



Revised RFP

For

**Implementation of
Meghalaya State Wide Area Network
(MSWAN)**

(NIT No: MSWAN/MITS/15/2007/75 Dated: 19/03/2008)

(No. MITS/26/2007/602 dated 26/08/2008)

(Version-1.1)

**Commissioner & Member Secretary (IT)
Meghalaya Information Technology Society
NIC Building, Ground Floor,
Secretariat Hill
Shillong-793001, Meghalaya**

IMPORTANT INFORMATION

Last date for submission of Bids	Up to 15:00 Hrs on 08/09/2008 Ground Floor, NIC Building, Secretariat Hill, Shillong-793001
Opening of Part-I and Part-II of the bids.	At 16:00 Hrs on 08/09/2008 Venue: Office of Commissioner & Secretary-IT, Information Technology Department, Ground Floor, NIC Building, Secretariat Hill, Shillong-793001

Table of Contents

Section	Description	Page
Section –1	Project Profile	4
Section –2	Instructions to Bidders	7
Section –3	General Conditions of Contract	33
Section –4	Special Conditions of Contract	48
Section –5	Schedule of Requirements	68
Section –6	Organizational Capabilities	155
Section –7	Proforma for queries, Compliance Statement, Deviation Statement, Bill of Material, Bid Letter Form, Bid Security Form, Implementation Guarantee and Performance Bank Guarantee	166
Section –8	Financial Bid	180
Section –9	Information by Bidders	194
Appendix 1	List of Districts, Sub-divisions and Blocks	200
Appendix 2	Responsibility Matrix	203
Appendix 3	Techno-commercial Evaluation Criteria	205

Section – 1

Project Profile

Section – 1

1.0 PROJECT PROFILE

Government of Meghalaya (GoM) proposes to set up a Meghalaya State Wide Area Network (MSWAN) to modernize the communication set up of Government to implement e-Governance initiatives, improve administrative effectiveness & efficiency, and accelerate the overall development of the State through improved Government interfaces.

The key applications envisaged on the network are Data, Voice Communications, Video Conferencing, Value Added Services, Help Desk for MSWAN users, etc.

GoM intends to set up MSWAN to link Government Offices at State Head Quarter, Shillong (herein after called as SHQ), District Head Quarter (herein after referred as DHQ), Sub-division Headquarter (herein after referred as SDHQ) and Block Headquarter (herein after referred as BHQ) with each other. The MSWAN would be implemented on Build-Own-Operate and Transfer (BOOT) basis spread over a period of five (5) years to provide Data connectivity, Voice and Video services to various offices of GoM and other locations as identified by the Govt. of Meghalaya. The MSWAN will have a suitable topology, use state-of-the art technologies and have capability / flexibility to expand / upgrade to cover all parts of the State.

There are 7 district headquarters, 8 sub-division headquarters and 39 block headquarters (refer Appendix 1 for details). The envisaged initial bandwidth for MSWAN is 2 Mbps (upgradable) for connecting SHQ with DHQs and DHQs with SDHQs / BHQs. All Government departments are envisaged to be connected with MSWAN horizontally.

Different departments of GoM have implemented or are implementing isolated local area networks and MSWAN shall have provision for connecting them for the required services.

MSWAN shall also provide single point internet connectivity through 4 Mbps gateway at SHQ, which may be increased progressively to 8 Mbps or more any time during the period of operation.

The life time of the project is taken as 5 years excluding implementation period.

The services as required by the purchaser are specified in section 5 (Schedule of Requirements). The bidder shall carry out the activities as mentioned from 1) to 4) below and purchaser will release

guaranteed payments against the services as prescribed in service level agreement:

- 1) Procurement, installation and commissioning of the equipment by the bidder.
- 2) Procurement of the transmission/connecting media on behalf of the Purchaser.
- 3) Integration of the network - The bidder has to offer the same as part of implementation activity.
- 4) Operation, maintenance and upgradation of equipment/network by executing a Service Level Agreement (SLA) between successful bidder and purchaser for Operation & Maintenance for the entire period of contract as an integral part of supplies and implementation.

As bidder will be responsible for smooth functioning of network, availability of spares will be taken care of by the bidder to maintain the guaranteed uptime.

A Third Party Agency will be appointed by GoM for monitoring MSWAN during operation period. Third Party Agency will be responsible for verification, validation of all works/services under the terms & conditions of the agreement.

MITS will release the Quarterly Guaranteed Revenue (QGR) as per SLA and other payments as mentioned in this RFP document.

Section – 2

INSTRUCTIONS TO BIDDERS

Section – 2

Instructions to Bidders

1.0 DEFINITIONS

In this document, the following terms shall have following respective meanings:

- 1.1 "**%Uptime**" means ratio of 'up time' (in minutes) in a quarter to Total time in the quarter (in minutes) multiplied by 100.
- 1.2 "**Acceptance Test Document**" means a document, which defines procedures for testing the MSWAN against requirements laid down in the Agreement.
- 1.3 "**Affiliate**" shall mean any holding company or subsidiary company of a part to the Agreement or any company, which is subsidiary of such a holding company. The expressions "holding company" and "subsidiary company" shall have the meaning specified in section 4 of the Companies Act 1956 (as amended from time to time).
- 1.4 "**Agreement**" means the Agreement to be signed between the successful bidder and GoM including all attachments, appendices, all documents incorporated by reference thereto together with any subsequent modifications, the RFP, the bid offer, the acceptance and all related correspondences, clarifications, presentations.
- 1.5 "**Authorized Representative/ Agency**" shall mean any person/ agency authorized by either of the parties.
- 1.6 "**Bandwidth Provider**" BSNL will be the primary Lease Line bandwidth provider for MSWAN. However GoM may use services from other bandwidth providers at its discretion. GoM will separately negotiate with BSNL and ensure availability of the links to the selected bidder for implementing MSWAN. Minimum bandwidth requirement for each lease line circuit for vertical connectivity of MSWAN is 2 Mbps. The VSAT Service Provider will provide VSAT bandwidth for connecting remote BHQs.
- 1.7 "**BHQ**" means Block Head Quarter or the offices in the campus area of the office of the Block Development Officer (BDO).
- 1.8 "**Bidder**" means any firm or group of firms (called consortium) offering the solution(s), service(s) and /or materials required as per the RFP. The word 'Bidder' when used in the pre award period shall be synonymous with Bidder, and when used after award of the Contract shall mean the successful Bidder with whom GoM signs the agreement for executing the MSWAN project.

1.9 “**BOOT Model**” the services as required by the Purchaser are specified in section 5 (Schedule of Requirements). The bidder shall carry out the activities as mentioned below from 1) to 4) and purchaser will release guaranteed payments against the services as prescribed in service level agreement.

- 1) Procurement, installation and commissioning of the equipment by the bidder.
- 2) Procurement of the transmission/connecting media on behalf of the Purchaser.
- 3) Integration of the network - The bidder has to offer the same as part of implementation activity.
- 4) Operation, maintenance and upgradation of equipment/network by executing a Service Level Agreement (SLA) between bidder and GoM for Operation & Maintenance for the entire period of contract as an integral part of supplies and implementation.

As vendor will be responsible for smooth functioning of network, availability of spares will be taken care of by vendor to maintain the guaranteed uptime.

1.10 “**Centre**” means SHQ, DHQ, and SDHQ / BHQ.

1.11 “**Co-located Office**” All the departmental offices which are either located in the same building as their centre or situated within a range of 500 meters of their respective Centre.

