERNET India.

NOTES:

a) The Bidder should submit Manufacturer's Authorisation in the form prescribed in **Annexure-VI.** The list of items for which Manufacturer's Authorisation shall be submitted is also mentioned at **Annexure-VI**.

b) Bidder shall submit the company profile.

c) The bidder need to provide the information of Bidder's Profile in the proforma given at **Annexure-VII.**

d) Bidder is duty bound to observe all the Laws, Rules, Regulations, Policies, Procedures and Guidelines of the Government of India as in force from time to time to supply, establish and operate the supplied VSATs and related network items.

e) The Articles of Association and Memorandum of Association of the Bidder are to be submitted along with the certificate of incorporation.

f) Bidders who do not provide the PMA Affidavit **(as per Annexure-XI)** shall not be considered for receiving this preference (i.e. see Domestic Manufacture Clause of **Section-B**).

SECTION – F

TECHNICAL REQUIREMENTS

1. About existing ERNET India VSAT Network

ERNET India operates a C-band VSAT Network having its VSAT Hub and Network Operation Centre (NOC) located in the premises of STPI, Bangalore. The RF spectrum being used is on the Normal C-band transponders of INSAT-3C satellite. The details of existing VSAT Network of ERNET India is given at **Annexure-I**. Presently, all these existing equipments are in operation / working. If any Bidder desires to see the existing VSAT Hub located at Bangalore, they may visit during any working day (Monday to Friday excluding holidays) between 3:00PM to 5:00PM from **20.10.2015 to 20.11.2015** with written request and approval from ERNET India, New Delhi at the address given at **clause 3.3 of Section-B**.

The existing RF chain Hub equipments as mentioned in **Annexure-I**, para 2 (i.e. existing 9.2M Hub antenna, TWTA HPA, UP/DN converters, LNA, Antenna Tracking unit) will be redeployed by the bidder or will remain same in the upgraded ERNET India VSAT Network.

2. Requirement details:

ERNET India desires to purchase and bidder is required to quote for the following items meeting tender terms and conditions:

2.1 Upgradation / Migration of existing SkyEdge-I based VSAT network

Its requirement and technical details are given at **Annexure-II-A**. However, the general (common) terms, given in this section will also be applicable and may also be referred and shall be complied by the bidder.

2.2 Supply and installation of high capacity SCPC VSAT links

Its requirement and technical details are given at **Annexure-II-B**. However, the general (common) terms, given in this section will also be applicable and may also be referred and shall be complied by the bidder.

2.3 Supply and installation of normal SCPC VSAT links

Its requirement and technical details are given at **Annexure-II-C**. However, the general (common) terms, given in this section will also be applicable and may also be referred and shall be complied by the bidder.

2.4 Maintenance of the Network

- Its includes the following:

At Hub side:

(i) Maintenance of Hub side existing RF equipments

(ii) Maintenance of Hub side new supplied DVB-S2 ACM, CCM / MFTDMA baseband

At remote side:

(iii) Maintenance of new supplied remote VSATs (DVB-S2 ACM, CCM/MFTDMA type)

(iv) Maintenance of upgraded VSATs (DVB-S2 ACM, CCM/MFTDMA type)

At both Remote +Hub side:

(v) Maintenance of high capacity SCPC VSAT links, including its counterpart modem, etc at Hub

(vi) Maintenance of normal capacity SCPC VSAT links, including its counterpart modem, NMS, etc at Hub

Its details are given below in this section.

2.5 Operations of VSAT Network

Its details are given in the subsequent clauses.

2.6 Miscellaneous items

In addition to above, there are few miscellaneous items which are given in the Bill of Material, **Annexure-IV**. Their specifications are given in **Annexure-II-D**.

3.0 General (Common) Terms

All the terms given henceforth in this section shall be applicable to all purchases made from this tender.

4.0 Maintenance of the Network

General conditions of Warranty and Maintenance services of Hub side items and remote side VSAT items are as below (in the entire tender, item or goods includes hardware, software, firmware, services, etc):

1. Warranty will be for the new supplied items and Maintenance (AMC) will be for both new supplied items (after expiry of its warranty period) as well as for the existing Hub and remote side items.

   Both warranty and maintenance (AMC) will be on-site comprehensive basis.

   The AMC shall be awarded on year-to-year basis or even in parts of the year through purchase orders.

   The warranty shall be for minimum one year period of new supplied Hub as well as remote side VSAT, items from the date of their acceptance by ERNET India.

The AMC of new supplied Hub as well as remote side VSAT, items shall be for the period of seven (7) years after the expiry of warranty period. And the AMC of existing Hub as well as remote side VSAT, items shall be for the period of eight (8) years.

Note: **For few items, the required warranty period is more than one year. For these items, AMC period is mentioned in the Bill of material. However, the Warranty + AMC period is not more than eight years. In such cases, Warranty and AMC period are specifically mentioned in the equipment specifications / BoM**.

2. The warranty and maintenance services shall include spares inventory, manpower for 24/7/365 level operations, etc. During the warranty and AMC, the performance of the Hub as well as VSATs should meet all the criteria's of the tender.

3. The Bidder shall accept the AMC of both Hub side items and remote side VSATs items as-is-where-is basis for existing items. However, it is submitted only for information to Bidder that all items at Hub side and remote VSATs are presently in working condition.

4. The Bidder shall do the preventive maintenance of the Hub side equipments on regular intervals. Its prior schedule and requirement should be intimated to ERNET India in advance. If Bidder is not having the sufficient capability to do the preventive maintenance of some of the equipments like Hub Antenna, High Power Amplifiers, etc, then its preventive maintenance as well as maintenance should be carried out with the help of their OEMs or authorized service partners. Thus, if the Bidder is not having the sufficient capability to perform the maintenance of any item (both hardware as well as software) in the network, than Bidder should ensure its back-to-back support from either OEMs or authorized service partners. However, all end responsibility should be of the Bidder in all respect of on-site comprehensive warranty and maintenance.

   The report of preventive maintenance and maintenance performed shall be provided to ERNET India.

5. The Bidder has to maintain the required spares at their at least four Regional offices (east, west, north and south) to provide the warranty and AMC for the network as per the SLA. In case of failure of any equipment, it should be repaired or replaced immediately meeting SLA.

6. The Bidder would deploy sufficient and competent personnel at VSAT Hub, Bangalore to manage the installation, commissioning and integration of new VSATs with the existing Hub items.

7. After the installation of VSATs, the personnel deployed (competent) by the Bidder (for 24x7x365 days basis) at Hub will receive the VSAT related complaints and will coordinate to rectify them as per the SLA to meet the required performance of the VSATs. The Bidder manpower will provide (on daily, weekly and monthly basis) the status of VSAT links, complaints related with VSAT links, follow up action, down time and any other relevant information required by ERNET India officials to run network.

8. The Bidder would deploy competent personnel, preferably from the local at various critical locations so that the problems can be resolved without any wastage of time.

9. The Bidder shall maintain a system for fault reporting and their management ensuring information flow mechanism as per the requirements of the ERNET India. The system should support lodging of complaint, generating trouble ticket number, track on the complaint, view of complaint status, action taken information, close of complaint after problem and total down time records. The system shall be configurable as per the SLA. This system can be a common system maintained by the bidder in his office for its various users.

10. It would be responsibility of the Bidder to arrange and deploy all resources, material, spares, etc. for this purpose including liabilities of the employees/contractors etc.

11. The bidder will sign Service Level Agreement which will be applicable during the rate contract period. The Service Level Agreement is placed at **Annexure-VIII.**

12. The deployed engineers should have at least 2 years experience in the relevant field of handling installation of VSATs, maintenance of VSATs and knowledge of RF section with Degree/Diploma in Electronics/Computer science/ Information Technology or equivalent. It is preferable that the person should have experience in networking also.

5. Operation of VSAT Network

a) The Bidder shall indicate detailed process for operation of the network.

The operation will be for 24x7x365 basis. The operation will include management of spares inventory and network performance.

The number of persons deployed at VSAT Hub, Bangalore of ERNET India for operation of the network should be mentioned.

The Bidder must deploy at least one Engineer and one Technical Assistant during daytime i.e. from 7:00AM to 7:00PM and two Technical Assistants during night hours i.e. from 7:00PM to 7:00AM.

The deployed engineer should have at least 2 years experience in the relevant field of handling/operation of VSAT hub and RF section with B. Tech or B.E in Electronics/Computer science/ Information Technology or equivalent OR 4 years experience in the field of handling/Operation of VSAT hub with Diploma in Electronics/ Computer Science/ Information Technology or equivalent. Engineer should have experience on networking. He should be able to do the link engineering and should be able to optimize the hub network for best performance. Coordination with NOCC, DoS and DoT for analyzing/clearing of cross co-pole and spurious signals on the transponder shall be the responsibility of Hub engineer.

Technical Assistant should have at least two years of experience in the field of handling/Operation of VSAT Hub with Diploma in electronics / Computer Science / Information Technology or equivalent.

Operation of the Hub shall include the network auditing on half yearly basis, if required by ERNET India.

b) For the operation of the network, the Bidder must deploy competent personnel, preferably locals meeting norms of DoT and maintain reasonable level of inventory of essential and key parts both for Hub equipment and Remote VSATs.

c) As part of the operation, the Bidder would establish a fault reporting & management system ensuring proper flow of information. It should support lodging of complaint, generating trouble ticket number, track on the complaint, view of complaint status, action taken information, close of complaint after problem rectification and total down time records. It should be configurable as per the SLA. This system can be a common system maintained by the bidder in his office for its various users.

d) It would be the responsibility of the Bidder to arrange and deploy all resources, material, spares, etc. for the operation of the Hub. The liabilities of the employees/contractors etc. would be of the Bidder.

e) The bidder would ensure quality of service to the users of the network and will also ensure network performance. The work order for operation of the VSAT Network will be renewed on year-to-year based on the performance of the bidder.

f) The manpower deputed at VSAT Hub for the operation of the network shall also do other works related to the network as instructed by ERNET India from time-to-time.

g) The Bidder would sign Service Level Agreement.

6.0 Other terms

6.1 Frequency of Operations

The new supplied VSAT System shall operate in **C-Band**. The Bidder will do the site survey of the remote location and will do the link engineering with proper fade margin for the requirement of 1.8M/2.4M/3.8M antenna at the site considering the parameters applicable for the North-East Region, Sikkim, Andaman & Nicobar Islands, Lakshadweep Islands and Jammu & Kashmir region.

6.2 WPC import and operating license and other statutory approvals:

ERNET India has the Captive CUG VSAT Network license from Department of Telecommunications and also has WPC operating license for its existing VSAT sites.

For all the new VSATs and hub side items, the Bidder shall arrange necessary License (i.e from DoT, WPC, NOCC, etc) for the import, installation and operation of the equipments.

The bidder shall indicate all necessary approvals required for the establishment and integration of supplied VSAT items with the existing ERNET India VSAT network from the Government bodies (Central and State) such as NOCC (for carrier plan), DoT (for Frequency allocation, SACFA, WPC Operating license, etc), etc as per the policies in vogue.

The bidder shall coordinate with DoT for the incorporation of new supplied VSAT network technology, VSAT items (including antenna system, modem, BUC, LNB, LNA, etc), etc in the existing VSAT license of ERNET India and in case the bidder is unable to do so or same is not permitted by DoT, the supplied network equipments by the bidder to ERNET India will out rightly rejected and no payment shall be liable and also all types of penalties will be applicable within the scope of this tender.

It is also the responsibility of Bidder to get necessary licenses from DoT for supply, installation and operation of the supplied VSATs and related items for the acceptance of the equipments.

The license fee paid to the DoT will be borne by ERNET India on actual.

If ERNET India is required to revise its carrier plan during the period of contract, the Bidder shall also provide the revised carrier plan and link budgeting as per the requirement for the appropriate approvals from NOCC wing of DOT, etc. The coordination shall be done by the Bidder. The bidder will also be responsible to modify/change the carrier plan of the network and implement it, as advised by ERNET India as and when requested.

The Bidder will also provide all types of consultancy and coordination in regard to licensing work related to ERNET India VSAT Network so that VSAT Network related licenses should remain in order.

6.3 Network Performance

The bidder would ensure the state-of-the art technology and network design and guarantee fulfillment of the following performance parameters:

1. For Hub (Central site at Bangalore)

The Bidder shall ensure that entire Hub side items (all hardware, software, cables, connectors, antenna, converters, etc) (for the full functioning of remote VSATs) should always be in good working and functional conditions meeting SLA and tender conditions.

- **Network Availability:**
  - VSAT Hub = 99.9% (averaged on quarterly basis)

- **Maximum Time To Repair /Replace (MTTR):**
  - VSAT Hub = Maximum of six (6) hour from the time of reporting of fault.

2. For DVB-S2 ACM, CCM / MFTDMA based upgraded/migrated VSATs

(i) The Bidder will ensure the fulfillment of the following performance parameters during the warranty and AMC, both for the new supplied and existing VSATs:

- Network Response (Ping response) from Remote VSAT to Hub less than 0.80 seconds, under no load condition.
- FTP test from the Hub to show the allocated Bandwidth to the VSAT link.

- Good Internet Browsing on PCs connected over the LAN of VSAT site (For example, 2Mbps Rx throughput at remote VSAT).

(ii) The Bidder shall assure fulfillment of SLA during the warranty and AMC period for both new supplied and existing VSATs:

3. For high capacity SCPC VSATs Network

The bidder would ensure the state-of-the art technology and network design and guarantee fulfillment of the following performance parameters during the warranty and subsequent AMC periods:

- SCPC VSAT link availability = 99.5% (averaged on quarterly basis)
- Maximum Time To Repair (MTTR) SCPC VSAT link = 04 hours from the time of reporting of fault (using redundant items supplied with VSAT)
- Maximum Time To Repair /Replace by same make & model (MTTR/Re) of items of SCPC VSAT link (both hub and remote side) = 24 hours from the time of reporting of fault.
- Should also meet all SLA conditions.

4. For normal SCPC VSATs Network

The bidder would ensure the state-of-the art technology and network design and guarantee fulfillment of the following performance parameters during the warranty and subsequent AMC periods:

- SCPC VSAT link availability = As per SLA
- Maximum Time To Repair /Replace by same make & model (MTTR/Re) of items of SCPC VSAT link (Hub side) = 12 hours from the time of reporting of fault.
- Maximum Time To Repair (MTTR) SCPC VSAT link = As per SLA
- Should also meet all SLA conditions.

Note: Service Level Agreement (SLA) is at **Annexure-VIII** of this tender.

6.4 System Documentation:

Two complete sets of manuals, technical literature, diagrams etc. shall be provided at no extra cost for Hub. The bidder shall furnish the following documents:

- System and Equipment (including S/w) instruction manuals
- Equipment installation manuals
- System operations manuals
- System maintenance documentation/manuals including troubleshooting and system care steps/procedures
- Complete Parts list including detailed instructions for ordering shall be furnished

All system documentation as delivered shall be complete, accurate, and fully representative of the supplied system and its elements.

6.5 Service Level Agreement (SLA)

The Bidder will have to sign Service Level Agreement as per details provided in **Annexure-VIII**.

The Bidder shall meet and provide the items and services meeting all norms & guidelines of DoT (Department of Telecommunications) pertaining to VSAT Network of ERNET India.

6.6 General terms and conditions:

Following are the general technical terms and conditions for various units/subunits of the network:

a. The bidder shall supply proven and latest version of hardware, software and firmware etc. The bidder shall intimate to ERNET India about the new developments related to upgradation and shall provide free software upgradations during the warranty period of one year.

b. The Bidder will submit detailed On-site Comprehensive Maintenance proposal describing all activities, resources, manpower etc. to ERNET India before taking up of the same.

c. All equipment shall operate with an uninterrupted AC power of 230V ± 10%, 50Hz. Reliable over voltage and over current protection circuits shall be provided in the power supply units. The power supply shall be self-protecting, and protect connected equipment against conducted interference, noise, voltage dips and surges & impulses.

   The Bidder would indicate the requirement of electric load including requirements for air conditioning etc, if required. In case, a specific power supply, including three phase supply is required, the bidder shall provide its details in this tender.

d. The equipments shall operate without any deviation in quality or degradation of system performance and all the parameters detailed in these specifications shall be guaranteed over the following environmental conditions, if these parameters are not specifically mentioned under the technical specifications of any item:

   i. Protection against = Rain, Dust, Corrosion, possible hazards including EMI (for outdoor equipments).
   ii. Operating Temp. = '0' degree to 45 degree C for ***indoor equipment.***
   (-)3 degree C to 55 degree C ***for outdoor equipment***
   iii. Relative Humidity = 90% at 40 degree C

e. The antenna FEED should be adequately protected keeping in view the weather conditions in the North-East Region, Sikkim, Andaman & Nicobar Islands, Lakshdweep Islands and Jammu & Kashmir region. The bidder shall also ensure

the same things for those VSATs which will be upgraded/ migrated by them or under their maintenance.

Tx/Rx cables of VSATs shall be properly taped using good quality amalgam tape to seal it from water.

f. All equipment supplied under this contract shall meet the prescribed standards of the Department of Telecommunication, Govt. of India.

g. All equipment supplied under this contract shall be in accordance with latest TEC guidelines or Indian regulatory guidelines so that system shall be acceptable to the Indian regulatory bodies.

The equipment shall be as per the latest standards of CCITT, CCIR, IEC, IEEE, IS, CISPR and INTELSAT standards or latest internationally acceptable standards or latest Indian regulatory guidelines including DoT, TEC, etc. The Bidder shall be responsible for obtaining all clearances for the installation, operation and activation of supplied items from all Indian regulatory bodies.

h. 1.8meter and 2.4 meter Antenna will be mounted using Non Penetrating Mount supplied under this tender. The Bidder will ensure to put the sufficient weight on the Mount of the antenna (also fix the mount with platform) so that alignment of the antenna will not get disturbed by high speed winds within the permissible limits of Antenna specifications. Antenna should not fall by high speed winds. If any damage occurs due to these, than it shall be repaired under AMC/Warranty conditions.

i. In case bidder prepares the concrete platform for mounting the antenna, its life shall be minimum seven years and antenna shall be mounted & installed perfectly on this platform.

j. Modem (IDU) of the VSAT shall mounted such that its connectors should not damaged due to IFL cable disturbance. For the same, IFL cable should be fixed properly near the IDU. In case connectors gets damaged due to disturbance of IFL cable, the bidder shall repair the IDU or if required will replace the IDU to make the link functional.

The bidder shall also ensure the same things for those VSATs which will be upgraded/migrated by them.

k. The Bidder is required to ensure latest state-of-the art technology and standards and accordingly ensure supply of equipment with the best performance and Quality of Service.

l. Other conditions:

- The design and manufacturing of supplied equipment shall be consistent with the requirements of long-term trouble free operation with highest degree of reliability and maintainability.

- All supplied equipment shall be constructed to operate safely without undue heating, vibration, wear, corrosion, electromagnetic interference or similar problems.

- The system shall be designed for continuous operation (24 hours a day and 365 days a year). The life of the equipment shall be a minimum of 8 years from the date of publish of this tender. But, AMC support shall be provided by the bidder for the full period for which Rate contract will be signed with the L-1 bidder.

- To ensure high reliability, the offered and supplied equipment shall be of field proven design and dependable components. The bidder shall indicate the MTBF and MTTR figure for various equipment, with analysis and indicate overall system reliability and availability figures.

- Safety and protection of personnel during normal operation and maintenance or during malfunctioning of any equipment shall be provided as integrated feature of design, manufacture and installation. Adequate protection shall be included for ensuring safety of personnel from any possible hazards, including EMI radiation, high voltages etc. The bidder shall furnish the details of EMI and safety standards met by his equipment and safety features built in.

- The supplied equipment shall be constructed on a modular basis throughout, using plug-in type components to the maximum practical content. Parts subject to failure, wear, corrosion or other deterioration or requiring occasional inspection, adjustment or replacement shall be made accessible and capable of convenient removal.

- For system maintenance, and checking health of equipment and link performance, adequate alarms, controls and monitoring facilities shall be provided. In case of fault and degraded performance it shall be possible to identify faulty unit up to card level based on alarm and monitoring facilities provided. The bidder shall describe the local/remote monitoring facilities, status indicators, and visual and/or audible alarms of the various units/sub assembles/modules.

- The Hub side equipment (except SCPC modems only) shall be supplied in standard 19" racks to form complete terminals. All interconnecting cables required to connect the equipment shall be furnished. All cables shall be fully assembled, connector pre-terminated and factory tested as part of overall system checkout.

- Input/output termination cables shall be properly labeled to permit ready identification of the incoming/outgoing wiring.

Annexure – I

Details of existing items at VSAT Hub, Bangalore and at remote VSAT sites

1. The details of existing Hub side items are given below. The location of ERNET VSAT Hub and NOC (Network Operation Centre) is as below:

ERNET VSAT Hub and NOC
Software Technology Parks of India
Block III, KSSIDC Complex,
KEONICS Electronic City,
Hosur Road, Bangalore – 561229

2. EXISTING HUB SIDE RF EQUIPMENTS / COMPONENTS

Hub Antenna system:

(i) C-Band Earth-station antenna – 9.2m – Model No. 920CS
TX Gain=53.6dB, RX Gain=50.1dB
Make: RSI, Procured in the year: 1994
Quantity: 01

LNA system:

(ii) LNA in 1+1 configuration consists of
Redundant C band, 1:1 LNA system with 45 degree K LNAs
1:1 redundant configuration Plate Assembly
Make: Vertex RSI, Procured in the year: 2002
Quantity: 01

Up Converter system:

(iii) Up converter in 1+1 configuration consists of
C Band Up converter (SFC6400)
Freq: 5845-6425 MHz-RF, 70+18 MHz,
125 KHz Step Size
Make: Radyne Comstream Inc.
1:1 Converter Redundancy Switch (RCU101)
(Including all interconnect cables)
Procured in the year: 2002 or onwards
Total number of sets: Two sets

Down Converter system:

(iv) Down converter in 1+1 configuration consists of
C Band Down converter (SFC4200)
Freq: 3625-4200 MHz-RF, 70+18 MHz,
Make: Radyne Comstream Inc.
1:1 Down Converter Redundancy Switch (RCU101)
(Including all interconnect cables
Procured in the year: 2002 or onwards
Total number of sets: Two sets

HPA system:

(v) High Power Amplifier with Power combiner system (2:1)
Make: CPI
Model: VZC-6967 (3 Nos) of 700/750Watts each

Frequency 5.85-6.65 GHz
TWT-Amp., 700W, Input VSWR 1.25:1 (Max),
Output VSWR 1.25:1 (Max)
Gain 75dB min. at rated power
2 TWTA procured in 2001, 1TWTA & PCS in 2007

Note: Tube of the amplifier will be considered as consumable item and will not be covered under maintenance. However, the bidder shall inform to ERNET India regarding requirement of its replacement well in advance (at least before 6 months).

Antenna tracking system:

(vi) Antenna Tracking Unit Make – Radiation Systems
Beacon Receiver Model 253 (C band) (3.6-4.2 MHz)
Spare Portable Maintenance Unit (Without Display) (Vertex RSI)
Transducer Assembly (Vertex RSI)
Quantity: 01

Apart from these items, splitters, combiners, cables, connectors, etc are also part of Hub side VSAT network items for the full functionality of the system.

3. Existing Hub side IF Equipment of SkyEdge from M/s Gilat Satellite Networks Ltd

The SkyEdge Baseband of Hub was procured from Gilat Satellite Networks Ltd with its local partner M/s HCL Comnet Limited in year 2006.

Base band system: Make- Gilat, Model: SkyEdge
Outbound: Gilat-SkyEdge
Inbound (Demodulators & associated equipment): Gilat
NMS (Network Management System): Gilat

4. Existing Remote Side VSAT items:

There may be 180 numbers of SkyEdge IP Broadband VSATs in various academic, research, Government institutions, etc spread all over the country. Their state- wise breakup is at **Annexure-X**. The SkyEdge IP VSAT item details at each site are as below:

Sr	Item description	Qty
VSAT Electronics		
1	SkyEdge IP IDU (Gilat) with power cable	1
2	ODU TRANS' C-BAND 2Watts (Gilat)	1
3	LNB C-BAND DRO (Gilat)	1
5	Antenna 1.8M (or 2.4M) –Linear Polarization	1
6	Non-Penetrating mount of antenna	1
7	IFL cable with connectors and conduiting	1 set

Note: Sites have 2.4 meter in Andaman & Nicobar, Lakshadweep islands, N-Eastern states including Sikkim, J& K.

Annexure-II –A

1.0 Upgradation / Migration of existing SkyEdge-I based VSAT network

(i) The bidder should supply Baseband IF equipment and other associated integration items and sub-systems including Network Management System (NMS), etc to upgrade the existing Hub baseband of SkyEdge-I IP (of M/s Gilat) to offer features and functionalities as mentioned in this part and sections.

(ii) The Baseband equipment should be designed to achieve the desired level of Quality of Service. The Baseband of Upgraded/Replaced SkyEdge-I IP broadband Hub and existing VSATs after upgradation should meet the specifications mentioned in this section.

(iii) NOTE: The equipments of upgraded DVB-S2 ACM, CCM / MF-TDMA baseband at Hub side shall be in brand new condition. The items from the existing DVB-S/MFTDMA of Gilat shall not be re-used at Hub side for its upgradation.

However, the bidder may use the items of existing remote VSATs for their upgradation /migration, i.e. from existing SkyEdge-I IP VSAT to DVB-S2 ACM, CCM /MF-TDMA type VSAT.

2.0 General requirements:

1. The upgraded VSAT Network shall be based on DVB-S2 ACM, CCM/ MF-TDMA mechanism.

2. All upgraded equipment shall be based on state-of-the-art technology with high performance and high efficiency.

3. The network shall support two-way satellite communication for a variety of applications and services.

4. Network will operate in star topology and it would be preferred for TCP/IP applications that are on-line in nature.

5. The ping response time from remote VSAT to Hub should be guaranteed to be maximum 0.80 seconds, under no load condition in the network.

6. Network shall have one aggregate Outbound capable of supporting the data rates required initially and scale up to meet all future demands. The outbound size should be software configurable from the hub. This outbound should be based on DVB-S2 ACM, CCM standards.

7. The Outbound and MF-TDMA Inbounds/Carriers along with the different Terminals in the network should be manageable from a single Network Management System (NMS) residing at Hub.

8. The network shall support all the enhancement features that are required to enable optimal TCP/IP transport over the satellite links such as TCP Spoofing.

9. Bidder should clearly mention the Hub, DVB-S2 ACM, CCM Outbound and Star Inbound (MFTDMA) scaling capacities. It should be possible to scale the Outbound data rate for the network centrally from the hub without visiting the remote sites.

10. The Network must support the following IP features, on both the Inbound and the Outbound in Star mode–
    - Support for TCP, UDP, RIP, FTP, ping through ICMP, ARP.
    - Packet filtering functionality similar to access list definitions
    - IP QoS along with Prioritisation of traffic based on the IP Standards of DiffServ
    - TCP Acceleration for TCP/IP applications
    - DHCP functionality should be supported in the remote
    - IP Multicast
    - NAT at the Hub

11. The system should have an embedded TCP acceleration mechanism between the VSATs and the Hub. It is preferred that the offer will include an embedded solution at the VSAT.

12. QoS:
    - For IP based applications, the network should provide end-to-end Quality of Service (QoS) based on the DiffServ standard both for forward and return channel traffic.
    - Forward path QoS shall adjust dynamically to the actual MIR throughput of the forward channel (outbound)
    - QoS should be provided at the following two levels:
        a. At a VSAT level
        b. At the level of a group of VSATs
    - Definition of CIR, MIR and different priorities should be supported.
    - QoS shall support sub-allocation of bandwidth on outbound as well as inbounds.
    - Application based reservation of BW on VSATs
    - Re-allocations of BW across different user groups in case one or more User Groups are not using the BW to their maximum allocation.

13. IPV6 features:
    - The system should support full featured IPv6 from the day one without any need to upgrade any hardware and software.
    - IPv6 should be supported for TCP acceleration.
    - VSAT can be configured in IPv4/IPv6 dual stack mode.
    - The system should be able to demonstrate the IPv6 functionality without addition of any external router for address translation. The test shall be demonstrated by doing Ping and FTP between PCs connected directly to the Hub and VSAT configured with IPv6 addresses. FTP to be shown as accelerated with TCP spoofing enabled in the Hub.

14. Quota Management System
    - The network shall support an integrated Quota Management System (QMS) supporting configuration of flexible and competitive service plans/SLAs and it should be possible to fix volume quota (like nGB per month) on individual VSAT basis.
    - The policies can be configured per network and per group of VSATs.
    - The system should enable a fair distribution of bandwidth based on the current network condition and current service attributes.
    - The system (QMS) shall support real-time dynamic BW distribution according to network load, MIR/CIR SLA and per site level priority.
    - In a loaded network, the system must determine dynamically the MIR for every site. The system shall calculates in real time and enforces the instantaneous MIR, per VSAT, based on the VSAT configured ceiling MIR, current priority level and overall network load.
    - System shall also support configuration of ***free usage time zones*** – by day and time.
    - The system shall support ***limited browsing modes*** where a list of domains can be configured which are only allowed to browse in the network.

15. Complete network shall be software configurable and up-gradable under on-line conditions from the NMS.

16. The Star network must support the following rain fade mitigation techniques:
    - DVB-S2 based ACM and CCM on Outbound
    - Automatic Power Control at the Remotes
    - Dynamic Inbound (return-channel) rate lowering by adjusting one or more of either the burst rates, FEC or modulation scheme.

17. The Hub baseband and NMS should have complete hot (automatic changeover) redundancy. Other items (Quota Management System, QoS, Network Utilization System), if not as integrated part of Hub baseband NMS, shall also be supplied in redundancy. Redundancy shall be applicable on all supplied components at Hub side, including GUI (Graphical User Interface) servers, backend servers, fron end servers, QoS, Quota Management Server, Storage servers etc

18. The proposed Network should support multiple inbounds carrier rates, using a common hardware at the Hub.

19. The Network should provide for a Geographic Redundancy feature where a secondary Hub located at a geographically distant location can take control of the network and the remotes. This is a feature to be supported. The Geographical redundant hub is not to be quoted now.

20. The bidder shall propose one hub system and its associated equipment to perform transmit and receive via satellite.

21. Forward Channel shall be DVB–S2 with ACM, CCM support.

22. Return channel shall be dynamic MF-TDMA to ensure that bandwidth may be shared between remotes sites. The system shall support dynamic and automatic adjustment of return channel carrier bit rates. VSATs shall be able to transmit in different channels on a burst-by-burst basis.

23. VSAT's shall be also configured via a Web based GUI, and shall minimize the number of inputs from the installer. VSAT firmware will be downloaded/upgraded "over-the-air" and managed from the hub. The VSAT shall be able to overcome a corrupt firmware upgrade without user intervention – rollback to previous firmware version.

24. The system shall provide service to different types of IP traffic, Unicast, multicast, voice, video, data and IP multicast from the VSAT terminal.

25. The system should have the capability to support multiple transponders.

26. Access Mechanism to guarantee bandwidth for Voice and Video over IP shall be provided.

27. Graceful degradation of bandwidth shall be supported when there are no capacity requests by the remote.

28. The entire DVB-S2 ACM CCM/MFTDMA VSAT network (including its all components and their processing) shall be capable to support 50Mbps of Outbound traffic and 25Mbps of Inbounds traffic.

3.0 Hub Side: Upgraded Baseband IF Equipment Specifications from day one:

1	**Outgoing Stream**	
	No. of Outbound streams	1 (in 1 + 1 redundancy configuration in automatic changeover)
	Standard	DVB-S2 ACM and CCM
	Data Rate:	Capable from 1.5Msps to 35Msps or higher (insteps of 300ksps or less)
	Modulation	QPSK, 8PSK, 16APSK, 32APSK
	Bit Error Rate	As per DVB-S2 specifications / (Quasi Error Free)
	Coding	LDPC, BCH
	FEC Rate	At least five different FEC rates
	Roll off Factor	1.2 or better (20% or better)
2	**Incoming Stream**	
	Data rate for Single Inbound:	From 128Ksps to 2.5Msps or higher (in different steps, at least 4 different sizes upto 2.5Msps) Note: Size of one inbound shall also support and configurable with 2Watts BUC at VSAT, QPSK 2/3, 1.8M VSAT antenna with linear polarisation, INSAT-3C C-band parameter as

		per latest TEC/IR, location A&N, Lakshadweep and N-E states
	Inbounds :	Minimum Inbound channels capacity required in the network is as below: (i) 12Msps of total Inbound channels capacity (ii) 50 Inbound channels Minimum Redundancy required in the Inbound channels is as below: (i) Redundancy for Inbound channels shall be in N: M, Where N is the total active Inbound channels and M are the minimum redundant Inbound channels. M should be minimum 10% of N, in hot redundancy (automatic changeover). (ii) Also, there should be hardware redundancy in Inbound channels. It should be minimum N:1, where N is the active number of hardware units. For N, there should be at least 1 redundant hardware, in hot standby mode (automatic changeover) (i.e. suppose, there are three cages for active Inbounds, then minimum one cage as redundant shall be provided) Following assumptions should be taken for calculations: (i) BUC output power at VSATs = 2watts (@P1 dB) BUC at VSATs (ii) INSAT-3C satellite parameters on Normal C-Band as per latest TEC/IR document (iii) 1.8Meter dish antenna, Linear polarization (iv) Links at A&N, Lakshadweep and North-Eastern states (2.4M antenna may be assumed for these locations and for other locations, 1.8M antenna shall be assumed) (v) Appropriate rain fade margin (vi) Modulation and Coding shall be taken which can work with above assumptions. (like, QPSK 3/4 for Outbound and QPSK 2/3 for Inbounds)

		Note: CIR, MIR shall also be supported.
	Modulation :	QPSK, 8PSK
	Coding :	Turbo Coding or LDPC
	FEC rate	At least four different FEC rates
	Access-Mechanism :	MF-TDMA, Dynamic channel allocation
	Roll off factor	1.2 or better (20% or better)
3.	Redundancy:	a) All equipments shall be in N: 1 redundancy Note: Clause no. 17 at Sr. 2 above should also be complied.
4.	Hub Interface	RF : L Band* or 70MHz *- In this case, the bidder needs to provide required converters as part of baseband in hot redundancy. Note: 70MHz (IF) shall be preferred.
5.	LAN	100BT / GbE
6.	NMS	Platform: Backend: Any client/ server OS Frontend: Operator console – windows Standards: SNMP based
7.	Environmental	Operating Voltage: 100V – 240V AC/ 50Hz Operating Temperature: 0 to 33 degree C
8.	Standard compliance	Company ISO 9001
9.	Dimensions	Items 19” rack mounted
10.	Others	All cables , connectors , s/w , etc shall be included to install, integrate, etc in upgrading the system

***C-Band to L-Band converter specs are as below:** (Note: Other converts if required and supplied by bidder shall also be of same make and equivalent specs)	
Input Parameters	Input Frequency : 3.7 to 4.2GHz Input Impedance : 50Ω VSWR <2:1 Input connector : N, Female
Output Parameters	Output Frequency : 950 – 1750MHz Impedance : 50Ω VSWR <2:1 Output Power @P1dB : +15dBm minimum Output connector : N, Female
Other Parameters	Gain : 35 dB ±2dB Spurious, In Band < -60dBc, 0 dBm out; < -60 dBm, signal independent Spurious, Out of Band < -50dBc Inter modulation < -55dBc for two carriers at -10dBm out Frequency Response : ±1.5 dB, over frequency band; ±0.5 dB, 40 MHz BW Frequency sense : Inverting

	Frequency accuracy : ±0.01 ppm max over temp internal reference; ext. ref. input 10MHz In/out level :3dBm ± 3 dB Noise Figure : 15 dB at minimum attenuation Phase Noise : @1KHz <-75dBc/Hz @10KHz < -85dBc/Hz @100KHz < -95dBc/Hz @1MHz < -105dBc/Hz Voltage : 220±10VAC, 50Hz
Others	Inclusive of all cables, connectors, monitoring connectors, etc -If system is chassis based, it shall have two slots.