1.12 “**Contract**” is used synonymously with Agreement.

1.13 “**Corrupt Practice**” means the offering, giving, receiving or soliciting of any thing of value or influence the action of a public official in the process of Contract execution.

1.14 “**DHQ**” means District Head Quarter or the offices in the campus area of the office of Deputy Commissioner (DC).

1.15 “**Default Notice**” means the written notice of Default of the Agreement issued by one Party to the other in terms hereof.

1.16 “**Final Acceptance Test (FAT)**” means the acceptance testing of the network including equipment at various levels.

1.17 “**Fraudulent Practice**” means a misrepresentation of facts in order to influence a procurement process or the execution of a Contract and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the GoM of the benefits of free and open competition.

- 1.18 “**Good Industry Practice**” means the exercise of that degree of skill, diligence and prudence which would reasonably and ordinarily be expected from a reasonably skilled and experienced Operator engaged in the same type of undertaking under the same or similar circumstances.
- 1.19 “**GoM**” stands for the Government of Meghalaya represented by the Principal Secretary/ Commissioner & Secretary/ Secretary, Meghalaya Information Technology Society, Department of Information Technology, Government of Meghalaya. The term GoM includes its successors and assigns thereof.
- 1.20 “**GoI**” shall stand for the Government of India.
- 1.21 “**Guaranteed Revenue**” means the rate payable to the Bidder under the Agreement for the performance of the Bidder's Contractual obligations.
- 1.22 “**Horizontal Office**” All the departmental offices of GoM are Horizontal offices, horizontal office will be either co-located or remote depending on distance from corresponding POP.
- 1.23 “**Implementation Period**” shall mean the period from the date of signing of the Agreement and upto the issuance of Final Acceptance Certificate of MSWAN.
- 1.24 “**Interest rate**” means 364 days Government of India (GoI) Treasury Bills' rate.
- 1.25 “**Law**” shall mean any act, notification, by-law, rules and regulations, directive, ordinance, order or instruction having the force of law enacted or issued by the Central Government and/ or the Government of Meghalaya or any other Government or regulatory authority or political subdivision of government agency.
- 1.26 “**Lol**” means Letter of Intent which constitutes the intention of the purchaser to place the Purchase Order with the successful bidder.
- 1.27 “**Operator**” means the entity/company providing the services/executing the project under the Agreement and is used synonymous with Bidder/Successful Bidder.
- 1.28 “**Partial Acceptance Test (PAT)**” means the acceptance testing of respective sites as mentioned in Section 4 of this document.
- 1.29 “**Party**” means GoM or Operator, individually and “**Parties**” mean MITS / GoM and Operator, collectively.
- 1.30 “**Period of Agreement**” means 5 years from the date of final acceptance of the MSWAN.

- 1.31 **“Remote BHQs”** In 14 BHQs currently lease line circuits are not available from any service provider, hence a VSAT based connectivity is proposed for these BHQs. These sites are called as remote BHQs.
- 1.32 **“Remote Office”** All the departmental offices which are situated at a distance of more than 500 meters from their centre are called remote offices.
- 1.33 **“Request for Proposal (RFP)”**, means the detailed notification seeking a set of solution(s), services(s), materials and/or any combination of them.
- 1.34 **“Requirements”** shall mean and include schedules, details, description, statement of technical data, performance characteristics, standards (Indian as well as International) as applicable and specified in the Contract.
- 1.35 **“Site”** means the location(s) for which the Contract has been issued and where the service shall be provided as per agreement.
- 1.36 **“SHQ”** means State Head Quarter or the offices in the campus area of the Government Secretariat at Shillong or any location where the State Network Center is required to be established.
- 1.37 **“Service”** means provision of Contracted service viz., operation, maintenance and associated services for MSWAN as per Section 5.
- 1.38 **“SDHQ”** means Sub-division Head Quarter or the offices in the campus area of the office of the Sub-Divisional officer.
- 1.39 **“Service Down Time” (SDT)** means the time period when specified services with specified technical and operational requirements as mentioned in Section 5 are not available to GoM and its user organizations. The network shall be operational on all days of a year and 24-hours/ day at all levels except at BHQ and SDHQ levels where the network shall be operational on all days of a year from 09:00 Hours to 22:00 Hours.

The network is considered as operational when all centres at all tiers/ levels are working, providing all/ specified services as mentioned in Section 5 in full capacity at all locations in the network. In case of failure of an aggregate port (i.e. port connecting a centre with other centre of a centre, all services at all positions of the lower level centre among the two shall be considered as Down/ non-operational.

Incase of non-availability of services from BSNL/VSAT Service provider, the successful bidder will have to arrange a documentary evidence of same (Down time) from that service provider.

For calculation of SDT the day is divided in:

Prime Business Hours = 09:00 Hours to 18:00 Hours on Weekdays

Extended SLA Hours (SHQ & DHQ) = 18:00 Hours to 09:00 Hours on Weekdays & 00:00 Hours to 24:00 Hours on Sundays and all other State Govt. holidays.

Extended SLA Hours (SDHQ, BHQ) = 18:00 Hours to 22:00 Hours on Weekdays & 09:00 Hours to 22:00 Hours on Sundays and all other State Govt. holidays.

For calculation of SDT if more than 50% of ports/ service positions (voice/ data/ video) are down/ non-operational in a centre, then the centre will be considered as 100% down/ non-operational.

SDT shall be calculated, including the Down time due to power failure (except for the video conferencing rooms at SHQ, DHQs but excluding the Service Down time due to BSNL/ other Basic Service Provider / VSAT Service provider circuit failure and Force Majeure, as follows: (all time shall be in minutes)

SDT = (Voice SDT + Data SDT + Video SDT) / 3

Voice SDT = Sum of Down time of voice service from all voice service positions / Total number of voice service positions

Data SDT = Sum of Down time of data service from all data service ports / Total number of data service ports

Video SDT = Sum of Down time of video service from all video service positions / Total number of video service positions

"All ports for Data and positions for Voice and Video or total number of ports for Data and positions for Voice and Video" mean number of ports for Data and positions for Video and Voice as specified in Section 5.

Internet/ other network service will be considered as data service for downtime calculation. In case of non-operational/ down of internet excluding the instances of failure of internet bandwidth from the Internet service provider (ISP) or helpdesk, one third the data ports in the network shall be considered non-operational / down.

1.40 "**Third Party Agency**" means any agency, if/as appointed by GoM for monitoring the MSWAN during commissioning and operation.

1.41 "**Termination Notice**" means the written notice of termination of the Agreement issued by one Party to the other in terms hereof.

1.42 "**Uptime**" means the time period when specified services with specified technical and service standards as mentioned in Section 5 are available to GoM and its user organizations. The uptime will be calculated as follows: Total time in a quarter (in minutes) less total Service Down time (in minutes) in the quarter.

2.0 COST OF BIDDING

The Bidder shall bear all costs associated with the preparation and submission of the Bid and GoM will in no case be responsible for those costs, regardless of the conduct or outcome of the bidding process.

3.0 BID DOCUMENT

Bidder is expected to examine all instructions, forms, terms, and requirements in the bid document. Failure to furnish all information required by the bid document or submit a Bid not substantially responsive to the bid document in every respect may result in the rejection of the Bid.

4.0 CLARIFICATION ON BID DOCUMENT

The GoM proposes to organize a Prebid meeting to clarify any queries. Bidders are requested to submit their queries in the format provided in Section 7 within the specified time mentioned in the RFP.

5.0 AMENDMENT OF BID DOCUMENT

5.1 At any time prior to the deadline for submission of bids, MITS/GoM, for any reason, whether at its own initiative or in response to the queries received from bidders may modify the bid document by amendment.

5.2 All bidders who have purchased the bid document will be notified of the amendment, and such modification will be binding on them.

5.3 In order to allow bidders a reasonable time to take the amendment into account in preparing their bids, MITS, at its discretion, may extend the deadline for the submission of bids.

6.0 LANGUAGE OF BID

The Bid prepared by the Bidder, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and MITS, shall be in English. Supporting documents and printed literature furnished by the bidder may be in any other language provided they are accompanied by an accurate translation of the relevant pages in English. For purpose of interpretation of the bid, the translation shall govern.

7.0 ELIGIBLE PRODUCTS AND SERVICES

- 7.1 Any or all the products and related services intended to be procured shall be governed by International Trade Classification (ITC), Harmonized System, Classification of Export and Import items issued by Ministry of Commerce, Government of India as amended from time to time and as per the Export Import (EXIM) policy of Government of India including restrictions on eligible source countries, if any, at the time of supply.
- 7.2 Any or all the products and related services to be supplied under this bid must be eligible for import into India under the existing regulations of the country of origin for the proposed project. Bidder shall be responsible for obtaining all the necessary export/ import permits for the Systems supplied.

8.0 BIDDER'S SOLUTION

- 8.1 The bidder shall submit only one option for an end to end solution, which is best suitable to meet the MSWAN requirements. **The bids submitted with multiple options are liable to be rejected.**
- 8.2 All the equipments / components are required to be specified clearly with make / model in the Bill of Materials (BOM) and copies of Technical Brochure/specifications are to be enclosed with the bids. **Mentioning 'equivalent' or any other term against any equipment / component may render the bid liable for rejection.**
- 8.3 The bidder shall base his solution on the basis of continuous availability of spares for the period of the agreement.
- 8.4 Bidder has to get network certified from respective OEM's.

9.0 ELIGIBLE BIDDER

- 9.1 The bid shall be submitted by an individual organization or a consortium. The consortium shall be evaluated based on the criterion as defined in this bid document. However, if any member of the consortium backs out after submission of the bid and before conclusion of the contract agreement, in that case, GoM reserves the right to disqualify the consortium.
- 9.2 The bidder (each member of the consortium) should not be blacklisted by any of the state and/or central government.
- 9.3 a) In case of consortium, applicant consortia shall have a valid Memorandum of Understanding (MoU)/ agreement among all the members signed by the Chief Executives/ Authorized Signatories of the companies dated prior to the submission of the bid. The MoU/ agreement shall clearly specify the lead bidder and stake of each member and outline the roles and responsibilities of each member. The MoU/ agreement shall be exclusively for this project and lead bidder shall be responsible in case of failure by any member. A copy of the MoU/agreement should be submitted in Part II of the bid.
- b) In case of a consortium, all members shall be jointly and severally responsible for the implementation and operation of the MSWAN project as per the requirement, however it shall be the prime responsibility of the lead bidder to fulfill the obligations under the Agreement signed with MITS. The lead bidder shall be nominated in writing by other members, who shall play lead role for the MSWAN project.
- c) The bidder/ each member of a consortium shall disclose details pertaining to all contingent liabilities, claims, disputes, matters in appeal & in court and any pending litigation against the bidder or member of the Consortium. Please provide details as per Form I in Section 6.
- 9.4 The bidder shall meet the following criteria for eligibility:
- 9.4.1 The bidder (lead member of the consortium) shall be an IT/ Telecom company and shall be either an Original Equipment Manufacturer or its Authorized System Integrator(s) in India duly authorized and supported by OEM to quote for this project. Please provide details as per Form1 in Section-6.
- 9.4.2 The bidder (each member of the consortium) shall have bank's certificate of solvency. Please provide details as per Form - I in Section 6. The bidder (each member of the Consortium) shall furnish latest Income Tax Clearance Certificates. If the latest Income Tax Clearance Certificates are not issued by Income Tax Department, any equivalent specified by law including latest IT return submission

acknowledgement shall also be acceptable (This is valid for all further instances of Income Tax clearance certificate in this document).

- 9.4.3 The bidder (each member of the consortium) shall have company registration certificate, registration under Labour Laws Contract Act, valid sales tax registration certificate and valid service tax registration certificate. Please provide details as per Form - I in Section 6.
- 9.4.4 The bidder (each member of the consortium) should not be a member of more than one consortium bidding for this project.
- 9.4.5 The bidder (each member of the consortium) shall have relevant quality certification viz. ISO 9001:2000 Certification or better quality certification. Please provide details as per Form I in Section 6.
- 9.4.6 The bidder (lead member of the consortium) shall have a minimum annual turnover of **Rupees Twenty Five Crores** in each of the past three financial years in System Integration and facility management work. In case turnover from System Integration and Facility Management services are not available in the balance sheet separately, a certificate from the Chartered Accountant for the same should be enclosed. Please provide details as per Form – II A in Section 6.
- 9.4.7 The bidder should be having either of the following experience during the last four years ending last day of the month previous to the one in which bids are invited: -
- (I) The bidder has executed
 - a. One WAN project involving at least 45 WAN nodes having services of voice, data & video.
OR
 - b. Two WAN projects involving at least 30 WAN nodes in each project having services of voice, data & video.
OR
 - c. Three WAN projects involving at least 25 WAN nodes in each project having services of voice, data & video.
OR
 - (II) The bidder has executed
 - a. One WAN project of minimum value of Rs. 24 crore with services of voice, data & video. If O&M is not part of this project then bidder must also have completed O&M of at least one networking project and the value of O&M contract should be at least Rs. 2.4 crore.
OR

- b. Two WAN projects of minimum value of Rs. 15 crore each with services of voice, data & video. If O&M is not part of these projects then bidder must also have completed O&M of at least two networking projects and the value of O&M contract should be at least Rs. 1.5 crore for each.

OR

- c. Three WAN projects of minimum value of Rs. 12 crore each with services of voice, data & video. If O&M is not part of these projects then bidder must also have completed O&M of at least three networking projects and the value of O&M contract should be at least Rs. 1.2 crore for each.

Bidder should clearly mention in his bid that for which of the above category of project experience is he claiming pre qualification. The Eligibility will be considered against the specified category **ONLY**. Bidder shall also attach reference documents (contact details, project completion certificate, customer satisfaction certificate etc) of the projects satisfying the pre qualification criteria in Part – II of the bid. Page numbers of supporting documents should also be clearly mentioned in the bid.

In case the bidder is claiming experience of BOOT for prequalification, he should have successfully carried out the implementation of the said WAN project(s) and thereafter has provided voice, data and video services satisfactorily to the client for at least ONE year. Bidder will have to submit relevant documents in support of this.

Please provide details as per Form-III A in Section 6. MITS/GoM shall have the right to crosscheck these certificates and personally visit these locations for a first hand feedback. The Projects executed for bidder's own, bidder's group of companies or bidder's JV companies shall not be considered

9.5 The following criteria shall be fulfilled by the bidder:

9.5.1 The local presence of the bidder in Shillong. Please provide details as per Form-I in Section 6. In case, the bidder has no presence in Shillong, bidder shall furnish an undertaking that an office shall be opened in Shillong with sufficient personnel and inventory of spares (if situation demands spares may be required to be stocked at any other location in Meghalaya for better logistics) within a month of selection as operator.