3.1 Network Management System (NMS) Requirements residing at Hub:

1. The entire network will be operated and monitored through single performance NMS. The bidder will include all the necessary equipment and software required for the network management. .

2. It should monitor all remote terminals and BW management. NMS shall monitor, control and configure the entire network by means of user friendly Graphical User Interfaces. The NMS should have necessary security features for management, administration and operation. NMS shall be capable of software download to all VSATs, if required. NMS shall have different levels of password protection for system administration, management and operation etc. NMS shall be able to switch off the operation of any VSAT if required. NMS shall be SNMP compliant. The following aspects of network management shall be addressed:
   i. Configuration Management
   ii. Security Management
   iii. Performance Management.
   iv. Fault Management (Fault management system to guarantee maximum uptime)

3. The Network Management System at the Hub shall provide the following:
   i. Monitoring network status
   ii. Configuration of all network components including VSATs
   iii. Enabling or disabling of remote VSAT stations
   iv. Recording detailed statistics of traffic, both network traffic and remote traffic
   v. Fault diagnosis and display of alarm
   vi. Support for SNMP.

4. The NMS shall operate (1+1) automatic redundant configuration

5. Traffic Management and Bandwidth allocation should be possible in NMS and QoS system so that each location (existing & proposed) can be guaranteed a particular Bandwidth, if required. **NMS must have the QoS and Quota Management System (either in built, as a part of the NMS or can be separate modules).** It should be capable of monitoring the usage pattern of all

the remotes. The committed information rate for each VSAT should be configurable on the NMS and should be able to download the parameters according to the remote from the hub. NMS must allow grouping of few VSATs and allow sharing of bandwidth dynamically or statistically amongst them.

6. The NMS software should have its own data base for current configuration like the number of connected and active nodes, their locations, port assignments, interfaces etc.

7. It should be possible to monitor and view the NMS screens from a remote location through a leased line or Intranet.

8. The NMS shall record all the transactions carried out along with time tag for further analysis.

9. The NMS shall be based on a modular architecture and Open standard protocol

10. The NMS application shall resides in a high performance NMS Server system consists of high performance server with high data storage reliability.

11. The NMS server shall be fully hot swappable system and redundant. Remote management of the system is available via an out of band connection.

12. NMS shall support centrally over the air VSAT software upgrades managed in group settings. It also supports a short system down time with complete restore capabilities to go back to the previous version if required.

3.2 Network Utilization System (both H/w and S/w) residing at Hub: The bidder should also provide a system (say Network Utilization System**)** which shall provide the following. Network Utilization System can be part of NMS or by separate module:

(i) Total data rate utilization (both for receive and transmit) on a VSAT link in Graphical form (X-axis shall show the bandwidth and Y-axis shall show time scale).
(ii) Uptime / Downtime details of all VSAT links.
(iii) The aforesaid graphs of data rate utilization and other required details should be available on hourly, daily, weekly, monthly and three-monthly (quarterly) basis.
(iv) The system should be able to provide the data rate utilization details of at least last three months period.
(v) The utilization graphs should be accessible on Windows platform client machines through web access.
(vi) The system shall be capable to handle the graphs, data and other required things for 300 – 400 numbers of Broadband VSATs.

4.0 Remote VSAT Equipment specifications:

4.1 General

1. Remote VSATs would comprise of following sub-systems namely Antenna system (1.8M/2.4M depending on the location of the site), LNB, ODU (BUC), IDU and IFL cable.
2. The VSATs will be connected in star topology.
3. Depending on site conditions, antenna shall be installed on the rooftop or on the ground with permanent civil foundations along with suitable earthing as per the antenna manufacturer.
4. The remote VSAT should be capable of providing 4Mbps of Remote Receive data to the ERNET India users. The processing capability of remote VSAT IDU should be enough to provide seamless access of Internet applications concurrently by minimum of 40 computer machines (assuming that each computer machine is browsing at least three web pages). The IDU shall support at least 10,000 pps.
5. All equipment at the remote VSAT sites shall be neatly mounted on a standard 19 inch racks (if provided by the user) or provided as desk top system for convenience of location and operation.

NOTE:

a) The existing 180 number of SkyEdge-I IP Gilat VSATs should be upgraded / replaced (either part of it or complete) to meet the technical specifications of Remote VSATs as mentioned in this section.

Equipment currently being used at these existing remote VSAT sites which includes 1.8M /2.4M C-Band Antenna, IFL cable, Mount, ODU TRANS' C-BAND 2Watts (Gilat), SkyEdge-I IP IDU (Gilat), LNB C-BAND DRO (Gilat) can be re-used by the bidder as deemed fit to upgrade the existing remote VSATs to DVB-S2 ACM CCM/MFTDMA type VSAT. The cost of reused items/equipments at remote sides shall not be accounted to compare the commercial part of bid. The cost of new quoted/offered items to meet the technical specifications of remote VSAT terminal (upgraded to type DVB-S2 ACM, CCM/MFTDMA) as mentioned below in this Section will only be included in the bid of that bidder to compare the commercial part of bid.

The bidder should note that the cost of all new items required to meet the technical specifications to upgrade VSATs should be quoted clearly.

b) The bidder should also quote equipment for completely new 250 VSATs.

4.2 Remote VSAT Equipment details and specifications:

The remote will comprise of the following items as detailed below:

1	**Antenna:**	
	Dish Antenna Diameter 1.8 M /2.4 M, Manual Tracking for both Azimuth & Elevation, C-Band Operation, **The details are as below:**	
	▪ Size of the reflector:	1.8m RxTx / or 2.4m RxTx
	▪ Reflector material:	Glass fiber Reinforced Polyester
	▪ Receive frequency:	3.7GHz to 4.2GHz
	▪ Transmit frequency:	5.85 GHz to 6.425GHz

	▪ VSWR: 1.3:1 Max. ▪ Off-axis radiation pattern as per latest CCIR rec. 580 ▪ Antenna gain C-band: Tx: 39.5 dBi, Rx : 35.5 dBi – (1.8m antenna) Tx: 42.0 dBi, Rx : 38.0 dBi – (2.4m antenna) ▪ Cross-Pol Isolation: >30 dB on axis (for linear polarization – 1.8M/2.4M Antenna) ▪ Noise Temperature at 30 degree elevation: 47 deg K (for 1.8M antenna), 45 deg K (for 2.4M antenna) ▪ Antenna steer ability: 5 – 90 deg. Continuous elevation, 0 – 360 deg. Continuous Azimuth ▪ Feed assembly complete with Feed horn, OMT, Tx / Reject Filter ▪ Polarization: Support for both Linear as well as circular ▪ Should meet TEC requirement or Indian regulations for VSAT installations. ▪ Non-penetrating base mount Note: The antenna shall support RFT of 5Watts in size of all types. The entire antenna including its back structure shall be from same OEM and from single source.
2	**LNB**
	Frequency Band : C-band
	Noise Temp. : < 100 deg K
3	**ODU (Linear)**
	Frequency of operation : C Band
	Power Output (P1dB) : 2 Watts, 3Watts & 5 Watts
	Quoted and supplied Modem (IDU) shall be capable to support 2 Watts, 3 Watts & 5 Watts ODU (BUC). If any additional items are required for this support, the same shall be provided as part of ODU (like External Power supply for supplied IDU/ODU, etc) which can be integratable with the IDU.
4	**IDU**
	RF In Frequency : 950 MHz – 1950 MHz RF Out Frequency : 950 MHz – 1950 MHz
	Data Port: No. of Ports : 1 Port (minimum) Input data port : Ethernet 10/100 (RJ 45) Data Transport Protocol : TCP/IP, UDP
	Bit Error Rate: Better than 1x 10^{-7}
	Inbound data rate: Supplied IDU shall be capable to handle minimum 2Mbps Tx data rate
	Outbound data rate: Supplied IDU shall be capable for minimum 40Mbps (Rx) download data rate to remote VSAT
	Transmit mechanism: MF-TDMA
	Operating Voltage: 100V - 220V AC, 50Hz Relative humidity: 90%
	IDU should be guaranteed to support at least or more than 10,000 numbers of packets per second (pps).
	IP features: RIP, DHCP,NAT/PAT, IGMP, IP Prioritization, VLAN, DiffServ, SIP, IPv4 and IPv6, Static routing, IP multicast, UDP

	broadcast support Security: IPSec (end to end), ACL Firewall
	Mechanical / Environmental /General condition: -Small in size & weight & single box -Operating temperature: 0 degree to +50 degree C -Relative humidity: upto 90% -Indian Power cable
5.	IFL cable 2x30meter minimum at each site with connectors and its conduiting (however, length will vary depending on the site requirement, L-1 shall be evaluated with 2x30M at each site). The supplied IFL cable shall be low loss type RG-11.
	Note: - All cables, connectors, software, etc required to install the VSAT links should be included in above. - The site-survey of user location, visit of engineers to sites to setup VSAT link, installation, commissioning and integration of VSAT shall also be quoted by the bidder. - IDU must be installed with surge protector for its safety. - All equipments wherever applicable shall be as per TEC guidelines or Indian regulations.

5.0 Expandability

a) Network should be capable to cater at least 2000 VSATs in Star configuration, i.e., the common equipment for the VSAT Hub and the Network Management System and additional modules supplied (if any) should have capability to support 2000 VSATs from day one. The common equipment of baseband Hub means NMS, common baseband processors, servers, etc.

b) All the new software versions and development related to upgradation shall be provided free during the warranty period of one year.

6.0 Satellite Transponder capacity requirement:

Presently, ERNET India has C-band transponder space segment on INSAT-3C satellite from Department of Telecommunications (DoT) for the national connectivity through VSAT network. The standard technical parameters of this satellite for normal C-band space segment (as per the latest TEC/IR document) shall be used by the bidder to the calculation of link engineering and bandwidth summary plan.

The bidder needs to provide the Link Engineering and bandwidth summary plan for the following:

(i) For DVB-S2 ACM, CCM/MF-TDMA network

- For one inbound channel traffic to Hub: 256 Kbps Inbound channel (assume 2Watts BUC at VSAT)

- For outbound channel traffic to Remote VSATs: 20Mbps outbound channel

Link engineering for the following shall also be provided:

- 1 Outbound channel with 36MHz Transponder in saturation
- 512kbps Inbound channel size
- One Inbound channel with 512KHz
- Maximum size of one Inbound channel with 2Watts BUC, 3Watts and 5Watts BUC

Note:

1. Take Hub antenna 9.2 M at Bangalore; VSAT antenna of 1.8 M with linear polarization; INSAT-3C, C-band parameters as per latest TEC/IR document of DoT; Rain fade margin; VSAT site location of A&N, Lakshadweep and N-E states.
2. For Outbound channel, take QPSK Modulation and FEC as 3/4 (or worse)
3. For Inbound channel, take QPSK Modulation and FEC as 2/3 (or worse).
4. For VSAT sites located in A&N, Lakshadweep and N-E, 2.4M antenna may be assumed.

7 Training

1. The bidder shall provide training to 2 officers at the manufacturer location in system design and operation and maintenance of the network. The bidder shall provide training material, documents, etc for this training to the officers. The expenses on travel, boarding & lodging etc. shall be borne by ERNET India. **Its cost shall be quoted in the bid.**

2. The bidder shall also provide free of cost in-house training to 10 technical persons at ERNET India HQ/ Hub site in the system design, technology, features details and the operation and maintenance of the network. The required training documents shall be circulated well in advance.

3. The bidder shall also provide free of cost on-site training of half day (2 to 3 hours) on 'Basics of VSAT, operations, troubleshooting, etc' to the officials of every remote site during the installation/upgradation of VSAT. The required material shall also be provided to the site for this purpose.

Annexure-II –B

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1. High capacity SCPC VSAT System

(a) This section covers general technical specification of the equipment to be supplied for establishing satellite based High capacity SCPC VSAT links between ERNET VSAT Hub Bangalore and user / remote location. These SCPC VSATs will operate as point-to-point link between remote site and ERNET VSAT Hub, Bangalore, i.e. in star topology.

(b) It is expected to connect about 50 LANs, each with 40-60 computers with each high capacity SCPC VSAT link for accessing Internet applications.

2. General requirements

(i) It is proposed that there will be two to four user locations where high capacity SCPC VSAT link will be established. The links will be point-to-point between Hub and user remote location. Initially, two such links will be installed.

(ii) All kind of Internet applications including value added applications like Distance learning, Digital library, video conferencing, Internet access etc will run on the link/network.

(iii) All components of the VSAT at remote will be in 1:1, except antenna system. At hub side, modems of each VSAT link will also be in 1:1 configuration. The 1:1 redundancy will be in hot configuration by using appropriate switch. Redundancy of IFL cable at remote site may be in manual changeable mode, but it should be laid from the antenna to modem.

(iv) The downlink (Rx) data rate at each VSAT shall be maximum of 40Mbps and uplink (Tx) data rate from each VSAT shall be maximum of 14Mbps.

(v) Antenna used at remote VSAT locations will be 3.8m with capability to operate with linear / circular polarization. Size of the VSAT BUC will be minimum 125Watts P1dB or shall be quoted of higher size by the bidder as per the link engineering to establish the required link of given data rate. The bidder needs to provide the link budget and summary sheet. The links should work on INSAT-3C C-band transponder meeting TEC/IR requirements and should pass all tests of NOCC and DoT and Indian regulations, meeting all requirements (including technical) of the tender. The modulation, coding rates, etc in link engineering, summary sheet, etc must be taken accordingly so that carrier plan must get approved by NOCC, DoT for 40Mbps(Rx)/14Mbps(Tx) link (data rate at remote VSAT site) on INSAT-3C C-band transponder at Port Blair and Kavaratti locations.

(vi) The SCPC VSAT link shall work with C-Band transponders on INSAT–3C. In future, the operation of link may be on other satellite, as allocated by DoS and bidder needs to configure and fine tune the system accordingly.

(vii) The bidder should supply and integrate all necessary hardware and software for both VSAT Hub and VSAT remotes for full functionality of the links. The cost of all components shall be included by the bidder.

(viii) Detailed equipment specifications of various sub-systems are given in this Annexure. However, the bidder is required to ensure latest state-of-the-art technology and standards and accordingly ensure supply of equipment/systems with the best performance and Quality of Service.

3. Hub side configuration and work

b) Integration of items with existing RF equipment at ERNET Hub shall be sole responsibility of the bidder. The existing 9.2m C-Band Antenna subsystem and CPI HPA already installed at the VSAT Hub, Bangalore will be used. If required, bidder shall modify/reconfigure his equipment to make it operational with RF equipment of hub at no extra cost.

c) It is required to integrate the high capacity SCPC VSAT network at hub with the Broadband VSAT and SCPC network of ERNET India at RF & IF level.

All cables, connectors, combiners/splitters (active type), etc required at hub to integrate the supplied items for establishing the high capacity SCPC VSAT links shall be supplied by the bidder. The cost of all such items shall be included in bid.

d) All equipment at the Hub shall be neatly mounted on a standard 19 inch racks. All the inter-rack & intra-rack cabling shall be done with cable markers. Detailed wiring diagram shall be supplied. The standard 19 inch rack at hub shall be provided by ERNET India to the bidder for this purpose, if bidder is requiring it. However, if bidder may think to supply their rack, they may do so.

4. VSAT Terminal Configuration for one VSAT link

- The remote SCPC VSAT shall have the following items:

(i)	SCPC Modem	:	04 Nos (2 at remote site and 2 at Hub)
(ii)	BUC–(125 Watts P1dB Guaranteed)	:	02 Nos (at site)
(iii)	LNB	:	02 Nos (at site)
(iv)	Feed Horn	:	02 Nos (at site)
(v)	3.8 meter dish Antenna and its Mount	:	01 Nos (at site)
(vi)	IFL Cable (2x50 meter) & Connectors (RG-11 low loss type)	:	02 sets (at site)
(vii)	Concrete Platform for the installation of antenna system at site	:	01 Nos
(viii)	Earthing (3 Earth Points) at site	:	01 Nos
(ix)	On line UPS system of 3KVA with batteries	:	01 Nos

The bidder is required to provide and install all the above items. The SCPC modems (including at hub side), BUC, LNB shall be in 1:1 hot redundancy configuration. Feed horn and IFL cable shall also be kept in ready condition in 1:1 configuration.

- The bidder should offer antenna which shall meet TEC requirements or Indian regulatory guidelines so that it must pass all test, requirements of NOCC, DoT. Depending on site conditions, antenna shall be installed on the rooftop or on the ground with permanent civil foundations along with suitable earthing as per the recommendations of the Antenna Manufacturer and DoT norms.

  However, size of antenna may increase as per the DOT directives and in that case, the bidder needs to install the bigger size antenna in place of 3.8meter antenna. The bigger size antenna is also mentioned in the Bill of Material and in this **Annexure**.

- All equipment pertaining to the SCPC VSAT link including all supplied items and accessories at the remote VSAT sites shall be neatly installed and mounted at user location for the convenience of location and operation. In case of rack mounted items, all the inter-rack and intra-rack cabling shall be done with cable markers. Detailed wiring diagram shall be provided.