9.5.2 Technical certification of staff proposed to be deployed for this project Please provide details as per Form-I in Section 6.

- 9.6 Please refer Form-I to Form-III in Section 6, for the formats in which the information is to be provided on Organizational Capability, technical capability, financial capability, and track record of bidder.

10.0 DOCUMENTS TO ACCOMPANY THE BIDS

10.1 The bid submitted by the bidder shall have the following documents:

10.1.1 Part – I (Bid Security)

The Bid Security as per format in Section 7.

10.1.2 Part – II (Organizational Capability) – Refer Form-I, II & III in Section 6

- i. Name of the Enterprise
- ii. Registered Office address
Telephone Number
Fax Number
e-mail
- iii. Correspondence/ contact address
- iv. Details of Contact person
(Name, designation, address etc.)
Telephone Number
Fax Number
e-mail
- v. Is the enterprise a registered company? If yes, submit documentary proof.
Year and Place of the establishment of the company
- vi. Former name of the company, if any.
- vii. Is the enterprise
 - a Government/ Public Sector Undertaking
 - a proprietary enterprise
 - a partnership enterprise (if yes, give partnership deed)
 - a limited company or limited corporation
 - a member of a group of companies (if yes, give name and address, and description of other companies)
 - a subsidiary of a large corporation (if yes, give the name and address of the parent organization) If the company is subsidiary, state what involvement if any, will the parent company have in the project.
 - a joint venture consortia (if yes, give name and address of each partner)

Information whether single or consortium (with copy of valid MoU/Agreement in case of consortium).

- viii. Is the enterprise registered with sales tax department? If yes, submit valid sales tax registration certificate highlighting date of issuance, issuing authority and validity period.
- ix. Is the enterprise registered for service tax with Central Excise Department (Service Tax Cell)? If yes, submit valid service tax registration certificate highlighting date of issuance, issuing authority and validity period.
- x. Is the enterprise registered under Labour Laws Contract Act? If yes, submit valid registration certificate highlighting date of issuance, issuing authority and validity period.
- xi. Attach the organizational chart showing the structure of the organization including the names of the directors and the position of the officers.
Total number of employees
- xii. Number of years of experience: as a prime contractor in a joint venture/ Consortium
- xiii. Are you registered with any Government/ Department/ Public Sector Undertaking (if yes, give details)
- xiv. How many years has your organization been in business under your present name? What were your fields when you established your organization? When did you add new fields (if any)?
- xv. What type best describes your enterprise? (documentary proof to be submitted)
 - Manufacturer
 - Supplier
 - System Integrator
 - Consultant
 - Service Provider (pl. specify details)
 - Software Development
 - Total solution provider (Design, Supply, Integration, O&M)
 - IT Company
- xvi. Number of Offices / Project Locations
- xvii. Do you have a local representation /office in Shillong? If so, please give the address and the details of staff, infrastructure etc in the office and no. of years of operation of the local office
- xviii. Do you intend to associate any other organization for the works for which you are bidding? If so, please give full particulars of that organization separately.
- xix. Please give details of Key Technical and Administrative staff who will be involved in this project, their role in the project, their Qualifications & experience and the certification attained from network product vendor. (documentary proof to be submitted)

- xx. Does your organization have ISO 9000 certificates? If so, attach copies of the certificates. State details, if certified by bodies, other than that stated.
- xxi. List the major clients with whom your organization has been/ is currently associated.
- xxii. Were you ever required to suspend a project for a period of more than three months continuously after you started? If so, give the names of project and reasons for the same.
- xxiii. Have you in any capacity not completed any work awarded to you? (If so, give the name of project and reason for not completing the work)
- xxiv. In how many projects you were imposed penalties for delay? Please give details.
- xxv. The bidder/ prime member of the consortium shall disclose details pertaining to all contingent liabilities, claims, disputes, matters in appeal & in court and any pending litigation against the bidder or any member of the Consortium. If nil, an undertaking from the bidder/ prime member of the consortium mentioning the same should be submitted.
- xxvi. Whether your organization has Bank's certificate of solvency. If yes, submit documentary proof.
- xxvii. Have you ever been denied tendering facilities by any Government/ Department/ Public sector Undertaking? (Give details)
- xxviii. Have you submitted valid Income tax Clearance certificate for the years 2006-2007, 2007-2008 and PAN no.
- xxix. In case of a Consortium, Power of Attorney from each member of the consortium, authorizing prime member to bid for this project.
- xxx. List of works which are intended to be subcontracted by the bidder.
- xxxi. The bidder (each member of consortium) should not be a member of more than one consortium bidding for this project.
- xxxii. The bidder (lead member of the consortium) shall be an IT/ Telecom company and shall be either an Original Equipment Manufacturer or its Authorized System Integrator(s) in India duly authorized and supported by OEM to quote for this project.

10.1.3 Part – III (Techno-commercial)

- a) Power of Attorney for signing the bid.
- b) Bid Letter Form duly filled in. (Refer Section 7)
- c) Techno-commercial Evaluation form duly filled in, along with the supporting documents (Refer Section 7)

- d) Clause by clause Technical Compliance statement for Section 5 including all annexures as per format (Technical) in Section 7
- e) Clause by clause Compliance statement for Bid document, except Technical i.e. for Section 5, including all annexure as per format (Non-Technical) in Section 7.
- f) Services offered shall be strictly as per requirements mentioned in this Bid document. Please spell out any deviations clause-wise in your bid under the heading "Deviation Statement" as per format in Section 7.
- g) Proposed solution with the following details:
 - Executive Summary
 - Networking architecture with description of the proposed solution
 - Hardware
 - Software
 - Connectivity for co-located and remote offices for SHQ, DHQ, SDHQ and BHQ levels
 - Network Management System including accounting
 - Technical details of network monitoring tools
 - Bill of Materials (BoM), as per format in Section 7, for SHQ, DHQ, SDHQ / BHQ, Horizontal office
 - Security solution
 - Scalability, redundancy, inter-operability and availability
 - Power backup facility
 - Site preparation at all levels.
 - Training
 - Post implementation services
 - List of spares
 - Certificates from OEM's of respective equipments stating that the spares will be made available to GoM for next 5 years from the date of final acceptance.
 - List of tools required for testing & maintenance of bandwidth, equipments, network
 - Project Management including organizational setup for this project, Methodology, approach and time schedule (detailed Project Plan), for various activities
 - Proposed team with their CVs, roles & responsibilities
 - Documentation & manuals
 - Helpdesk facility
 - VSAT bandwidth and connectivity plan
- h) Original Bid document duly signed on all pages.
- i) Guaranteed Revenue with prices blanked out duly signed confirming prices are filled in this format only.
- j) Document establishing goods eligibility and conformity to bid document

- k) Bidder has to provide additional Information as per Section 9.
- l) The bidder should provide documentary evidence of the deployment of equipments / items offered in this solution with name & address of clients along with the contact details. The FAT for the equipment shall be considered towards documentary evidence asked for.

10.1.4 Part – IV (Financial)

Financial Bid as per Section 8

- 10.1.5 GoM may ask Bidder(s) for more information, visit to Bidders site and/ or arranging discussions with their professional, technical faculties to verify claims made in their Bid.

11.0 EVALUATION CRITERIA

1. Part – I (Bid Security)

Bidders who have submitted the valid bid security as per the format shall be considered for further evaluation. Similarly, if the RFP document fee has not been deposited / submitted in case of downloaded forms, the Bid shall be out rightly rejected. Any late submission of bids shall disqualify the bid.