- Local/remote alarm indication for internal power supply, Tx-chain, Rx-chain, failure shall be provided at each VSAT terminal for quick fault finding and the maintenance at the site shall involve module level replacement.

- Combiner / splitter (active type), cables, connectors, etc items required to establish and interconnecting the SCPC VSAT link at remote user location with user router/switch shall be included in the scope of supply by the bidders to ensure completeness and interconnection aspects.

5. Link Design

For link design, the bidder may assume 9.2meter hub antenna at Bangalore, sufficient HPA power at Hub and C-band transponder parameters on INSAT-3C satellite (as per latest TEC/IR document). In addition to above, the modulation, coding rates, fade margin, etc must be taken so that carrier plan must get approved by NOCC, DoT for 40Mbps(Rx)/14Mbps(Tx) link (data rate at remote VSAT site) on INSAT-3C C-band transponder at Port Blair and Kavaratti locations. In line to above, the bidder must provide the 'Link Budget', 'Link Summary' and 'Frequency plan' in the format as per latest TEC/IR document.

The bidder shall provide a detailed link analysis for following cases:

1. (a)	Hub to VSAT : 40Mbps VSAT to Hub: 14Mbps Remote SCPC Site: at Port Blair Remote SCPC Site antenna: 3.8M RF (BUC): Its size needs to be calculated by the bidder
(b)	Hub to VSAT : 40Mbps VSAT to Hub: 14Mbps Remote SCPC Site: at Kavaratti

	Remote SCPC Site antenna: 3.8M RF (BUC): Its size needs to be calculated by the bidder
2. (a)	Hub to VSAT : 40Mbps VSAT to Hub: 14Mbps Remote SCPC Site: at Port Blair Remote SCPC Site antenna: 4.5M RF (BUC): Its size needs to be calculated by the bidder
(b)	Hub to VSAT : 40Mbps VSAT to Hub: 14Mbps Remote SCPC Site: at Kavaratti Remote SCPC Site antenna: 4.5M RF (BUC): Its size needs to be calculated by the bidder

The above may be done considering the worst case design, to substantiate the adequacy of the sub systems indicated in the Tender and those offered by the bidder.

Detailed analysis regarding EIRP required at the Hub and at each VSAT and satellite bandwidth required shall be enclosed.

6. Other requirements:

Following are the other requirements:

a) The design and selection of equipment shall be consistent with the requirements of long term trouble free operation with highest degree of reliability and maintainability.

b) All equipment shall be constructed to operate safely without undue heating, vibration, wear, corrosion, electromagnetic interference or similar problems.

c) All interconnecting cables required to connect the equipment shall be provided. All cables shall be fully assembled, connector pre-terminated and factory tested as part of overall system checkout.

d) For system maintenance, and checking health of equipment and link performance, adequate alarms, controls and monitoring facilities shall be provided. In case of fault and degraded performance it shall be possible to identify faulty unit up to card level based on alarm and monitoring facilities provided. The bidder shall describe the local/remote monitoring facilities, status indicators, and visual and/or audible alarms of the various units/sub assembles/modules.

7. The specifications of the sub-systems of high capacity SCPC VSAT items are as below:

Sr.	**Equipment Description with specifications**		
1.	**SCPC Modem**		
	a)	**General Specifications:**	
		Symbol Rate Range	DVB-S2: 100 Ksps to 25 Msps in 1 ksps steps

		Modulation Type	DVB-S2
		FEC Frame	Normal or Short
		Alpha (Roll-off)	10% or better
		Management	Front panel keypad with display or 10/100Base-T with SNMP, HTTP
		Frequency Stability	Internal, stability ± 0.06 ppm
		External Reference Input / Output (BNC Female)	Internal, 1, 2, 5 or 10 MHz for IF and data, internally phase locked. Output: off or internal 10 MHz
		Spectral Sense	Normal and inverted
		Configuration Retention	Non-volatile memory; Returns upon power up
	b)	**Modulator (Dual IF)**	
		Frequency	Dual IF 70/140 MHz and L-band (950-2050 MHz)
		Step Size	100 Hz for both IF and L-band
		Impedance / Connector	IF : 75 Ω, BNC female L-band: 50 Ω, Type N female.
		Output Power	IF: 0 to -25 dBm, 0.1 dB steps (70/140 MHz) L-band : 0 to -40 dBm, 0.1 dB steps
		L-Band Monitor	Same as L-Band or 900 + 70/140 MHz IF at -27 dBm ± 3 dB
		Quadrature Phase Error and Amplitude Imbalance	Sideband 35 dB below unmodulated carrier
	c)	**Demodulator (Dual IF)**	
		Frequency	Dual IF 70/140 MHz (50 to 180 MHz) and L-band (950-2050 MHz)
		Step Size	100 Hz for both IF and L-band
		Impedance / Connector	IF: 75 Ω, BNC female. Return loss 15 dB min. L-band: 50 Ω, Type N female. Return loss 10 dB min.
	d)	**Basic Unit Connectors**	
		Alarm Connector (DB-15 Male)	Form C: TX, RX and unit faults External TX carrier off
		Unit Management	RJ-45 Ethernet
		TX & RX IF Connectors	BNC female (70/140 MHz) Type-N female (L-Band)
		L-Band Monitor	SMA female
		Data Interfaces	2 x RJ-45 10/100/1000Base-T Ethernet -Shall support both IPv4 and IPv6 for their full functionality
	e)	**Environmental and physical**	
		Temperature Operating	0 to 50°C
		Temperature Storage	-10 to 70°C
		Humidity	95% maximum, non-condensing
		Power Supply Input	120 to 240 AC, 50 Hz
		Power Consumption	100 W or less, 150 VA typical (for 220 VAC at 50 Hz)

	f)	**Others**	-All cables, connectors, etc for interconnection.
	Note: The modem may be also supplied meeting the following in respect of dual inputs: The modem shall have option to support both IF and L-band inputs. Out of these two, only one input will be purchased as per the requirement of ERNET India. At remote VSAT site location, L-band modem may be purchased. At Central site hub, either of these (i.e. L-band or IF band) may be purchased as per the requirement of the ERNET India. The VSAT link shall function with any combination between Hub side and remote side modem. Note: For network design purpose, the bidder may assume IF type modem at Hub side.		
2.	**1:1 Modem Redundancy Switch for modem**		
	General		- 1:1 modem redundancy switch, suitable for the supplied high capacity modem for their functionality in hot redundancy (automatic changeover). - All cables, connectors, splitters, accessories etc required for their integration and installation must be included. Note: At remote site, L-band Redundancy switch along with L-band modem (configured in L-band mode) shall be deployed. At hub side, suitable switch matching the proposed modem shall be supplied (L-band or IF-band).
3.	**BUC – 125Watts (P1dB)**		
		Specifications	
	a)	**General**	It is a single integrated unit with built-in AC power supply.
			The unit has built-in data logging up to 30 days. Vital parameters like Temp , Output power mute status , LNB current etc will be recorded at time stamped interval for system maintainability
			The unit has a phase noise performance which meets or exceeds IESS-308/309 standard
			The unit has at least M&C, Ethernet for monitoring
			The unit has SNMP and web interface login for M&C
			In redundancy operation , faulted online unit may be disconnected and replaced without affecting online power amplifier
			The supports Industry standard FSK communication
			The unit has inherent protection against open/short on the Tx output port by means of an inbuilt Output Isolator present inside the unit.
	b)	**RF features**	
		Output Frequency	5850 – 6650 MHz
		Available power Output @ P1 dB	51 dBm (125 W)
		Output Connector	CPR137G or suitable
		Output Return Loss	19.1 dB
		Gain Linear	70 dB min
		Adjust	20 dB in 0.5 dB step
		Gain flatness	+/- 1.5 dB full Band or better
		Gain variation over temp -40 to +55 Deg C	+/- 1.5 dB or better

	c)	**Input**	
		Frequency	950 to 1750 MHz
		Noise Figure	8 dB typical
		Input return loss	15 dB
		Connector	N-Type
	d)	**Phase noise performance**	
		Offset at 100 Hz	-70 dBc/Hz
		@ 1 KHz	-80 dBc/Hz
		@ 10 KHz	-90 dBc/Hz
		@100 KHz	-100 dBc/Hz
		@ 1 MHz	-105 dBc/Hz
	e)	**Internal reference**	
		Freq	10 MHz over range of -5 to +5 dBm
		Frequency stability	+/- 5 X 10E-10 / day
	f)	**Environmental , Power and Physical**	
		Operating Temperature	-10 Deg C to +55 Deg C
		Non- Operating Temperature	-10 Deg C to +75 Deg C
		Operating Humidity	0 to 100 % Condensing
4.	**BUC – 100Watts (P1dB)**		
		Available power Output @ P1 dB	50 dBm (100 W)
	Note: Other specifications and parameters will remain same as given above at Sr. 3 for BUC-125watts		
5.	**BUC – 80Watts (P1dB)**		
		Available power Output @ P1 dB	49 dBm (80 W)
	Note: Other specifications and parameters will remain same as given above at Sr. 3 for BUC-125watts		
6.	**LNB**		
	RF Frequency		3.4 to 4.2 GHz
	Local Frequency		5.15 GHz
	IF Frequency		950 to 1750 MHz
	Local Stability		Depends on External reference or ±10 ppm for Internal reference.
	Input Interface		CPR-229 waveguide (with Groove) or suitable
	Noise Temp. (Ta.: +25 C)		30°K max.
	Linear Gain (Ta.: +25 C)		59 dB min., 66 dB max.
	L.O. Phase Noise (SSB)		<-85 dBc/Hz @ 10kHz <-90 dBc/Hz @ 100kHz
	Input VSWR		3.0:1 typ.
	Output VSWR		2.5:1 max.
	Power Requirement		+24 VDC (+12 to +24 VDC)
	Operating Temperature		-10 to +50° C
	Storage Temperature		-10 to +70° C
	Size		Small in size
	Weight		Less than 1Kg
7.	**1:1 Redundancy switch for BUC and LNB**		

	General		- 1:1 BUC and LNB redundancy switch, suitable for the supplied BUC and LNB for remote site setup - All cables, connectors, splitters/combiners, mounting kits, accessories etc required for their integration and installation	
8.	**Dish Antenna – 3.8meter**			
	a)	Antenna Size	3.8 M, Tx/Rx, C-band with Feed	
		Operating Frequency (GHz)	Receive: 3.625 - 4.20 GHz Transmit : 5.845 - 6.425 GHz	
		Midband Gain (+/- .5dB)	Receive: 42.00 dBi Transmit : 46.20dBi	
		VSWR	Receive: 1.3:1 Max.(<-17.70 dB) Transmit : 1.3:1 Max.(<-17.70 dB)	
		Pattern Beamwidth (in degrees at midband)	-3 dB	Rx 1.40 deg Tx 0.90 deg
			-15 dB	Rx 3.20 deg Tx 2.00 deg
		Sidelobe Envelope, Co-Pol (dBi)	$100\lambda/D < \theta \leq 20^0$	29 - 25 Log θ dBi
			$20^0 < \theta \leq 26.3^0$	-3.5 dBi
			$26.3^0 < \theta \leq 48^0$	32 - 25 Log θ dBi
			$\theta > 48^0$	-10 dBi (averaged)
		Note: In receive portion of C-band only, sidelobe envelope specified from 100l/D rather than 1^0		
		Antenna Noise Temperature	20^0 Elevation	38 K
			40^0 Elevation	36 K
		Power Handling	1 kW	
		Cross Polarization Isolation	On Axis	> 30 dB
			Within 1.0 dB Beam width	> 27 dB
		Output Waveguide Interface Flange	Receive	CPR 229 F
			Transmit	CPR 137 or Type N
	b)	**Mechanical**		
		Reflector Material	Glass Fiber Reinforced Polyester SMC	
		Antenna Optics	Easy-to-assemble, 4 Pc., Offset Fed Prime Focus Design with 0.6 F/D optics.	
		Mast Pipe Size	10" SCH 40 Pipe (10.75" OD) 27.3 cm. minimum	
		Elevation Adjustment Range	12° to 90° or 0° to 15° for Polar Latitudes	
		Azimuth Adjustment Range	360° Continuous with +/- 35° Fine Adjustment	
	c)	**Environmental performance & others**		
		Wind Loading	Operational	80 km/h
			Survival	200 km/h
		Temperature Range (operational)	-10° to 60° C	
		Rain (operational)	10mm per hour	

		Atmospheric Conditions	Salt, Pollutants and Contaminants as Encountered in Coastal and Industrial Areas
		Relative Humidity	0 to 100% Condensing
		Solar Radiation	360 BTU/h/ft2
		Mount	-Non-Penetrating Mount : - Its installation, commissioning, integration -All nuts, bolts, cables, connectors, concrete blocks, etc to mount and fix it so that antenna should not disturb/misalign due to high wind speed which is specified in the antenna specs. -The installation of mount shall be as per the standard guidelines of antenna OEM and DoT.
		Others	-All iron parts of the antenna which requires anti-rust painting shall be done by the bidder each year to avoid rusting of such parts. -All parts of the antenna, rod, nuts, bolts, mast, etc shall be included in the warranty and AMC and bidder has to repair /replace them during warranty/AMC appropriately to the system fully functional. -Supplied with turntable assembly
9.	**UPS – 3KVA**		
		Rating	On line UPS system of 3KVA
	i)	Input Parameters	
		Technology of Rectifier	Microprocessor controlled True On-line Double conversion PWM Technology, using IGBT as switching devices
		Rated Voltage	220V, single phase
		Voltage range	150V-260V
		I/p Frequency range	47-54Hz
		Power factor	Power factor => 0.80
	ii)	Battery	
		Type	Lead acid maintenance free battery SMF / Sealed Valve Regulated Lead Acid (VRLA) battery, Maintenance free with steel rack for battery housing.
		Charging capability	12 Hours for 80%
		Backup capability	To maintain 9600VAH (minimum) with the combination of 65AH or 75AH or 100 AH of 12 V each
		Battery life/warranty	The life of the batteries shall be minimum 2 years or warranty of batteries shall be minimum 2 years.
	iii)	Output Parameters	
		Power factor	0.8
		Voltage	220V, single
		O/P Voltage THD	<3% for non-linear
		Crest factor	3:1
		Efficiency	>95% full load
		Overload performance (% of rated load)	1 min for 125%
		Bypass	Built-in
	iv)	System parameters , environmental parameters and others	
		System efficiency	>90%

		Noise	<55dB
		Display	LCD/ LED
		Safety	IEC/EN61000-3-11,12 Or equivalent conformance
		Operating Temp	0-40 degree
		Relative humidity	5-95% without condensation
		Alarm	-Mains Fail -Low Battery Overload Overheat
		Protection	Input Over/ Under Voltage Overload at the output Battery Short Circuit Over Temperature Protection
		Quality standard	ISO certification, safety & EMC certification as per IEC standards
		Isolation transformer	Built-in isolation transformer
		Display	Status display for load, battery, battery Replace
		Miscellaneous	- All cables, wires, connectors, mounting kits, accessories etc required for their integration and installation.
		Warranty (Three Years)	**On-site comprehensive warranty of three years** from the successful installation and its acceptance.
10.	**Earthing -3 points**		
			▪ Earthing at remote sites to protect the VSAT equipment from high voltage. E-N voltage less than two volts to be maintained and the Earth should be less than 2 Ohms. ▪ Earthing should be Chemical type. ▪ Chemical Earthing using Electrode (of size 40 mm dia, 3 meter long, K-type copper pipe) connected with 32X4 mm GI internal strip complete with excavation, civil works, earth enhancement material (minimum 30Kgs), Inspection chamber (concrete /cast Iron), cast iron cover with back fill compound. ▪ Copper strip (25mmWx6mmH), multi-strand single core pvc insulated 10 sqmm copper cable, etc shall be used for connections. ▪ Three points earthing means three separate earthing pits shall be done nearby (keeping some minimum distance between them as per standard norms) and all shall be jointed all altogether. This joint earthing shall be used to protect the equipments from power fluctuations. ▪ All material shall confirm to the relevant Indian standards and shall be of the standard make & design. ▪ **Three years on-site comprehensive warranty period.**
11.	**Dish Antenna: 4.5 – 4.8meter**		
	a)	Antenna Size	4.5 to 4.8 Meter , Tx/Rx antenna, C-band, with feed and motorization
		Operating Frequency (GHz)	Receive: 3.625 - 4.20 GHz Transmit : 5.845 - 6.425 GHz
		Midband Gain	Receive: 44.00 dBi Transmit : 46.81dB
		VSWR	Receive: 1.3:1 Transmit : 1.3:1
		Pattern Beam width (in degrees at mid band)	-3 dB: Rx 1.12 deg Tx 0.72 deg

		Side lobe Performance	ITU-RS-580	
		Antenna Noise Temperature	20^0 Elevation	47 K or better
			40^0 Elevation	43 K or better
		Power Handling	1 kW	
		Typical G/T	25.3 dB/K or better	
		Cross Polarization, on Axis	30 dB (Rx), 35dB (Tx)	
	b)	**Mechanical/Environmental**		
		Type	Cassegrain design	
		Reflector construction	8 or more Aluminum panels with heat-diffusing white paint. Cleared and brightened back-up structure	
		Mount configuration	Elevation over azimuth,	
		Drive type	Manual strut,	
		Azimuth travel	360 degree coarse	
		Elevation travel	0 to 90 degree continuous	
		Foundation	12.5L x 12.5W x 1.5H (in feet) Concrete type	
		Wind Loading	Operational	70 km/h
			Survival	200 km/h
		Temperature Range (operational)	-10° to 50° C	
		Rain (operational)	8mm per hour	
		Atmospheric Conditions	Salt, Pollutants and Contaminants as Encountered in Coastal and Industrial Areas	
		Relative Humidity	0 to 100% Condensing	
		Solar Radiation	360 BTU/h/ft2	
		Others	-Should meet latest TEC guidelines, specs -Its installation, commissioning, integration (turnkey installation and commissioning, all inclusive with its foundation) -All nuts, bolts, cables, connectors, concrete foundation, etc to mount and fix its functionality. -The installation shall be as per the standard guidelines of antenna OEM and DoT.	
			-All iron parts of the antenna which requires anti-rust painting shall be done by the bidder. -All parts of the antenna, rod, nuts, bolts, mast, etc shall be included in the warranty and AMC and bidder has to repair /replace them during warranty/AMC appropriately to the system fully functional.	