2. Part – II (Organizational capability)

On the basis of evaluation of following, only successful Bidder shall be considered for further Techno-Commercial evaluation:

- Organizational Details – Refer Form-I in Section-6
- Financial Capability – Refer Form-II in Section 6
- Technical Capability – Refer Form-III in Section 6

3. Part – III (Techno-commercial)

Bidders fulfilling the organization capability criteria will be short-listed for evaluation of techno-commercial bid. Techno-commercial bids will be opened only for the bidders who have succeeded in the pre-qualification stage.

The techno-commercial bids of the short-listed bidders will be reviewed to determine whether the techno-commercial bids are substantially responsive. Bidder will be called for presentation of his proposed solution for establishment and operation of MSWAN project. MITS will carry out a detailed evaluation of the bids in order to determine whether the technical aspects are in accordance with the requirements given in the RFP. Bids that are not substantially

responsive are liable to be disqualified at MITS's discretion. Techno-commercial evaluation will be based on the overall capabilities of the consortium. **(ONLY reference documents submitted in the Techno-commercial bid will be considered for evaluation)**

The Techno-commercial bids shall be evaluated based on the evaluation criteria mentioned in Appendix – 3 of this RFP.

The minimum score required in Techno commercial evaluation to pass is **70 points out of 100**. Bidders scoring at least 70 points in the techno commercial evaluation shall be considered for further Financial evaluation. However weightage will be carried forward from techno-commercial qualification stage to financial bid evaluation.

The individual bidder technical scores of the technically qualified bidders, thereafter, will be normalized as per the formula below:

$$T_n = (T_b / T_{max}) * 60$$

Where;

T_n = normalized technical score for the bidder under consideration
T_b = absolute technical score for the bidder under consideration
T_{max} = maximum absolute technical score obtained by any bidder

The demonstration of the equipments / items offered in the solution may have to be organized by the bidder in India, if required during evaluation. The demonstration is to be arranged by the bidder, whenever required, with 7 days notice period in India for all the items or some of the items as required during evaluation. Failure to arrange the above demonstration may result in rejection of bid.

4. Part – IV (Financial)

Financial Bids of those who have techno-commercially qualified only shall be opened for further evaluation.

The commercial scores will be calculated as per formula given below:

$$F_n = F_{min} / F_b * 40$$

Where;

F_n = Normalized financial score of the bidder under consideration
F_b = Evaluated cost for the bidder under consideration
F_{min} = Minimum evaluated cost for any bidder

Fb – is the overall project cost given by the bidder in Table A(4), Section-8 which includes Vertical connectivity, Horizontal connectivity and Site preparation costs.

Final Evaluation of Bid - The overall score will be calculated as follows:-

$$B_n = T_n + F_n$$

Where;

B_n = Overall score of bidder under consideration

T_n = Normalized technical score for the bidder under consideration

F_n = Normalized financial score of the bidder under consideration

Final Selection of Bidder will be done based on added individual score achieved by the bidder in technical evaluation and commercial evaluation scores and highest score (B_n) will be awarded the contract. The highest score bid henceforth will be called adjusted Lowest One (L1). MITS (GoM) reserves the right to award the contract to the bidder with the adjusted Lowest One (L1) and negotiate with him. Negotiated offer, if any, or else the original bid offer shall be treated as the final offer.

Right now only the vertical connectivity portion of the RFP – DIT funded portion (Table A(1) Section-8) and Site preparation cost (Table A(3) Section-8) will be awarded. Though the horizontal connectivity portion – state funded portion (Table A(2) Section-8) will also be awarded in the due course of time. The rates mentioned by the successful bidder in this RFP for the horizontal connectivity will be used while awarding horizontal portion.

Table B(1) in Section-8 enlists the estimated components of vertical connectivity (Table A(1)) while table B(2) enlists the estimated components of horizontal connectivity (Table A(2)) and other additional state funded components. The list of components in B(1) and B(2) are indicative only. The complete list of components is the responsibility of the bidder and he will specify the details of the same in his priced / unpriced bid. The rates mentioned in B(1) and B(2) will be used for any addition / deletion in the final Bill of Material (BoM).

12.0

BID FORMS

- 12.1 Wherever a specific form is prescribed in the Bid document, the Bidder shall use the form to provide relevant information. If the form does not provide space for any required information, space at the end of the form or additional sheets shall be used to convey the said information.
- 12.2 For all other cases, the Bidder shall design a form to hold the required information.
- 12.3 MITS shall not be bound by any printed conditions or provisions or counter conditions in the Bidder's Bid Forms

13.0 FRAUDULENT & CORRUPT PRACTICES

- 13.1 "Fraudulent Practice" means a misrepresentation of facts in order to influence a procurement process or the execution of the project and includes collusive practice among bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the MITS/GoM of the benefits of free and open competition.
- 13.2 "Corrupt Practice" means the offering, giving, receiving or soliciting of any thing of value, pressurizing to influence the action of a public official in the process of project execution.
- 13.3 MITS / GoM will reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for, or in executing, the project.

14.0 LACK OF INFORMATION TO BIDDER

The Bidder shall be deemed to have carefully examined all contract documents to his entire satisfaction. Any lack of information shall not in any way relieve the Bidder of his responsibility to fulfill his obligation under the bid.

15.0 BID PRICE

- 15.1 The Financial bid shall indicate the quantum of uniform Quarterly Guaranteed Revenue payable at the end of each quarter as per Section 8, for 5 years and terms thereof for providing Information and Communication Network Services to the MITS/GoM.

Notes:

Bidder shall categorically confirm strict compliance with the following stipulation in respect of their offer.

- a) Any effort by a bidder or bidder's agent/ consultant or representative whosoever tries to influence MITS/GoM in any way concerning scrutiny/ consideration/ evaluation/ comparison of the

bid or decision concerning award of contract shall entail rejection of the bid.

- b) Bids shall be submitted directly by the bidder.

15.2 Fixed Quarterly Guaranteed Revenue – Refer Section 8.

15.2.1 The bidder shall quote fixed Quarterly Guaranteed Revenue. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

15.2.2 Quarterly Guaranteed Revenue shall be written in both words and figures.

15.2.3 MITS/GoM shall correct arithmetic errors on the following basis:

- a) If there is 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, unless, in the opinion of MITS/GoM, there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
- b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the sub totals shall prevail and the total shall be corrected; and
- c) If there is a discrepancy between words and figures the amount in words shall prevail, unless the amount expressed in words is related to an arithmetical error, in which case the amount in figures shall prevail subject to a) and b) above.

15.2.4 Any arithmetical error or other discrepancy as stated above at 15.2.3 is found it shall be immediately notified to the concerned bidder.

15.2.5 Any bidder that does not accept the correction of errors as determined by the application of sub clause 15.2.3 above, his tender shall be disqualified and his bid security may be forfeited.

16.0 BID CURRENCY

For the services required for the MSWAN project, the prices shall be quoted in Indian Rupees. The payment for such services as specified in the Agreement shall be made in Indian Rupees only.