The following equipments may also be purchased depending on the requirement. This equipment will be integrated with the high capacity SCPC VSAT link or may be purchased for any other links. Its specifications are as below:

11	**WAN optimizer at Central site for Asymmetric link**		
	a)	Generic Requirement	The equipment should provide TCP (Transmission Control Protocol) acceleration, header compression, data compression, image transformation and dynamic content caching to achieve optimization
			It should work in both Bridge and Routed mode

			It should provide payload compression, packet aggregation, TCP acceleration and object caching.
			VOIP traffic should undergo header compression
			It should provide few levels (2 or more) of settable hierarchical QoS.
			It should work in a point to point topology.
			It should work with both IPv4 and IPv6 and mixed environment.
	b)	Functional & Technical Requirement	The equipment should provide the following features: ▪ Lossless compression of HTTP traffic, file attachments, file uploads and downloads ▪ Compression of all HTTP cookies, HTTP header and HTTP get and post in both directions ▪ Image reduction and smoothing ▪ Dynamic object and file caching ▪ Dynamic data suppression ▪ Maintain persistent connection between sites.
			Traffic classification on ingress side
			Compressed traffic should be aggregated into larger Ethernet packet
			Packet aggregation should be configurable based upon maximum aggregation time or maximum size of aggregation.
			Image quality reduction and smoothing should reduce the amount of data required to represent the image, without significantly altering the visual perception of the image.
			The equipment should have user configurable setting to select between quality of image and size
			The equipment should have static caching abilities.
			The equipment should also support intelligent cache differencing
			The equipment should support data de-duplication
			The equipment should support IEEE 802.1Q (VLAN) traffic.
			The equipment should support adding/deletion of IEEE802.1q VLAN tag.
			The equipment should support flow control in compliance with IEEE802.3x.
			The equipment should support source IP preservation.
			The equipment should support at least 10,000 accelerated session (connections)
			The equipment should have minimum 12GB RAM.
			The equipment should be 19" rack mountable
			The equipment should have a minimum 1TB of Hard disk capacity
			The equipment should provide "fail to wire" capability with at least one pair of bypass port.
			The fail to wire should trigger under two conditions, a) active flow exceeds max configured, b) loss of power/box failure
			The equipment should also provide the feature of 1+1 system level redundancy.
			The equipment should support traffic classification on the basis of the following: ▪ IP Subnet ▪ VLAN tag ▪ Port
			The equipment should be able to support Strict Priority(SP) queue and Stochastic Fair weighted queue(SFW) at the egreee WAN interface
			It should provide a throughput of 60Mbps (this equipment will be installed at central site with asymmetric link).

			It should provide at least 350,000 PPS
	c)	Performance Measurement Parameters	The equipment should provide the following performance measurement parameters: ▪ CPU Utilization ▪ Memory Usage ▪ HTTP Hit Savings (%) ▪ WAN bytes processed ▪ WAN bytes saved ▪ WAN savings (%) ▪ Capacity Improvement (%)
	d)	Management and Maintenance	It should **be** SNMP complaint
			It should provide open web interfaces for maintenance personnel to log into the equipment and do the management activities as per the authorization.
			It should provide SSH, telnet and console logging
			It should have provision for both out-of-band(OOB) and In-band(IB) management access
	e)	Interface	The equipment should provide at least two GbE interfaces for user traffic (1 for ingress and 1 for egress (WAN) traffic)
	f)	Environmental and Physical	Operating temperature of 0 - 50 C
			Storage Temperature -10 - 70 C
			Humidity tolerance 8 - 90%
			Power supply input a/c 100 - 240 V, 50 Hz
			Low power consumption
	g)	Others:	Installation, commissioning and integration of the system with the existing setup of ERNET India Hub and/or at ERNET India user sites.
			All cables, connectors, etc to install and commission the equipment shall be included.
	h)	Warranty	Three years on site comprehensive Warranty
12	**WAN optimizer at Remote site for Asymmetric link**		
	a)	Note: All specifications of this item will be same as of above equipment (i.e. WAN optimizer at Central site for Asymmetric link) with following modifications:	
	b)	It should provide a throughput of 20Mbps (This equipment **shall** be installed at remote site with asymmetric link. At this site, 20Mbps **shall** be transmit and 60Mbps **shall** be receive data rate).	
	c)	Three years on site comprehensive Warranty	

Annexure-II –C

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1. Normal SCPC VSAT System

This section covers general technical specification of the equipment to be supplied for establishing satellite based SCPC VSAT links, each having a variable data uplink capability upto 4Mbps, to be used for IP data network in star topology with Hub.

It is expected to connect around 200 computers on campus LAN for accessing Internet, Intranet applications using these links.

2. Hub and Remote side requirements

(i) The proposed normal SCPC VSAT network will be having 30 remote locations in Star topology for Internet, Intranet applications including video conferencing during the contract period. The initial procurement will be less.

(ii) The SCPC network shall work with C-Band transponders. Presently, ERNET India has C-band transponder space segment on INSAT – 3C, so these links will operate on this satellite.

(iii) All kind of Internet based value added applications are envisaged on the network, principal being Internet/Intranet access, Distance learning, Digital library, video conferencing, VOIP, etc.

(iv) Remote VSATs shall have capability (i) to support asymmetric SCPC inbound/outbound upto 4Mbps. The link will be used for providing Internet access (ii) high quality video conferencing with another SCPC VSAT location.

(v) The bidder may need to supply and integrate an external router at remote site for connectivity to the user LAN. The specs of router are given in this section.

The router at hub side will be provided/ arranged by ERNET India to interconnect modem. However, its integration shall be done by bidder. All necessary cables shall be arranged by the bidder.

(vi) The bidder should supply and integrate all necessary hardware and software for both VSAT Hub and VSAT remotes for full-fledged functionality of all supplied hardware with existing ERNET India's VSAT network.

(vii) **Hub side configuration:**

- Integration of SCPC VSAT network with existing RF equipment at ERNET Hub shall be sole responsibility of the bidder. The existing 9.2m C-Band Antenna subsystem and CPI HPA already installed at the VSAT Hub, Bangalore will be used. If required, bidder shall modify/reconfigure his equipment to make it operational with RF equipment of hub at no extra cost. Supply/arrangement of IF/RF combiner/splitter (active type) shall be by bidder.

- The complete SCPC VSAT network (including supplied modems) shall be managed through a Network Management System (NMS) residing at the HUB. Satellite resources may be allocated on BOD (Bandwidth on Demand) basis. Its details are given in this section. This NMS may be purchased and installed

initially or later on during the period of the contract. Thus, the supplied SCPC VSAT components shall be integratable and workable with this NMS and also without this NMS. The Bill of Material may also be seen.

- All equipment at the Hub shall be neatly mounted on a standard 19 inch racks. All the inter-rack & intra-rack cabling shall be done with cable markers. The standard rack of installation of modems and routers shall be provided by ERNET India.

  For NMS/BoD system, rack need to be supplied by the bidder.

- All equipment at the Hub Center shall operate with 230 V ± 10%, 50 Hz, AC. Bidder would indicate the power requirement for the equipment, systems, air conditioning, lighting etc. for making suitable arrangements for power load.

(viii) **VSAT terminal configuration**

- The remote VSAT shall comprise of dish antenna system (1.8m/2.4m) with capability to operate with linear / circular polarization with mount, LNB, BUC (5Watts /10 Watts L-band, wattage depending on the carrier size requirement) and IFL cable (RG-11 low loss type). The BUC wattage will be based on applications to uplink carrier from remote site. The specification of 1.8m and 2.4m antenna are given in **Annexure-II-A & B**. The bidder shall also provide router, UPS, earthing, etc., if procured based on this tender. Their specs are given in this tender in Annexure-II.

- Depending on site conditions, antenna shall be installed on the rooftop or on the ground with permanent civil foundations along with suitable earthing as per the recommendations of the Antenna Manufacturer.

- All equipment including router and other accessories at the remote VSAT sites shall be neatly mounted **on a standard 19 inch racks** and/ or as per the convenience of location and operation. If rack mounted, all the inter-rack and intra-rack cabling shall be done with cable markers. The rack will be provided by ERNET India's user.

- All equipment at the remote VSAT sites shall operate with 230 ± 10%, 50 Hz, AC (single phase). The bidder would indicate the requirement of electric load including requirements for lighting, air conditioning etc.

- All cables, connectors, etc required to install and configure the VSAT shall be by the bidder. It is to ensure completeness and interconnection aspects.

3. Expandability

The SCPC VSAT network shall be capable for 30 SCPC VSAT links. Network Management system should have provision to expand its capacity, if required in future. All the new software versions and development related to upgradation shall be provided free during the warranty period of one year.

4. Link Design

For link design, the bidder may assume 9.2meter hub antenna at Bangalore, sufficient HPA power at Hub and C-band transponder parameters on INSAT-3C satellite (as per

latest TEC/IR document). The bidder must provide the 'Link Budget', 'Link Summary' and 'Frequency plan' in the format as per latest TEC/IR document. For link design, the bidder shall consider the worst case design to substantiate the adequacy of the sub systems indicated in the tender and those offered by the bidder.

The bidder shall provide detailed link analysis for following cases:

1.	Hub to VSAT : 2Mbps VSAT to Hub: 512kbps Remote SCPC Site: at Port Blair/Kavaratti/NE/J&K Remote SCPC Site antenna: 2.4M RF (BUC): Its size needs to be calculated by the bidder
2.	Hub to VSAT : 4Mbps VSAT to Hub: 1Mbps Remote SCPC Site: at Port Blair/Kavaratti/NE/J&K Remote SCPC Site antenna: 2.4M RF (BUC): Its size needs to be calculated by the bidder
3.	Hub to VSAT : 2Mbps Remote SCPC Site: at Port Blair/Kavaratti/NE/J&K Remote SCPC Site antenna: 2.4M RF (BUC) (Output Power): 5Watts VSAT to Hub maximum possible data rate. It needs to be calculated.
4.	Hub to VSAT : 2Mbps Remote SCPC Site: at Port Blair Remote SCPC Site antenna: 2.4M RF (BUC) (Output Power): 10Watts VSAT to Hub maximum possible data rate. It needs to be calculated.

The bidder shall do and provide the link engineering so that same may be accepted by NOCC, DoT for ERNET India VSAT network by taking parameters as mentioned above. The transponder capacity should also be fully utilized without wasting its any space segment.

5. The specifications of the sub-systems of SCPC VSAT items are as below

Sr.	**Equipment Description with specifications**	
1.	**SCPC Modem : L-Band (For VSAT terminal side)**	
a)	General Specifications:	
	Data rate Range	10Kbps to 2Mbps in 16kbps steps or better with QPSK. However, same modem should support 4Mbps data rate with QPSK, just by changing its s/w license parameter. Note: Other taken parameters (like FEC, etc) shall also work and permitted on the link for INSAT-3C, C-band as per TEC, NOCC,

		DoT guidelines.
	Modulation Type	BPSK, QPSK, OQPSK, 8PSK/8QAM
	FEC	Viterbi/ Trellis Coded Modulation (TCM)/ Reed-Solomon (RS)/ Turbo Product Code (TPC)
	Frequency range	950-1750 MHz, 100Hz resolution
	Input /Output Data Interfaces	Serial Port for connectivity with router (as per router specs which are given in this tender) 10/100Base-T Ethernet (optional) IPv4 and IPv6 dual stack full functionality support
	Others	Standard High stability 10 MHz Reference Modem shall provide power to LNB and BUC (upto 10watts BUC)
	Management	-The front panel shall have display, key pad and LED indicators for monitor and control of modem parameters. -The modem can also be configured and monitored from the front panel or through the remote M&C port. -The complete RF configuration shall be stored in the modem. -The modem may support SNMP, web-based and command line interfaces for management.
	Configuration Retention	Non-volatile memory; Returns upon power up
b)	Modulator	
	Output power	Tx output power range of 25dB, in 0.1dB steps
	Roll-off	20% or better
	Accuracy	+/- 1.0dB over frequency and temperature
	Spurious & Harmonics	Less than -55dBc/4 KHz
	Tx clock options	Internal, External
	Mode of operation	Rx and Tx Continuous (SCPC),
c)	Environmental, physical, Miscellaneous, others	
	Temperature Operating	0 to 50°C
	Temperature Storage	-20 to 70°C
	Humidity	95% maximum, non-condensing
	Power Supply Input	100 to 240 AC, 50 Hz
	Power Consumption	250 W or less (including BUC, LNB load), (for 220 VAC at 50 Hz)
	Others	-Rack mountable -All cables (including cable to connect modem serial port with router serial port), connectors, etc for its installation and integration - This modem will be used at remote user side to establish the SCPC VSAT link between Remote and Hub.
	NOTE	The supplied modems (as mentioned above) shall be easily integrated and configured with NMS quoted in this tender by the bidder. If this feature is available as optional feature in the modem, the bidder must (has to quote) quote the price of this feature separately. This price for 20 VSAT sites (i.e. 40 modems including both hub and

		remote) will be taken for L-1 evaluation. BoM may also be seen. Please also note that bidder has to specify the type of software and additional hardware module (if any) which will be installed/added in the modem for NMS support and features. The hardware module may also be Ethernet module and/or any other module.
2.	**SCPC Modem : IF-Band (for Hub side)**	
a)	General Specifications:	
	Data rate Range	10Kbps to 2Mbps in 16kbps steps or better with QPSK. However, same modem should support 4Mbps data rate with QPSK, just by changing its s/w license parameter. Note: Other taken parameters (like FEC, etc) shall also be work and permitted on the link for INSAT-3C, C-band as per TEC, NOCC, DoT guidelines
	Modulation Type	BPSK, QPSK, OQPSK, 8PSK/8QAM
	FEC	Viterbi/ Trellis Coded Modulation (TCM)/ Reed-Solomon (RS)/ Turbo Product Code (TPC)
	Frequency range	IF-Band 50 to 90MHz, 100Hz resolution
	Input /Output Data Interfaces	Serial Port for connectivity with router (as per router specs which are given in this tender) 10/100Base-T Ethernet (optional) IPv4 and IPv6 dual stack full functionality support
	Management	-The front panel shall have display, key pad and LED indicators for monitor and control of modem parameters. -The modem can also be configured and monitored from the front panel or through the remote M&C port. -The complete RF configuration shall be stored in the modem. -The modem may support SNMP, web-based and command line interfaces for management.
	Configuration Retention	Non-volatile memory; Returns upon power up
b)	Modulator	
	Output power	Tx output power range of 25dB, in 0.1dB steps
	Roll-off	20% or better
	Accuracy	+/- 1.0dB over frequency and temperature
	Spurious & Harmonics	Less than -55dBc/4 KHz
	Tx clock options	Internal, External
	Mode of operation	Rx and Tx Continuous (SCPC),
c)	Environmental, physical, Miscellaneous, others	
	Temperature Operating	0 to 50°C
	Temperature Storage	-20 to 70°C
	Humidity	95% maximum, non-condensing
	Power Supply Input	100 to 240 AC, 50 Hz
	Power Consumption	100 W or less, 150 VA typical (for 220 VAC at 50 Hz)