17.0 BID SECURITY i.e. EARNEST MONEY DEPOSIT (EMD)

- 17.1 The Bidder shall furnish, as part of the Bid, a Bid security for an amount specified at the important information sheet in a separate envelope. Only after the confirmation of valid bid security, the organizational capability bid shall be opened.
- 17.2 The Bid security shall be in Indian rupees and shall be a bank guarantee or bank draft favouring Meghalaya Information Technology Society, issued by a Scheduled Bank having atleast one branch office at Shillong, Meghalaya. Such negotiable instrument shall be valid for at least sixty (60) days beyond the validity of the Bid. No interest shall be payable on Bid Security under any circumstance.
- 17.3 Unsuccessful Bidder's Bid security shall be discharged or returned within sixty (60) days after the expiration of the period of Bid validity prescribed.
- 17.4 The successful Bidder's Bid security will be discharged upon the Bidder signing the Contract Agreement & submitting the performance guarantee.
- 17.5 The Bid security may be forfeited either in full or in part, at the discretion of MITS/GoM, on account of one or more of the following reasons:
- a) The Bidder withdraws their Bid during the period of Bid validity
 - b) The Bidder does not respond to requests for clarification of their Bid
 - c) The Bidder fails to co-operate in the Bid evaluation process, and
 - d) In case of a successful Bidder, the said Bidder fails :
 - to furnish Performance Guarantee; or
 - to sign the Contract Agreement in time

18.0 PERIOD OF VALIDITY OF BIDS

- 18.1 Bids shall remain valid for 180 days after the date of Bid opening prescribed by GoM. A Bid valid for a shorter period shall be rejected as non-responsive.
- 18.2 In exceptional circumstances, MITS/GoM may solicit Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The Bid security shall also be suitably extended. A Bidder accepting the request is neither required nor permitted to modify the Bid.

19.0 FORMAT AND SIGNING OF BID

- 19.1 The bidder shall prepare required number of copies (original plus two copies) of the bid, clearly marking each “Original Bid” and “Copy of Bid” as appropriate. In the event of any discrepancy between them, the original shall govern.
- 19.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by the bidder or a person duly authorized to bind the bidder to the bid. All pages of the bid, except for un-amended printed literature, shall be initialed by the person or persons signing the bid.
- 19.3 The complete bid shall be without alteration or erasures, except those accorded with instructions issued by MITS/GoM or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.
- 19.4 All pages of the original bid shall be initialed. All pages of the copies of the bid shall be signed or photocopies of the signed original bid shall be submitted.
- 19.5 Softcopy (one set in CD) of the bid (as per clause “Sealing and Marking of Bid”) shall be submitted along with the bid in the respective envelopes.

20.0 SEALING AND MARKING OF BID

- 20.1 Bidder shall submit their bids in FOUR PARTS, each in a separate sealed envelope super-scribed with the RFP document number, due date, time, Project name (MSWAN) and nature of bid (bid security, Organizational capability, Techno-commercial bid or Financial Bid).

PART-I: The Bid Security.

PART-II: Original and 2 copies of ORGANISATIONAL CAPABILITY BID, complete with all details

PART-III: Original and 2 copies of TECHNO-COMMERCIAL BID complete with all technical and commercial details.

Note: Filling up prices in Part-III will render the bidder disqualified.

PART-IV: Original and 2 copies of FINANCIAL BID with full price details.

The envelopes containing Part-I, Part-II, Part-III and Part-IV of offer shall be enclosed in a larger envelope duly sealed. The proforma of the format to be used on the envelope is mentioned below.

PROFORMA OF FORMAT TO BE USED ON THE OUTER ENVELOPE CONTAINING BID SECURITY, ORGANISATIONAL CAPABILITY, TECHNO-COMMERCIAL & FINANCIAL BIDS

DO NOT OPEN – THIS IS A BID

Client : Meghalaya Information Technology Society
RFP No : MSWAN/MITS/15/2007/75 dt. 19.03.08
Project Name : Meghalaya State Wide Area Network (MSWAN)

Due Date :
Time :

From To
<Name of Bidder>:
<Address> :

PROFORMA OF FORMAT TO BE USED ON EACH OF THE INNER ENVELOPE CONTAINING BID SECURITY/ ORGANISATIONAL CAPABILITY/ TECHNO-COMMERCIAL/ FINANCIAL BIDS (Mention the appropriate option on each envelope)

DO NOT OPEN – THIS IS A BID

1 Original/ Copy1/ Copy 2
Bid Security/ Organizational Capability Bid/ Techno-commercial Bid/ Financial Bid

Client : Meghalaya Information Technology Society
RFP No : MSWAN/MITS/15/2007/75 dt. 19.03.08
Project Name : Meghalaya State Wide Area Network (MSWAN)

Due Date :
Time :

From To
Name of Bidder
<Address>

- 20.2 The outer envelope shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared "late".
- 20.3 If the outer envelope is not sealed and marked as required, the bid will not be accepted.
- 20.4 The Organizational Capability, Techno-commercial and Financial bids shall be placed in separate sealed envelopes and then placed in outer envelope as explained above.
- 20.5 If these inner envelopes are not sealed and marked as required, the bid will be rejected.

21.0 BID DUE DATE

- 21.1 Bids shall be received by the MITS at the address specified in the Request for Proposal (RFP) not later than the date and time specified in the RFP.
- 21.2 MITS may, at its discretion, on giving reasonable notice by fax, cable or any other written communication to all prospective bidders who have been issued the bid documents, extend the bid due date, in which case all rights and obligations of the MITS and the bidders, previously subject to the bid due date, shall thereafter be subject to the new bid due date as extended.

22.0 LATE BID

Any bid received by the MITS after the bid due date and time prescribed in RFP shall be rejected.

23.0 MODIFICATION AND WITHDRAWAL OF BID

- 23.1 The Bidder may modify or withdraw their bid after the bid's submission, provided that written notice of the modification including substitution or withdrawal of the bid is received by MITS prior to the deadline prescribed for submission of bids.
- 23.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in a manner similar to the initial bid.
- 23.3 No bid shall be modified subsequent to the deadline for submission of bids.

- 23.4 No bid shall be withdrawn in the intervening period between the deadline for submission of bids and the expiry of the Bid validity specified. Withdrawal of a Bid during this intervening period shall result in forfeiture of their Bid security.

24.0 OPENING OF BIDS BY GoM

- 24.1 Bids shall be opened in the presence of Bidder's representatives (Maximum 2), who choose to attend. The Bidder's representatives who are present shall sign a register evidencing their attendance and also produce necessary authorization.
- 24.2 The Bidder's names, Bid modifications or withdrawals, discounts and the presence or absence of relevant Bid security and such other details as the GoM at its discretion, may consider appropriate, shall be announced at the opening.
- 24.3 The bids shall be opened on the date and time as defined in the RFP document.

25.0 CONTACTING GoM/MITS

- 25.1 Bidder shall not approach GoM/MITS after office hours and/ or outside GoM/MITS office premises, from the time of the bid opening till the time the Contract is awarded.
- 25.2 Any effort by a bidder to influence GoM/MITS in the decisions on bid evaluation, bid comparison or contract award shall result in rejection of the Bidder's offer. If the Bidder wishes to bring additional information to the notice of the GoM/MITS, they shall do so in writing.

26.0 GoM's/MITS RIGHT TO REJECT ANY OR ALL BIDS

GoM/MITS reserves the right to reject any bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder(s) or any obligation to inform the affected Bidder(s) of the grounds for such decision.