	Others	-Rack mountable -All cables (including cables to connect modem with router serial and Ethernet ports), connectors, etc for its installation and integration -This modem will be used at Hub side to establish the SCPC VSAT link between Remote user side and Hub.
	NOTE	The supplied modems (as mentioned above) shall be easily integrated and configured with NMS quoted in this tender by the bidder. If this feature is available as optional feature in the modem, the bidder must (has to quote) quote the price of this feature separately. This price for 20 VSAT sites (i.e. 40 modems including both hub and remote side) will be taken for L-1 evaluation. BoM may also be seen. Please also note that bidder has to specify the type of software and additional hardware module (if any) which will be installed/added in the modem for NMS support and features. The hardware module may also be Ethernet module and/or any other module
3.	**NMS : Network (SCPC VSAT links) Management System**	
	General features	The SCPC VSAT links Management system shall provide the following from day-1 in star topology: ▪ The system shall be capable for Dynamic SCPC carrier allocation & true bandwidth on demand on both transmit and receive channels. ▪ The system shall support at least 30 SCPC VSAT links. ▪ The system shall be capable for to implement User defined policies for upstream carrier switching. Policies can be configured for a variety of applications such as VoIP or video or based on load or via schedule or type of service or QoS rules like IP Port/IP address/protocol type. The policies can be individually enabled on a per-remote basis, or globally enabled. The operators are able to set minimum and maximum data rates for each remote. ▪ The system shall provide guaranteed bandwidth capability. ▪ The system shall provide sharing of BW when needed between modems and switch automatically to a dedicated SCPC channel. ▪ With the growth of the network, the system shall provide more and more advantage in bandwidth saving by implementing bandwidth on-demand in the network.
	Other features	▪ The system shall latest and state-of-the-network features. It shall ensure on line monitoring and management of the network resources to achieve the desired performance. ▪ The entire NMS system shall be supplied in standard 19" racks to form complete network system. The system shall include all the necessary items (H/w and S/w) required for the network management. All interconnecting cables, connectors, interfaces, etc required to connect the equipment shall be supplied. ▪ Shall support both IP4 and IPv6 protocols for their full functionality.
	Optional	▪ The SCPC VSAT links Management system (NMS) shall support above features in MESH topology. The bidder shall provide the technical documentation in the bid. But it's price need not to be

		quoted. ▪ The system shall be expandable to support more than 30 SCPC VSAT links.
	NOTE	The supplied modem (as mentioned above at Sr. 1 and 2) shall be easily configured with this Network management system by adding the optional feature of network management in the modem (if separately quoted by the bidder).
4.	**C-band BUC – 5Watts or 10 Watts specifications**	
	Specifications	
	Operating band	C-band
	Transmit Power	: 5Watts (P1dB); Gain: 56-64 dB or 10 Watts (P1dB); Gain : 60-65 dB (BUC size shall be purchased as per the user requirement)
	General	▪ Gain Flatness over Full bandwidth : +/-2dB max ▪ Gain stability over Temp : +/-2dB max ▪ Phase noise < -80dBc/Hz max @10KHz offset ▪ Input / Output VSWR : 2:1 max ▪ Output Interface : CPRG137 ▪ External Reference Frequency : 10MHz ▪ L-band interface to the indoor unit
	Environmental	▪ Operating temperature : -20ºC to + 60ºC ▪ Relative Humidity : up to 100% ▪ Weather Protection sealed to IP65 ▪ Operating Voltage : +15VDC to +60VDC ▪ Power Supply Interface : Common input via IFL ▪ Size & weight: Small in size and low in weight ▪ Easy to install at antenna. ▪ It is a single integrated unit with built-in AC power supply. ▪ All cables and connectors shall be included for its integration and installation to establish SCPC VSAT link
4.	**LNB : Frequency: C-Band**	
	RF Frequency	3.4 to 4.2 GHz
	Local Frequency	5.15 GHz
	IF Frequency	950 to 1750 MHz
	Local Stability	Depends on External reference or ±10 ppm for Internal reference.
	Input / Output impedance	50 / 75 ohm
	IF Connector output	As per requirement
	Input Interface	CPR-229 waveguide (with Groove)
	Noise Temperature (Ta.: +25 C)	30°K max.
	Linear Gain (Ta.: +25 C)	59 dB min., 65/66 dB max.
	L.O. Phase Noise (SSB)	<-85 dBc/Hz @ 10kHz <-90 dBc/Hz @ 100kHz
	Input VSWR	3.0:1 typ.
	Output VSWR	2.5:1 max.
	Power Requirement	+24 VDC (+12 to +24 VDC)
	Current Drain	350 mA max.
	Operating Temperature	-20 to +60° C
	Size	Small in size
	Weight	Less than 1Kg

	Others	Unit shall be environmentally sealed (connectors, covers, waveguide port, etc) against humidity, rain, dust and sand for the lifetime of the unit. All cables, connectors, etc included.
6.	**IFL cable**	
		RG-11 IFL cable, low loss type, with connectors and its proper conduiting using flexible PVC pipe (however, length will vary depending on the site requirement)
7.	**Router**	
	General	Following shall be supported from day one:
		Supporting two integrated 10/100/1000 Ethernet Ports
		Two enhanced high speed WAN interface card slots that can host – (i) two cards populated with single WAN port or (ii) one card populated with two WAN ports and second card with one WAN port. -Router should be populated by one card having one WAN port initially.
		Protocols: IPv4, IPv6, static routes, OSPF, EIGRP, BGP, BGP Router Reflector, IGMPv3, IPsec, Generic routing encapsulation (GRE), Bidirectional Forwarding Detection (BVD), IPv4-to-IPv6 Multicast, MPLS, Layer 2 Tunneling Protocol, 802.1ag, 802.3ah, and Layer 2 and Layer 3 VPN.
		Encapsulation: Ethernet, 802.1q VLAN, Point-to-Point Protocol (PPP), Multilink Point-to-Point Protocol (MLPPP), Frame Relay, Multilink Frame Relay (MLFR), High-Level Data Link Control (HDLC), Serial (RS-232, RS-449, X.21, V.35, and EIA-530), Point-to-Point Protocol over Ethernet (PPPoE), and ATM.
		Traffic management: QoS, Policy-Based Routing (PBR), Performance Routing (PfR), and Network-Based Application Recognition (NBAR).
		Shall support SNMP, Remote Monitoring (RMON), syslog, NetFlow,
		Temperature: -10 to 70°C; Humidity: 5 to 95% RH ;
		RAM Memory: 512MB installed (and upgradable to 1GB) Flash Memory: 256MB installed (and upgradable to 1GB)
		AC Input voltage: 180-240V; AC input frequency : 48 to 52Hz; Rack mountable, power supply, power cable, etc
		Warranty: Three years on-site comprehensive warranty after supply, installation and its acceptance.
8.	**Earthing (Single Point)**	
	General	▪ Earthing at remote sites to protect the VSAT equipment from high voltage. E-N voltage less than two volts to be maintained and the Earth should be less than 2 Ohms. ▪ Earthing should be Chemical type. ▪ Chemical Earthing using Electrode (of size 40 mm dia, 3 meter long, K-type copper pipe) connected with 32X4 mm GI internal strip complete with excavation, civil works, earth enhancement material (minimum 30Kgs), Inspection chamber (concrete /cast Iron), cast iron cover with back fill compound. ▪ Copper strip (25mmWx6mmH), multi-strand single core pvc insulated 10 sqmm copper cable, etc shall be used for connections. ▪ This earthing shall be used to protect the equipments from power fluctuations. ▪ All material shall confirm to the relevant Indian standards and shall be of the standard make & design. ▪ **Three years on-site comprehensive warranty period**.
9.	**UPS – 1KVA**	

		Rating	On line UPS system of 1KVA
	i)	Input Parameters	
		Technology of Rectifier	Microprocessor controlled True On-line Double conversion PWM Technology, using IGBT as switching devices in rectifier and inverter sections
		Rated Voltage	220V, single phase
		Voltage range	160V-260V
		I/p Frequency range	47-54Hz
		Power factor	Power factor => 0.80
	ii)	Battery	
		Type	SMF battery with steel rack for battery housing.
		Charging capability	12 H for 80%
		Backup capability	To maintain 1500VAH (minimum)
		Battery life/warranty	The life of the batteries shall be minimum 2 years or warranty of batteries shall be minimum 2 years.
	iii)	Output Parameters manipulating	
		Power factor	0.7 or above
		Voltage & Frequency	220V AC, 50Hz+/-0.5Hz
		O/P Voltage THD	<3% for linear load
		Crest factor	3:1
		Efficiency	>90% full load
		Overload performance (% of rated load)	1 min for 125%
		Bypass	Built-in / Automatic
	iv)	System parameters , environmental parameters	
		Noise	<55dB
		Display	LCD/ LED
		Safety	IEC/EN61000-3-11,12 Or equivalent conformance
		Operating Temp	0-40 degree
		Relative humidity	5-95% without condensation
		Alarm	-Mains Fail -Low Battery Overload Overheat
		Protection	Input Over/ Under Voltage Overload at the output Battery Short Circuit Over Temperature Protection
		Quality standard	ISO certification
		Isolation transformer	Built-in or External isolation transformer
		Display	Display for battery, Replace Battery, overload,, bypass
		Miscellaneous	- All cables, wires, connectors, mounting kits, accessories etc required for their integration and installation
		Warranty (Three Years)	**On-site comprehensive warranty of three years** from the successful installation and its acceptance.

Annexure-II –D

Specifications of miscellaneous items:

Sr.	Equipment Description with specifications	
1.	**Wi-Fi Access Point (For indoor)**	
	General	IEEE 802.11 a/b/g/n Access Point having antenna with at least two Ethernet 10/100/1000 port
		Above Ethernet interface should be PoE type with PoE adaptor so that it shall be connected with Ethernet Hub or Ethernet Switch having Ethernet port without POE support.
		Shall work perfectly in Indian environment
		Security 802.11, WPA2, WPA, 802.1x, AES/TKIP, EAP/TLS
		It shall have capability to assign the IP addresses to the wireless devices accessing the Internet through it. (DHCP)
		It shall have password protection to access the Internet/Intranet through it
		Mounting kit including installation, commissioning, activation work, etc at site
		Three years on-site comprehensive warranty from the successful installation and acceptance.
2.	**Wi-Fi Access Point (For outdoor)**	
	General	IEEE 802.11 a/b/g/n, Access Point having antenna with at least one Ethernet 10/100/1000 port
		Above Ethernet interface should be PoE type with PoE adaptor so that it shall be connected with Ethernet Hub or Ethernet Switch having Ethernet port without POE support.
		Shall work perfectly in Indian environment
		Security 802.11, WPA2, WPA, 802.1x, AES/TKIP, EAP/TLS
		It shall have capability to assign the IP addresses to the wireless devices accessing the Internet through it. (DHCP)
		It shall have password protection to access the Internet/Intranet through it
		Mounting kit including installation, commissioning, activation work, etc at site
		Outdoor with necessary environment protection (including protection from heavy rains)
		Three years on-site comprehensive warranty from the successful installation and acceptance.
3.	**UTP cable and its laying**	
	General	CAT 6 type UTP cable for integration of Wi-Fi Access Point with Ethernet Hub/switches available at the site.
		The proper conduiting of UTP cable using PVC pipes
		Termination of UTP cable with connectors for interconnectivity with Ethernet switch/hub, Wi-Fi Access Point, etc
4.	**Server**	
	Specifications:	
	General	Mount type: Rack server

		Processor: Minimum Frequency / cache:2.5GHz/15MB; Minimum six-core processor;
		I/O Expansion slots: Minimum 2PCIe (PCI Express)
		Memory:16GB – (in 4x4GB modules) (support upto 256GB)
		Internal Storage: 1000GB (support upto 10TB) with storage controller; Type: 6Gbps SATA; Logical drive supported: upto 6 logical drives; Hot Plug support; RAID support;
		Networking Ports: 2x1GbE (Support upto 4x1GbE ports); Connector type: RJ45;
		Other Ports: VGA, Serial, USB, SD Ports; Minimum 4USB ports (with 2in front);
		Power on button;
	NOS	Red Hat Enterprise Linux 7 (Pre Installed and configured) – latest version if newer is available and supported, NOS CD
	Others	Humidity (operating): 10 to 90% relative humidity), non-condensing Emission: Class A FCC rating, Power supply; Power: 200 to 240VAC/50Hz; Low Acoustic noise, System internal cooling fan with redundancy; Server shall be of standard make. All cables, connectors, rack mounting items, etc
	Warranty (Three Years)	**On-site comprehensive warranty of three years from the successful installation and its acceptance**.
5.	**Encoder-cum-Streaming system**	
	General	The system shall provide: - MPEG-4 H.264 compatible Encoding and steaming system - Low encoding latency - Rugged, silent design - Streaming of full motion video (FMV) content across LANs and WANs - Encoding and multicasting high-res HDMI/DVI sources - Streaming PC screens over the LAN / WAN - Broadcast quality video - Viewing of stream using free available video players, like Windows media player, Adobe flash. - Switching of output for audio/video inputs - Support to Internet Explorer, Google Chrome, FireFox browser for viewing streamed video
	Video Inputs	▪ 1 x HDMI ▪ 1 x DVI-I ▪ 4 x Composite (RCA type) [Optional: The system shall support S-video input also, RCA type) ▪ SDI input (BNC type) (for SD/HD)
	Input Resolutions	1920x1080p /i 1280x720p /1024/768p 720x480p /i 720x576p /i
	Audio Inputs	▪ 1 x HDMI Embedded audio ▪ 1 x Analog unbalanced stereo audio, AC-coupled (mini-jack) ▪ 4x Analog unbalanced stereo audio pairs (RCA)
	Video Output	▪ H.264 (MPEG-4)

		▪ Bit Rate: 100 Kbps - 10 Mbps ▪ Frame Rate: 5-60 fps ▪ Bit Rate Regulation Modes: Constant (CBR), Variable (VBR) ▪ Output Resolutions: Configurable from QCIF upto full HD ▪ Low Encoding Latency
	Audio Output	▪ MPEG-4 AAC-LC, MPEG-1 L2 ▪ Stereo and mono modes ▪ Bit Rate: 32Kbps - 256Kbps in Stereo, 16Kbps - 128Kbps in Mono ▪ Sampling Rate: 16 kHz - 48 kHz
	Network Streaming Protocols	UDP, RTSP, Unicast and multicast modes simultaneously
	Output interface	10/100 Mbps Ethernet: RJ -45, Auto sense
	Management	▪ Secure Web based remote management interface (HTTPS) ▪ SSH interface ▪ Dashboard with dynamically updating I/O signal detection and streaming stats ▪ Auto start mode recovers saved configuration after power cycle ▪ Saving of channel configurations ▪ System and channel event logging ▪ Password-protected system, including HTTP
	Others	Operating Temperatures: -10º C to +45º C Relative Humidity: 5% to 95% (non-condensing) EMC Standards: FCC part 15 class B and CE Power: 200 - 220VAC, 50Hz (+/- 5% variation) Rack mountable Status LED's for power, network activity, streaming and video source indications All cables, connectors to configure, control, monitor, manage and install the system
	Warranty	On-site comprehensive **warranty of three years** from the successful installation and its acceptance.
6.	**Down converter**	
	Specification for Down Converters (At the Hub side)	
	General	Down converter in 1:1 auto redundancy configuration with redundancy switch (this switch may be internal or external)
	Input frequency range	C-band (3.4 – 4.20 GHz)
	Input Impedance	50 Ohms
	Input Power	-45dBm typical
	Output Frequency	70 MHz +/- 20MHz
	Output Power	+20dBm
	Type of conversion	Double Conversion, No spectral inversion
	Gain	40 dB maximum @ 0 dB total attenuation
	Gain control	30 dB in 0.1dB increments
	Gain Ripple	+/- 0.3 dB / 40 MHz
	Gain stability	+/-0.25 dB/ day and +/-1.0 dB (0 to 50^0 C)
	Spurious	-80 dBm @ 0 dBm output (Non carrier related) or better

		-65 dBc @ 0 dBm output (carrier related) or better
	Frequency step size	1 kHz
	Frequency stability	+/- 1 x 10^{-8} over temperature (0 to 50 degree C) +/-1 x 10^{-9} / day
	Phase Noise	10KHz : -88dBc/Hz 100KHz: -95dBc/Hz 1MHz : -110dBc/Hz
	Monitor Ports	IF and RF on Front Panel, -20dBc Nominal
	Accessories	All cables, connectors, accessories etc to install, commission and integrate the system shall be included.
	Warranty	On-site comprehensive warranty of **three years** from the successful installation and its acceptance.
7.	**Up converter**	
	Specification for Up Converters (At the Hub side)	
	General	Up converter in 1:1 auto redundancy configuration with redundancy switch (this switch may be internal or external)
	Output frequency range	C-band (5.850 – 6.425 GHz)
	Type of conversion	Double conversion without spectral Inversion
	Output Impedance	50 Ohms
	Output Return Loss	>18 dB
	Spurious	-80 dBm @ 0 dBm output (Non carrier related) -65 dBc @ 0 dBm output (carrier related)
	Input Frequency	70 MHz +/- 20MHz
	Input Power	-35dBm typical (Input level)
	Gain	30 dB @ 0 dB total attenuation
	Gain control	30dB in 0.1 dB increments
	Gain Ripple	+/-0.3 dB/40 MHz
	Gain stability	+/-0.25dB/24 hours, +/- 1.0 dB (0 to 50 deg C)
	Frequency step size	1kHz
	Frequency stability	+/- 1 x 10^{-8} over temperature (0 to 50 degree C) +/-1 x 10^{-9} / day
	Phase Noise	10KHz : -88dBc/Hz 100KHz: -95dBc/Hz 1MHz : -110dBc/Hz
	Monitor Ports	IF and RF on front Panel, -20dBc Nominal
	Accessories	All cables, connectors, accessories etc to install, commission and integrate the system shall be included.
	Warranty	On-site comprehensive warranty of **three years** from the successful installation and its acceptance.

Annexure – III

TIME SCHEDULE

1. The Bidder shall complete the following activities in the below mentioned time frame for the supply, installation, commissioning and integration of all supplied items/services procured through this tender (and/or rate contract signed with successful L-1 bidder) for their full functionality (including VSATs) as per tender terms and conditions at ERNET India's sites:

Sr	Activity	Time frame of completion	Remarks
1	The bidder shall submit the BG-1 to ERNET India as per tender	One week from the issue of PO	1 week
2	The Bidder shall submit the PI and BG-2 to ERNET India of imported equipments for the opening of LC.	One week from the issue of PO	Parallel activity to Sr.1
3	Delivery of imported and indigenous Hub side items at VSAT Hub, Bangalore and Delivery of imported and indigenous remote VSAT site items at Central warehouse at Delhi.	Six weeks from the opening of LC for imported items And Six weeks from PO for indigenous items.	7 weeks for imported and 7 weeks for indigenous items
4	Site-survey of user location and submission of its report to the user and to ERNET India HQ.	Two weeks from the issue of PO	Parallel activity to Sr. 1 and 3
5	Preparation of site as per the site-survey report by the site. (Any delay in account of preparation of site as per site survey report will not be accounted on the Bidder part)	Two weeks after the submission of site-survey report. This time may vary (decrease/exceed) from site to site.	Parallel activity to Sr.3
6	Delivery of imported and indigenous remote VSAT site items from Central warehouse at Delhi to the user sites. (Any delay in arranging the shipment related papers ie road permits, declarations, challans etc by	Four weeks from the handing over of shipment related documents to the Bidder by ERNET India.	4 weeks

	ERNET India will not be accounted on Bidder's part).		
6	Installation, commissioning and activation of Hub as well remote site equipments (for their full functionality)	Three weeks from the delivery of equipment at the respective site	3 weeks
		*Total Time:	15 weeks
*Total time of 15 weeks may be re-appropriated in above mentioned activities, but total time will remain same (this re-appropriation condition is applicable only if all activities are involved by POs).			