27.0 NOTIFICATION OF AWARD & SIGNING OF CONTRACT

- 27.1 Prior to expiration of the period of Bid validity, MITS shall notify the successful Bidder in writing, that their bid has been accepted by issuance of Letter of Intent (LoI) and shall send the copy of the Agreement to be signed with MITS.
- 27.2 Within 15 days of issuance of LoI, the successful Bidder shall intimate MITS the acceptance of the LoI and submit Implementation Plan for approval of MITS. The successful bidder shall submit the letters/ forms for MITS's signature to get required approvals/ clearances and obtain MITS's signature for the same. At the same time, successful bidder shall also submit the performance guarantee.
- 27.3 MITS shall call successful bidder for signing the Agreement anytime after fulfillment of conditions precedent, approve the implementation plan (if acceptable). Upon the successful bidder's signing of Agreement, MITS will notify all unsuccessful bidders and will discharge their Bid Security.
- 27.4 Failure of the successful bidder to comply with the requirements of above mentioned clauses shall constitute sufficient ground for the annulment of the notification and forfeiture of the bid security in which event, the MITS/GoM may award the contract in accordance with its prescribed rules.

Section – 3

GENERAL CONDITIONS OF CONTRACT

Section – 3

GENERAL CONDITIONS OF CONTRACT

1.0 Conditions Precedent

1.1 Commencement of the Agreement

The successful bidder shall obtain the following clearances within 15 days of issuance of Lol. Agreement shall be signed only after the clearances are obtained:

- The successful bidder shall have received all clearances, approvals and permits including any environmental approvals. The successful bidder shall also be responsible for obtaining the clearances on behalf of and in the name of GoM/MITS those clearances which are the responsibility of GoM/MITS. The clearances, approvals and permits are specified in clause 7 of Section 4. GoM will provide all necessary support to the successful bidder to obtain clearances, approvals and permits including environmental approvals.
- Successful bidder shall have executed requisite shareholder and Board of Director/ partners resolutions in order to enter into and ensure performance with its obligations under the Agreement.
- GoM/MITS will identify one nodal person in each DHQ for co-ordination and successful implementation.

The agreement will come into effect from the date of signing the agreement.

1.2 Obligations to satisfy the Conditions Precedent

Each of the successful bidder and GoM/MITS shall make all reasonable endeavors to satisfy the Conditions Precedent that falls within the scope of its respective responsibility.

1.3 Notice of fulfillment of the Conditions Precedent

Upon the date on which the successful bidder becomes aware that any of the Conditions Precedent has been satisfied in full, it shall promptly give notice thereof to GoM/MITS together with full details of the circumstances constituting such satisfaction and documentary evidence thereof.

1.4 Non-fulfillment of Conditions Precedent

If the Conditions Precedent set out hereinabove are not satisfied in full within 30 days of issuance of Lol, GoM/MITS shall have the right to terminate/ cancel the Lol without any liability on GoM/MITS. However, the Performance Guarantee provided by the successful bidder will be encashed by GoM/MITS if the delay is ascribed to the successful bidder.

2.0 CONTRACT OBLIGATIONS

Once a contract is confirmed and signed, the terms and conditions contained therein shall take precedence over the Operator's bid and all previous correspondences.

3.0 PERFORMANCE GUARANTEE

- 3.1 Within 15 days of the issuance of Lol the bidder shall furnish revolving Performance Guarantee, as provided, to GoM/MITS for an amount equal to 10% of the arithmetic sum of 5 years of the Guaranteed Revenue according to the Agreement. The Performance Guarantee shall be valid initially for a period of Two years and shall be extended on annual basis to remain valid for a period of 5 and half years from the date of completion of FAT.
- 3.2 The guarantee amount for each year after first two years shall be calculated on the basis of Guaranteed Revenue for the remaining years of operation under the agreement subject to minimum Performance Guarantee based on sum of two years Guaranteed Revenue.
- 3.3 The GoM/MITS may forfeit the Performance Guarantee for any failure on part of Bidder to complete its obligations under the Agreement. The Performance Guarantee shall be denominated in Indian Rupees and shall be in the form of a Bank Guarantee issued by a scheduled commercial bank located in India with at least one branch office in Shillong in the format provided by GoM/MITS.
- 3.4 The Performance Guarantee shall be returned to the Bidder within 30 days of the date of successful discharge of all contractual obligations at the end of the period of the Agreement by GoM/MITS.
- 3.5 In the event of any amendments to Agreement, the Bidder shall within 15 days of receipt of such amendment furnish the amendment to the Performance Guarantee as required.
- 3.6 No interest will be payable on amount of the performance guarantee.

4.0 DEFAULT, TERMINATION & EXIT MANAGEMENT

4.1 Operator's Event(s) of Default

MITIS, without prejudice to any other remedy available for breach of Agreement, may terminate the Agreement, by issuing a Default notice of Fifteen (15) days in writing to the Operator, for any or all of the following except for 4.1 (f) below for which no Default notice will be given:

- a) If the Operator fails to implement the MSWAN within the time period(s) specified in the Agreement, or within any extension thereof granted by the MITIS in writing
- b) If the Operator fails to provide any or all of the Contracted services as per service standards specified in the Agreement
- c) If the Operator fails to perform any other obligation(s) under the Agreement
- d) If the Operator, in the judgment of the GoM/MITIS has engaged in corrupt or fraudulent practices in competing for or in executing the Agreement.
- e) If the Operator, in the judgment of the GoM/MITIS uses the MSWAN for activities other than that defined in the Agreement.
- f) If the Operator uses the MSWAN and engages in anti-national activities.

4.2 MITIS's Event(s) of Default

The Operator has the right to terminate the Agreement by giving a Default notice of Thirty days (30 days) to MITIS.

The following shall be construed as the Events of Default on the part of MITIS:

- a) If the payment to the Operator is due for more than 3 quarters consecutively.

Upon the occurrence of an event of default as set out in clause 4.1 and 4.2 excluding the event of default indicated in clause 4.1 (f) above, a Party will deliver a Default notice in writing to the other party which shall specify the event of default, and give the party an opportunity to correct the default.

At the expiry of notice period specified in clause 4.1 and in clause 4.2 unless the Party receiving the Default notice remedied the default, the party giving the Default notice may terminate the Agreement.

During any Notice Period, both Parties shall, save as otherwise provided herein, continue to perform their respective obligations under the Agreement and shall not, whether by act or omission, impede or otherwise interfere with a Party's endeavors to remedy the default which gave rise to the commencement of such Notice Period.

4.3 Termination for Insolvency

If the Operator becomes bankrupt or otherwise insolvent, MITS may at any time terminate the Agreement by giving written notice of 30 days to the Operator. In this event, termination will be without compensation to the Operator, provided that such termination shall not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to MITS. In exercise of the exclusive charge upon the assets of the Operator, GoM/MITS shall be entitled to take over the assets of the Operator.

4.4 Force Majeure Termination

In case, the period of Force Majeure lasts for more than 3 (three) months from the occurrence of the event of force majeure, whether such force majeure event occurs before or after commissioning of the Project, either party shall have the right to terminate the Agreement by a written notice of 15 (fifteen) days to the other party. In the event of such termination GoM/MITS will take over all equipment (without any liability) necessary for the proper and normal operation of the MSWAN including but not limited to all constructed sites, laid cables, software, technical designs, technical & operational manuals and also all electrical, civil and mechanical works at SHQ, all DHQs, all SDHQ/BHQs, all co-located & remote offices related to the MSWAN.

4.5 Remedy available to the Operator for MITS's Event(s) of Default and under Force Majeure Termination

4.5.1 In an exceptional event if the termination occurs after the date of Final Acceptance then MITS will pay only the net present value of the capital expenditure incurred by the operator for MSWAN project.