Note:

- The Bidder should note that they shall inform to ERNET India at least two weeks in advance (in writing) about all the documents required from ERNET India/user sites to establish the Broadband VSAT link. Any delay in providing the above information will be accounted on the Bidder part.

- The Bidder should note that they will inform about all the documents required to ship the equipments to ERNET India/ user site locations well in advance to ERNET India in writing, not later than two weeks after the issue of PO. Any delay in providing the above information will be accounted on the Bidder part.

- Bidder shall provide the correct information to open the LC and shall verify its contents before its opening at ERNET India office. Any incorrect information provided by the Bidder resulting in non-acceptance etc of LC shall be on account of Bidder.

- **Time to take up the Operation of the VSAT Network:** The Bidder shall depute all resources including manpower, etc required for the Operation of the VSAT Network within two weeks from the issue of communication (in the form of letter, Purchase order, etc) from ERNET India.

- **Time to take up the Maintenance of the Hub side and remote side equipments (including all hardware, software, etc):** The Bidder shall depute all resources (hardware, software, manpower, etc) required for the on-site comprehensive maintenance of the ordered work within two weeks from the issue of communication (in the form of letters, Purchase Orders, etc) from ERNET India.

Annexure – IV

ANNEXURE – IV
Bill of Material

Sr.	Description	Qty
At Hub site:		--
1.	New DVB-S2 ACM, CCM/MFTDMA baseband with NMS, etc at Hub (Central site)	01
New DVB-S2 ACM, CCM / MFTDMA type VSATs for remote sites comprising of:		--
2.	Satellite Modem (IDU)	250
3.	ODU /RF C-BAND- 2Watts or higher	250
4.	ODU /RF C-BAND- 3Watts or higher	250
5.	ODU /RF C-BAND- 5Watts or higher	50
6.	LNB C-BAND	250
7.	Antenna 1.8M with Linear Polarization	100
8.	Non-Penetrating mount for 1.8M Antenna and its installation	100
9.	Antenna 2.4M with Linear Polarization	150
10.	Non-Penetrating mount for 2.4M Antenna and its installation	150
11.*	IFL cable with connectors (2x30Meter length) and its conduiting*	250
12.	Site survey, Installation, commissioning activities, etc for MFTDMA VSAT link establishment at user site including its integration, functioning with ERNET Hub	250
Items /services required for the upgradation/migration of existing SkyEdge-I IP VSAT sites to new DVB-S2 ACM, CCM/MFTDMA type of VSAT:		--
13.	Satellite modem (IDU) (please quote if existing cannot be re-used)	180
14.	ODU /RF C-BAND- 2Watts (please quote if existing cannot be re-used)	180
15.	LNB C-BAND (please quote if existing cannot be re-used)	180
16.	Installation, commissioning, integration activities, etc for upgradation/ migration of existing SkyEdge IP VSAT link to new type of DVB-S2 ACM, CCM/MFTDMA VSAT link	180
---	Note: The bidder shall use the existing antenna system and IFL cable of existing VSAT link at remote sites	--
17.	Training of 2 officers at manufacturers location	01
Items/services required for high capacity SCPC VSAT link – for 4 sites		--
18.	Satellite modem- High capacity	16
19.	BUC 125Watts @P1dB or of higher size as per the link engineering	8
20.	LNB	8
21.	1:1 redundancy system/switch for satellite modem of high capacity	8

22.	1:1 redundancy system/switch for BUC and LNB	4
23.	IFL cable – two sets (each of 50 meter length: from antenna to modem)	4
24.	Antenna System– 3.8mtr with Feed	4
25.	Non-Penetrating mount system for 3.8meter dish antenna	4
26.	Concrete Platform for installing the 3.8M Antenna at user location	4
27.	UPS – 3KVA	4
28.	Earthing –Three points	4
29.	Site survey, Installation, commissioning, integration, activation, etc for the establishment of high capacity SCPC VSAT link	4
30.	WAN optimizer at Central site for Asymmetric link	4
31.	WAN optimizer at Remote site for Asymmetric link	4
Following items should also be quoted (These items may be required in case of higher size antenna)		--
32.	Antenna system with linear polarization (4.5 - 4.8meter)	02
33.	BUC – 100Watts P1dB	04
34.	BUC – 80Watts P1dB	04
Items/services required for normal SCPC VSAT link – for 30 sites		--
35. (a)	Normal Satellite modem (For Remote site : L-band type) (without NMS feature, only if it is available as optional feature)	30
(b)	Normal Satellite modem (For Hub site : IF- type) (without NMS feature, only if it is available as optional feature)	30
(c)	S/w License to enhance the capability of normal SCPC Modem for 4Mbps data rate support	30
(d)	10/100 Base T Ethernet module for the normal modem (including its installation cost)	30
36.	Enabling of NMS optional feature in the modem per modem cost (This may be done by installing software and/or hardware module in the modem. The hardware module may also be Ethernet module and any other module, if it is required. Details be provided)	40
37.	BUC- 5 watts or higher	30
38.	LNB	30
39.	IFL cable – one set (length: 30 meter from antenna to modem)	30
40.	Antenna with linear polarization – 2.4mter	30
41.	Non-Penetrating mount system for 2.4meter dish antenna	30
42.	Antenna concrete platform for 2.4meter antenna	30
43.	UPS- 1KVA (It can be supplied with other types of VSATs also)	90
44.	Earthing (single point) (This can be supplied with other types of VSATs also)	100
45.	Router	30
46.	Site survey, Installation, commissioning, integration, activation, etc for the establishment of normal SCPC VSAT link	30
47.	NMS for Normal SCPC VSAT links at Hub	01
Following should also be quoted (These items may be required in case of higher size requirement)		--

48.	BUC- 10 watts (or higher) compatible with quoted normal SCPC VSAT link		10
Maintenance and Operation services			--
49.	AMC of existing RF equipments of VSAT Hub, Bangalore:		
(A)	Hub Antenna system		1st Year
			2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year
			7th Year
			8th Year
(B)	LNA system		1st Year
			2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year
			7th Year
			8th Year
(C)	Up converter system (1 set)	Qty=2 sets	1st Year
			2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year
			7th Year
			8th Year
(D)	Down Converter system (1 set)	Qty-2 sets	1st Year
			2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year
			7th Year
			8th Year
(E)	HPA system		1st Year
			2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year

			7th Year
			8th Year
(F)	Antenna Tracking System (ATS)		1st Year
			2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year
			7th Year
			8th Year
(F-1)	Any repair cost of this Antenna Tracking System (ATS) before taking its 1st year AMC (Maximum time to repair it shall be 3 months) – one unit		01 time cost
50.	AMC of new DVB-S2 ACM, CCM/MFTDMA baseband at Hub side, Bangalore after one year of warranty period		2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year
			7th Year
			8th Year
51.	Hub Operation services to ERNET India 's VSAT network (on 24x7x365 basis)		1st Year
			2nd Year
			3rd Year
			4th Year
			5th Year
			6th Year
			7th Year
			8th Year
52.	AMC of new remote VSATs (DVB S-2 ACM, CCM/MFTDMA type) after one year of warranty period (for new VSATs) (It will include antenna system, feed, IDU, RF, LNB, connectors, etc) - with 1.8M or 2.4M antenna, 2 or 3Watts RF)	2nd Year	200 VSATs
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
53.	AMC of new remote VSATs (DVB-S2 ACM, CCM/MFTDMA type) after one year / 1st year of warranty period (for new VSATs) (It will include antenna system, feed, IDU, RF, LNB, connectors, etc) - with 1.8M or 2.4M antenna, 5Watts RF)	2nd Year	50 VSATs
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
54.	AMC of upgraded VSATs-DVB-S2 ACM, CCM/MFTDMA type (existing VSATs which will be upgraded after replacing their few items like IDU,	1st Year	180 VSATs
		2nd Year	
		3rd Year	
		4th Year	

	BUC, etc) (It will include 1.8 or 2.4M antenna system, feed, IDU, 2 or 3watts RF, LNB, connectors, etc)	5th Year	
		6th Year	
		7th Year	
		8th Year	
55.	AMC of high capacity SCPC VSAT (including modems, RFs, LNBs, switches, Antenna system, hub modems with switch, etc) (with 3.8M antenna and about 125Watts RF)	2nd Year	4 VSATs
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
56.	AMC of high capacity SCPC VSAT(including modems, RFs, LNBs, switches, Antenna system, hub modems, etc) (with 4.X M antenna and about 80 or 100Watts RF)	2nd Year	4 VSATs
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
57.	AMC of Normal SCPC VSAT (including modem, RF, LNB, 2.4M antenna system, Hub modem, etc) (with 5watts RF)	2nd Year	30 VSATs
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
58.	AMC of Normal SCPC VSAT (including modem, RF, LNB, 2.4M antenna system, Hub modem, etc) (with 10watts RF)	2nd Year	10 VSATs
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
59.	AMC of S/w License to enhance the capability of normal SCPC Modem for 4Mbps data rate support	2nd Year	30 Modems
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
60.	AMC of 10/100 Base T Ethernet module for the normal modem	2nd Year	30 Modems
		3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
61.	AMC of Enabling of NMS optional	2nd Year	40 Modems

	feature in the modem per modem cost	3rd Year	
		4th Year	
		5th Year	
		6th Year	
		7th Year	
		8th Year	
62.	AMC of 3KVA UPS	For 4th Year	4
		For 5th Year	
		For 6th Year	
63.	AMC of 1KVA UPS	For 4th Year	30
		For 5th Year	
		For 6th Year	
64.	AMC of three Point Earthing	For 4th Year	4
		For 5th Year	
		For 6th Year	
		For 7th Year	
65.	AMC of single Point Earthing	For 4th Year	30
		For 5th Year	
		For 6th Year	
		For 7th Year	
66.	AMC of NMS of SCPC VSAT Network	2nd Year cost	1
		3rd Year cost	
		4th Year cost	
		5th Year cost	
		6th Year cost	
		7th Year cost	
		8th Year cost	
67.	AMC of WAN optimizer at Central site for Asymmetric link	4th Year cost	4
		5th Year cost	
		6th Year cost	
		7th Year cost	
		8th Year cost	
68.	AMC of WAN optimizer at Remote site for Asymmetric link	4th Year cost	4
		5th Year cost	
		6th Year cost	
		7th Year cost	
		8th Year cost	
69.	**Miscellaneous Items:** **Note: These items may be procured over the entire period of contract as and when required. The cost of these items shall be included for evaluating L-1. This is to get the best price quote of these items.**		--
A	Wi-Fi Access Point (for Indoor)		200
B	Wi-Fi Access Point (for Outdoor)		100
C*	*UTP cable and its laying for it 30 meter length for one Wi-Fi Access Point		240

D	Encoder-cum-Streaming System	2
E	Server	2
F	Up converter	3
G	Down converter	3
H	C to L-band converter and vice versa (its specs will remain same as given in Annexure-IIA)	02
I	C-band Linear Feed for 1.8M antenna	20
J	C-band Linear Feed for 2.4M antenna	20
K	Power Adaptor of the IDU (Compatible with quoted DVB-S2 ACM, CCM/MFTDMA IDU of the same make & model)	60
L	Site survey of remote site (for DVB-S2 type VSAT)	30
M	Site survey of remote site (for normal SCPC type VSAT)	10
N	De-installation and Installation of 1.8M antenna system for its shifting (excluding its transportation)	30
O	De-installation and Installation of 2.4M antenna system for its shifting (excluding its transportation)	30
P	De-installation and installation of Indoor Unit equipment for its shifting (excluding its transportation charges)	30
Q	De-installation and installation of complete VSAT system with 1.8M antenna (IDU & ODU) for its shifting (excluding its transportation charges)	30
R	De-installation and installation of complete VSAT system with 2.4M antenna (IDU & ODU) for its shifting (excluding its transportation charges)	30
S	Polarizer for conversion of Linear feed to Circular Feed for 1.8M C-band antenna	20
T	Polarizer for conversion of Linear feed to Circular Feed for 2.4M C-band antenna	20
U	Concrete Platform for installing the 1.8M Antenna at user location [8ft-Lx8ft-Bx6inch-H]	20
V	Concrete Platform for installing the 2.4M Antenna at user location [12ft-Lx12ft-Bx6inch-H]	20
W	Work at Hub side required for the shifting of satellite within one week from PO (from existing satellite to another satellite). This work will also include re-alignment of antenna system, coordination with DoT (NOCC, etc) for fine tuning of the antenna, carrier approvals, etc	01
X	Work at remote site for the shifting of satellite within three weeks from the PO or two weeks from the completion of work at Hub, whichever be maximum (from existing satellite to another satellite). This work will also include re-alignment of antenna system (including 1.8m or 2.4m or 3.8m with feed) for its fine tuning, re-configuration of IDU, BUC, LNB, coordination with DoT (NOCC, etc) work, etc	400

	(for DVB-S2 ACM, CCM/MF-TDMA & normal SCPC VSATs)	
Y	**Pertaining to only for high capacity SCPC VSAT link:** Work is :- All work at Hub and remote side to fine tune the link in case of change of satellite within three weeks from the PO or two weeks from the completion of work at Hub, whichever be maximum	04 links
	Total Price of all items from Sr. 1 to Sr. 69	**Grand Total**

NOTE:

1. If any other items and/or services are required to install the (i) Hub side items and (ii) remote VSAT for their full functionality, the same may also be indicated in above table (BoM) and shall be quoted in the format as at **Annexure-IV A/B**. The same will be accounted for commercial evaluation of the bid.

2. Charges for Licenses, statutory approvals/clearances etc, if any by the bidder shall be inclusive.

3. *Additional IFL/UTP cable, if required at the site and/or as per the site-survey report will be supplied and installed by the Bidder at the same per meter rate, calculated from the above quoted rate.

4. For financial comparison to evaluate L-1 bid, the cost of all items (for all quantities) upto the site (i.e. on site price at ERNET India's user) inclusive of all components, like sales tax, service tax, VAT, entry tax, etc. shall be taken. Accordingly all components shall be indicated and taken in the financial bid. However, custom duty component will not be taken for financial comparison for evaluating L-1 bid.

5. Only for the shipment of equipment at remote VSAT site/user site, the road permit will be arranged by ERNET India/its user and also the cost of arranging the road permit will be borne by ERNET India/ its user. But, the cost of shipment and all expenses incurred to deliver the items at remote VSAT site /user site will be borne by the bidder.

6. The breakup of the prices shall be provided by the bidder in **Annexure-IVA or IVB.** (**Annexure-IVA** is for Dollar value component and **Annexure-IVB** is for Rupee value component).

7. The Bidder must quote price of each line item of above table. **Bids received without these details are liable to be rejected.**

8. All warranty and AMCs shall be on-site comprehensive.

Price Schedule - ANNEXURE - IV A (for $ Items)

PRICING SCHEDULE

Foreign Exchange Rate: 1US$ =

S. No.	Item description	Unit for Qty	Qty	FOB Price at port of dispatch, per unit	Insurance, Freight, etc charges upto port of lading Per unit	CIF Price at port of lading, per unit	Full Custom duty rate (In %)	Full Custom duty amount	Inland freight, insurance etc., charges per unit upto the site	Price Per unit upto the site	Total cost
(1)	(2)	(3)	(4)	(5)	(6)	(7) = 5+6			(8)	(9) = 7+8	(10) = 9x4
TOTAL (X) (in US$)											

NOTE:

1. **Rate as well as amount of custom duty on each component should be specified clearly. But, the L-1 bid will be evaluated without custom duty component.**

2. The charges towards all types of coordination services with various agencies like DoT, DoS, local bodies, etc (as per clause 9.2.6 of Section-B) shall be inclusive in column (8), as applicable.

ANNEXURE - IV B (For Local Equipment in Rupees)

PRICING SCHEDULE (Contd.)

S. No	Item details	Unit for Qty	Qty	Price Per Unit	Insurance, Freight, etc upto site, per unit	Rate of Sales / Service Tax	Amount of Sales tax	Amount of Service Tax	Total Price Per Unit (all inclusive up to the site)	Total Price
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10) =(5)+(6)+(8) +(9)	(11) =(10)x(4)
TOTAL (Y)										

Note:

1. The charges towards all types of coordination services with various agencies like DoT, DoS, local bodies, etc (as per clause 9.2.6 of Section-B) shall be inclusive in column (6), as applicable.

GRAND TOTAL = [{Total (X) (in $)} x {US$ conversion rate for Rs.}] + Total (Y)

Note: 1.Grand total will be considered for the evaluating financial bid for lowest bid (L-1)
2. All prices shall be quoted in the format as above failing which the bid will be out rightly rejected. Conditional Price Bid shall also be rejected.

Annexure – V

Format of Bank Guarantee

For BG-RC, BG-1 and BG-2

(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

ERNET India
Department of Electronics and Information Technology
Ministry of Communications and Information Technology,
10th Floor, Jeevan Prakash Building
25, K.G. Marg, New Delhi- 110 001

Dear Sirs,

Dear Sirs,
In consideration of the ERNET India, Department of Electronics & Information Technology Ministry of Communications & 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 Guranatee 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/HeadOffice 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 convenants, 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 _____ _____BANK

Signature_____
Name_____

Signature_____
Name _____
(Bank's Rubber Stamp)
Seal, name & address of the Bank and address of the Branch

Designation with Bank Stamp

Attorney as per Power of Attorney No._____

Date: _____

Place:

FOR EMD

(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,

ERNET India
Jeevan Parkash Building, 10th floor,
KG Marg, CP, New Delhi-110 001

In consideration of the ERNET India, Department of Electronics & Information Technology Ministry of Communications & 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 issued a tender no._____dated_____and M/s._____(name, constitution and address) (herein referred to as the **Bidder**, which expression shall unless repugnant to the context of meaning thereof, include its successors, administrator, executors and assigns) having made a Bid for the above-mentioned tender and the **Bidder** have agreed to give Earnest Money Deposit of Rs._____to abide with the below mentioned condition of the tender :

(1) If the **Bidder** withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of bid.

(2) If the **Bidder** having been notified of the acceptance of his bid by the Owner during the period of its validity:-

a) If the **Bidder** fails to furnish the Performance Security for the due performance of the contract.
b) Fails or refuses to accept/execute the contract.

We_____ (name of the Bank) having our 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 of Rs._____; to the Owner, within three (3) working days from the date of receipt by us of your first written demand 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 Tender. Aforesaid Payment will be made without any demur, reservation, contest, recourse or protest and/or without any reference to the Bidder. Any such demand made by the Owner to the Bank shall be conclusive and binding notwithstanding any difference between the Owner and Bidder 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 **Bidder**, and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any convenants, contained or implied,

in the Tender between the Owner and the **Bidder** 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 **Bidder** and notwithstanding any security or other guarantee that the Owner may have in relation to the **Bidder's** liabilities.

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 **Bidder** on whose behalf this guarantee has been issued.

WITNESS _____ _____BANK

Signature_____
Name_____

Signature_____
Name _____
(Bank's Rubber Stamp)
Seal, name & address of the Bank and address of the Branch

Designation with Bank Stamp

Attorney as per Power of Attorney No._____

Date: _____

Place:

Annexure – VI

Manufacturer's Authorization Form

To

ERNET India
(Under Department of Electronics and Information Technology,
Ministry of Communications and Information Technology,
Government of India)
10th Floor, Jeevan Prakash Building
25, K.G. Marg, New Delhi -110 001

Ref: Tender No. _____ dated _____

Sir,

We _____ who are established and reputed manufacturers of _____ having factories at _____ do hereby authorize M/s. _____ (Name and address of bidder) to bid, negotiate and conclude the contract with you against the above referred Tender for the following goods manufactured by us:

(i)
(ii)
(iii)
(iv)

We hereby extend our full guarantee, warranty, AMC for the durations/periods as per clauses of the above referred tender for the above offered goods for supply against this tender for bid by the above bidder.

Yours faithfully,

(Name)
for and on behalf of M/s.
(Name of manufacturers)

Note:

a. This letter of authority should be on the letterhead of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturer.
b. The bidder must submit this Manufacturer's Authorization Form for at least following items:
    (ii) DVB-S2 ACM, CCM / MFTDMA baseband and VSATs
    (iii) Dish Antenna's
    (iv) SCPC modems (both high capacity and normal)
    (v) NMS for normal SCPC modems
    (vi) BUC -125 Watts and 100 Watts and 80 Watts

Annexure – VII

Bidder's Profile

(I).	**General Information:**			
a)	Location of Corporate Headquarters			
b)	Date and country of Incorporation			
c)	Manufacturing facilities Locations and Size (for the items manufactured by the bidder) (Please attach enclosure for furnishing full information)			
	Sr.	Location	Size	
	(i)			
	(ii)			
1.1	Number of Broadband VSAT networks (including RF chain) supplied, installed, maintained and operationlized by the bidder. Note: Including Captive Network of the bidder			
	Their details are as below:			
	(i)			
	(ii)			
1.2	Number of Broadband VSATs supplied, installed and maintained by the bidder			
	Their details are as below:			
	(i)			
	(ii)			
2.1	Number of DVB-S2ACM, CCM/MFTDMA type VSATs supplied, installed and maintained by the bidder			
	Their details are as below:			
	(i)			
	(ii)			
2.2	Number of normal SCPC type VSATs supplied, installed and maintained by the bidder			
	Their details are as below:			
	(i)			
	(ii)			
2.3	Number of Hub operation and hub maintenance being looked after by the bidder (of DVB-S2 ACM, CCM/MFTDMA type)			
	Their details are as below:			
	(i)			
3.1	Number of IT staff technically qualified in providing the VSAT services in the last 2 years			
	Their details are as below			
	(i)			
	(ii)			

3.2	Number of support offices only w.r.t. VSAT business (Please attach enclosure for furnishing full information)			
	In India:			
	Sr.	Location, Support Offices, their details	Size (Technical staff in VSAT / Inventory)	
	(i)			
	(ii)			
	(iii)			
	(iv)			
	(v)			
	(vi)			
	(vii)			
	(viii)			
	(ix)			
	(x)			
4.1	List of at least two VSAT related projects implemented whose individual value not less than Rs. 200 lakhs in the last four years			
	Sr.	Detail of Project	Value in terms of Rupees	
	(i)			
	(ii)			
5.1 (a)	List of DVB-S2 ACM, CCM /MFTDMA type VSAT (of same type as quoted in this bid) purchasers through the bidder. It must also show the number of supplied such VSATs.			
	Sr.	Name of purchaser		No. of VSATs purchased
	(i)			
	(ii)			
	(iii)			
(b)	List of DVB-S2 ACM, CCM/MFTDMA type VSAT (of same type as quoted in this bid) purchasers through the OEM /others. It must also show the number of supplied such VSATs.			
	Sr.	Name of purchaser		No. of VSATs purchased
	(i)			
	(ii)			
	(iii)			
5.2 (a)	List of high capacity SCPC VSAT (of same type as quoted in this bid) purchasers through the bidder. It must also show the number of supplied such VSATs.			
	Sr.	Name of purchaser		No. of VSATs purchased
	(i)			
	(ii)			
	(iii)			
(b)	List of high capacity SCPC VSAT (of same type as quoted in this bid) purchasers through the OEM / others. It must also show the number of supplied such VSATs.			
	Sr.	Name of purchaser		No. of VSATs purchased

	(i)			
	(ii)			
	(iii)			
5.3 (a)	List of normal SCPC VSAT (of same type as quoted in this bid) purchasers through the bidder. It must also show the number of supplied such VSATs.			
	Sr.	Name of purchaser		No. of VSATs purchased
	(i)			
	(ii)			
	(iii)			
(b)	List of normal SCPC VSAT (of same type as quoted in this bid) purchasers through the OEM / others. It must also show the number of supplied such VSATs.			
	Sr.	Name of purchaser		No. of VSATs purchased
	(i)			
	(ii)			
	(iii)			
6.1	Annual Turnover of the bidder from Indian Operations			
	Sr.	Year	Turnover from VSAT related field	Total Turnover of the bidder
	(i)	FY 11/12		
	(ii)	FY 12/13		
	(iii)	FY 13/14		
	(iv)	FY 14/15		
7.1	The details that the bidder is authorized **DEALER** and is in possession of a **DEALER POSSESSION LICENSE** (DPL) and meet norms of DoT for procurement and supply of items as per this tender			
	The details are as below:			
8.1	PAN :			
	TIN or Service Tax Registration Certificate			
9.1	Declaration on the letter head stating that the bidder is non black-listed on the due date of bid submission by any Government Ministry/Department/Organisation			
10.1	Bidder must submit (i) Tender Fee; and (ii) EMD			
11.1	Manufacturer's Authorization Certificate, as per Annexure-VI			
12.1	Article of Association and Memorandum of Association of the bidder are to be submitted along with the certificate of incorporation.			
13	Signed copy of the Integrity Pact (IP) as give at **Annexure-XII** of the tender by the bidder.			

NOTE: All the above things must necessarily be supported by relevant documentation.

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Annexure – VIII

SERVICE LEVEL AGREEMENT

Terms of the Service Level Agreement would be as under:

1.0 Hub Uptime

1.1 Bidder guarantees that ERNET VSAT Hub, Bangalore uptime of 99.9% averaged on quarterly basis for 24x7x365 days operation meeting Network performance. The Hub Uptime will be calculated based on the following formula:

Hub Uptime (HU) in % = ((Hub $_{POT}$ – Hub $_{DT}$) / Hub $_{POT}$)*100

Where,

Hub $_{POT}$ = Hub power on time
Hub $_{DT}$ = Hub down time

In case required Hub uptime falls below 99.5% (averaged on quarterly basis), the Bidder shall pay penalty of Rs. 50,000/- per day to ERNET India.

Bidder shall ensure that all components installed at hub shall function in good condition. In case of failure of any equipment (hardware/software) at hub, it shall be repaired / replaced immediately, but not later than 12 hours. In case of its non-replacement of the equipment within 12 hours, the bidder shall pay penalty of Rs. 10,000/- for that day. If bidder is unable to repair or replace the faulty equipment at Hub within 24 hours, the bidder shall pay penalty of Rs. 30,000/- per day per equipment to ERNET India subsequently.

1.2 In any case if the Hub is not made operational for 10 days from the time of reporting of fault, the Bank Guarantees provided by the Bidder to ERNET India shall be invoked and any payment dues and AMC pertaining to this network shall not be paid.

1.3 Penalties whichever shall be at the higher side shall be imposed.

1.4 Hub means all items at Hub including SCPC items/modems.

2.0 For high capacity SCPC VSAT links

- SCPC VSAT link availability = 99.5% (averaged on quarterly basis)
- Maximum Time To Repair/Replace (MTTR) the items of SCPC VSAT link (at remote side) = 24 hours from the time of reporting of fault.
- Maximum Time To Repair (MTTR) SCPC VSAT link = 05 hours from the time of reporting of fault (using redundant items supplied with VSAT)
- In case, the bidder is unable to meet any of the above condition, the bidder shall pay penalty of Rs. 10,000/- per day.
- The permit to visit Kavaratti will be arranged by the UT of Lakshadweep. The bidder shall coordinate for it. In case of any delay in getting the entry

permit, the bidder will intimate the same to ERNET India to get the relaxation in time in attending and resolving the link related problems. The decision of ERNET India in providing time relaxation shall be final.

3.0 For DVB-S2 ACM, CCM/MFTDMA and normal SCPC type VSATs Uptime / Availability

Bidder guarantees that each C-Band remote VSAT Uptime of 99% (97% for VSATs installed in NEH region, Andaman & Nicobar and Lakshadweep Islands) averaged on quarterly basis (excluding the National holidays – January 26th, August 15th and October 2nd). VSATs should meet Network Performance as mentioned in the tender**.**

- Individual VSAT downtime refers to the time for which the VSAT equipment is unable to support the satellite link with the Hub, due to failure of the VSAT IDU, RFT/BUC, LNB, Antenna system, IFL cable, connectors, etc. The VSAT fault means that remote VSAT not meeting the Performance of VSAT mentioned in the tender**.**

The maximum time to repair (MTTR) of VSAT will not exceed

- 48 Hrs for all other cities except NEH region, Andaman & Nicobar Islands, Lakshdweep Islands
- 72 Hrs for NEH region, Andaman & Nicobar Islands, Lakshadweep Islands

(For difficult areas like certain parts of NEH region, Andaman & Nicobar and Lakshadweep, Maximum Time to Repair service should not exceed 120 hours in any case)

- In case the maximum time to repair the VSAT exceeds the above mentioned duration or unable to meet the desired uptime, Bidder would pay penalty of an amount of Rs.5,00/- per remote VSAT per day **AND** in case maximum time to repair (MTTR) VSAT exceeds by 10 days, AMC of that VSAT will not be paid for that quarter, whichever be the maximum.

- The Downtime starts from the time complaint is logged at VSAT Hub, Bangalore. Any delay in logging the complaint by user shall be excluded from the downtime calculations.

- Penalties whichever shall be at the higher side shall be imposed

For the purpose of the above clause, non-availability /degradation in the throughput of service on account of the following shall not be construed as defect or interruption in 'Remote VSAT availability':

a) Failure or fluctuation of electric power.
b) Accident, neglect of the equipment.
c) Any fault in any attachments or associated equipment, which is not supplied by the Bidder.
d) Downtime caused due to optimization and preventive maintenance of VSAT Hub.

e) Event of Force Majeure conditions like natural calamities, civil disturbance, strike, war, flood etc as described in Contract.
f) Non-Availability / degradation of satellite / Transponder.

The Bidder shall submit the Maintenance Service Report for each VSAT site duly signed by the official of the site for the confirmation of satisfactory maintenance services and functionality of the link during the period of warranty as well as AMC (yearly report). ERNET India (and Bidder) shall mutually decide the format.

NOTE: The total value of penalties which can be imposed during one year due to non-compliance of Service Level Agreement (SLA) will not exceed the total value of Work Awarded to the bidder for the services (like AMC, Hub operation, etc) for that one year period plus Bank Guarantees available with ERNET India under this tender/rate contract.

Annexure – IX

Format of "Installation/Commissioning/etc Report of VSAT, etc"

This is to certify that the following VSAT equipments have been received, installed, commissioned satisfactorily at our site on date ……. with a bandwidth of ……kbps:

- List of Equipments:

  (i)

  (ii)

  (iii)

  (iv)

  (v) ……

- The following shown to us during the installation/commissioning of VSAT link:

  (i) Allocated Bandwidth: (*as allocated*) Kbps. (by doing FTP from ERNET Hub)

  (ii) Satisfactory Internet browsing on few PCs.

Above is certified.

(Name and Signature of user)
Stamp of the institute/ Organization
Date: ……

Note: The format may be modified by ERNET India, as per the requirement and tender terms.

Annexure – X

Sl No	State / Region	*No of existing DVB-S/FTDMA type VSAT Sites (Skyedge-I IP)
1	Andaman & Nicobar Island (U.T)	46
2	Lakshadweep Islands (U.T)	33
3	North-Eastern States (8 States)	55
4	Andhra Pradesh	2
5	Bihar	5
6	Gujarat	3
7	Haryana	1
8	Jammu & Kashmir	6
9	Jharkhand	3
10	Karnataka	2
11	Maharashtra	4
12	Tamil Nadu	1
13	Uttar Pradesh	2
14	Uttranchal	11
15	West Bengal	6
	Total Sites	**About 180**

*The number may vary slightly. Except North-Eastern states, A&N and Lakshadweep islands, it is expected that some links may get disconnected in near future.

Annexure – XI

PMA AFFIDAVIT

Format for affidavit of self certification regarding domestic value addition in an electronic product, to be provided on Rs. 100/- stamp paper

Date: .....

We .... a firm/Pvt. Ltd. Co.....
, having registered office at .....
do hereby solemnly affirm and declare as under:

That we will agree to abide by the terms and conditions of the policy of Government of India issued via notification no. 8(78)/2010-IPHW dated 10-02-2012, and the subsequent revision to the policy issued via notification no. 33(3)/2013-IPHW dated 23-12-2013.

That the information furnished hereinafter is correct to the best of our knowledge and belief and I undertake to produce relevant records before the ERNET India or any authority so nominated by the Department of Electronics and Information Technology, Government of India, for the purpose of **a**ssessing the Domestic Value Addition.

That the domestic value addition for all inputs which constitute the said electronic product has been verified by us and we are responsible for the correctness of the claims made therein.

That in the event of the domestic value addition of the product mentioned herein is found to be incorrect and not meeting the prescribed value addition norms, based on the assessment of an authority so nominated by the ERNET India or Department of Electronics Information Technology, Government of India for the purpose of assessing the domestic value addition, we will be disqualified from any Government tender for a period of 36 months. In addition, we will bear all costs of such an assessment.

That we have complied with all conditions referred to in the notification no. ....., wherein preference to domestically manufactured electronic products in government procurement is provided and that the procuring authority is hereby authorized to forfeit and adjust our EMD and other security amount towards such assessment cost and we undertake to pay the balance, if any, forthwith.

We agree to maintain the following information in the record for a period of 8 years and shall make this available for verification to any statutory authorities:

i. Name and details of the domestic manufacturer (Registered office, manufacturing unit location, nature of legal entity)

ii. Date on which this certificate is issued

iii. Electronic product for which the certificate has been produced

iv. Procuring agency to whom the certificate is furnished

v. Percentage of domestic value addition claimed

vi. Name and contact details of the unit of the manufacturer

vii. Sale price of the product

viii. Ex-factory price of the product

ix. Freight, insurance and handling

x. Total bill of material

xi. List and total cost value of inputs used for manufacture of the electronic product.

xii. List and total cost of inputs which are domestically sourced. Please attach certificate from suppliers if the input is not in-house.

xiii. List and cost of inputs which are imported, directly or indirectly.

For and on behalf of ..... (Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>

Annexure – XII

ERNET India hereinafter referred to as "The Principal".

And

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

Preamble

The Principal intends to award, under laid down organizational procedures, contract/s for all the items (all H/w, S/w, services, etc) of this tender. The Principal 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, the Principal 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 the Principal

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
    a. No employee of the Principal, 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. The Principal will during the tender process treat all Bidder(s) with equity and reason. The Principal 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. The Principal will exclude from the process all known prejudiced persons.
2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or it there be a substantive suspicion in this regard, the Principal 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. He 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 the Principal'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 the Principal 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, the Principal 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

1. If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/Bid Security.

2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminated the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value and/or the amount equivalent to Performance Bank Guarantee.

Section 5: Previous Transgression

1. 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.
2. 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

1. 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 the Principal before contract signing.
2. The Principal will enter into agreements with identical conditions as this one with all bidders, contractors and subcontractors.
3. The Principal 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 the Principal 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 the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8: Independent External Monitor/Monitors

(1) The Principal 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 the Principal 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) The Principal 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 the Principal 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 the Principal 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 the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

(7) Monitor shall be entitle 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

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) which ever be later and for all other Bidders 12 months from the contract has been awarded.

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

- This agreement is subject to Indian Law, Place of performance and jurisdiction is the Registered Office of the principal, i.e. New Delhi.
- Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

- If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 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.

_____	_____
(For & on behalf of the Principal)	(For & on behalf of Bidder/Contractor)
(Office Seal)	(Office Seal)

Place----------
Date----------

Witness 1:
(Name & Address) _____
_____
_____

Witness 2:
(Name & Address) _____
_____
_____