4.5.2 If the termination occurs due to non payment by MITS/GoM to the Operator for three consecutive quarters then operator will be paid the QGR for those quarters for which the payment has not been made by MITS/GoM plus the Net Present Value of the capital expenditure only incurred by him.

4.5.3 In the event of such termination, MITS/GoM will take over all the equipment (without any liability) necessary for the proper and normal operation of the MSWAN including but not limited to all constructed sites, laid cables, software, technical designs, technical & operational manuals

and also all electrical, civil and mechanical works at SHQ, all DHQ's, and all SDHQ/BHQ's related to the MSWAN.

4.5.4 The discounting interest rate for calculating the Present Value will be Prime Lending Rate (PLR) plus 550 basis points prevailing on the date of termination.

4.6 Remedy available to MITS for Operator's Event(s) of Default

In the event of Operator's default, MITS may terminate the Agreement without any reimbursement of the investment by the Operator in the project. In the event of termination, MITS will take-over all equipment necessary for the proper and normal operation of the MSWAN including but not limited to all constructed sites, laid cables, software, technical designs, technical & operational manuals and also all electrical, civil and mechanical works at SHQ, all DHQ, all SDHQ/BHQ, related to the MSWAN without prejudice to any other action contemplated in the Agreement.

4.7 The successful bidder shall provide assurance for migration to IPV6 from IPv4 alongwith his bid for this project. He will migrate the complete system to IPv6 as and when asked by MITS /GoM without any additional cost to the state. If the successful bidder is not able to implement IPv6 at all levels within 3 months from the date of being asked by the MITS / GoM, 10% of the sum of QGR at all levels shall be deducted from the respective QGR till the time the successful bidder is not able to implement IPv6 at all levels.

5.0 **FORCE MAJEURE**

Force Majeure shall mean any event or circumstances or combination of events or circumstances that materially and adversely affects, prevents or delays any Party in performance of its obligation in accordance with the terms of the Agreement, but only if and to the extent that such events and circumstances are not within the affected party's reasonable control, directly or indirectly, and effects of which could not have prevented through Good Industry Practice or, in the case if construction activities through reasonable skill and care, including through the expenditure of reasonable sums of money. Any events or circumstances meeting the description of the Force Majeure which have same effect upon the performance of any contractor shall constitute Force Majeure with respect to the Operator. The Parties shall ensure compliance of the terms of the Agreement unless affected by the Force Majeure Events.

The Operator shall be relieved from forfeiture of its Performance Guarantee, levy of Penalties, or termination for default if and to the extent that it's delay in performance or other failure to perform its obligations under the Agreement is the result of Force Majeure.

5.1 Force Majeure Events

The Force Majeure circumstances and events shall include the following events to the extent that such events or their consequences (it being understood that if a causing event is within the reasonable control of the affected party, the direct consequences shall also be deemed to be within such party's reasonable control) satisfy the definition as per clause 5 of this section.

Without limitation to the generality of the foregoing, Force Majeure Event shall include following events and circumstances and their effects to the extent that they, or their effects, satisfy the above requirements.

Natural events ("Natural Events") to the extent they satisfy the foregoing requirements including:

- (a) any material effect on the natural elements, including lightning, fire, earthquake, cyclone, flood, storm, tornado, or typhoon;
- (b) explosion or chemical contamination (other than resulting from an act of war);
- (c) epidemic such as plague;
- (d) any event or circumstance of a nature analogous to any of the foregoing.

5.2 FORCE MAJEURE EXCLUSIONS

Force Majeure shall not include the following event(s) and/or circumstances, except to the extent that they are consequences of an event of Force Majeure:

- (a) unavailability, late delivery, or changes in cost of the MSWAN, machinery, equipment, materials, spare parts
- (b) delay in the performance of any contractor, sub-contractors or their agents;
- (c) non-performance resulting from normal wear and tear of the materials and equipment; and
- (d) non-performance caused by, or connected with, the Affected Party's:
 - (i) negligent or intentional acts, errors or omissions; and/or
 - (ii) failure to comply with an Indian law or Indian Directive; and/or
 - (iii) breach of, or default under the Agreement

- (e) Fluctuations in currency exchange rates or rate of taxes (sales/income/service) or duties (customs/excise/Octroi).

5.3 PROCEDURE FOR CALLING FORCE MAJEURE

5.3.1 The Affected Party shall notify to the other Party in writing of the occurrence of the Force Majeure as soon as reasonably practicable, and in any event within 5 (five) days after the Affected Party came to know or ought reasonably to have known, of its occurrence and that the Force Majeure would be likely to have a material impact on the performance of its obligations under the Agreement.

5.3.2 Any notice shall include full particulars of:

- (i) the nature of each Force Majeure Event which is the subject of any claim for relief under the Agreement;
- (ii) the effect which such Force Majeure Event is having or is likely to have on the Affected Party's performance of its obligations under the Agreement;
- (iii) the measures which the Affected Party is taking, or proposes to take, to alleviate the impact of the Force Majeure Event and restore the performance of its obligations under the Agreement which are affected; and
- (iv) any other information relevant to the Affected Party's claim.

5.4 Procedure for Claiming Relief

- i) Where an Affected Party claims relief on account of Force Majeure Event then, the rights and obligations of both Parties under the Agreement shall be suspended to the extent that they are affected by such Force Majeure Events.
- ii) In an Event of Force Majeure :
 - (a) the Affected Party shall use its best efforts to minimise the effects of Force Majeure and remedy any inability to perform due to Force Majeure;
 - (b) the Affected Party shall provide daily written reports to the other Party regarding its progress in overcoming the adverse effects of the Force Majeure event;
 - (c) the Affected Party shall, as soon as reasonably practicable after claiming such relief, provide the other Party with written notice containing such information as may be reasonably required to justify the claim for relief due to Force Majeure;
 - (d) the Affected Party shall claim in respect of physical loss or damage resulting from the event constituting Force Majeure

which are available from Insurances pursuant to any Insurance maintained by the Affected Party and ensure such claims are made as soon as is reasonably possible and that the proceeds of any such Insurance claims are applied to remedy the effects of the event constituting Force Majeure as soon as is reasonably possible; and

- (e) the Affected Party shall, at its own cost, take all steps reasonably required to restore its ability to perform its obligations under the Agreement as soon as possible, including the re-commissioning of any affected part of the MSWAN.
- iii) When the Affected Party is able to resume performance of its obligations under the Agreement, it shall promptly give the other Party written notice to that effect. In no event shall the suspension of performance be of greater scope and of longer duration than is necessitated by Force Majeure.

5.5 Extensions due to Force Majeure

Neither Party shall be responsible or liable for, or deemed to be in breach of the Agreement because of any failure or delay in complying with its obligations under the Agreement, due solely to one or more events of Force Majeure, and the periods allowed for the performance by the Parties of such obligation(s) shall be extended on a day-for-day basis from the date of the event of Force Majeure provided that no relief shall be granted to the Affected Party to the extent that such failure or delay would have nevertheless been experienced by that Party had such Force Majeure event not occurred.

5.6 Termination as a result of Exceptional Event

Notwithstanding anything contained herein, in case the period of Force Majeure lasts for more than 3 (three) months from the occurrence of the event of force majeure, whether such force majeure event occurs before or after commissioning of the Project, either party shall have the right to terminate the Agreement by a written notice of 15 (fifteen) days to the other party.

The Operator shall give notice to the MITS of:

- (i) the cessation of the event or circumstance of Force Majeure being claimed; and
- (ii) the cessation of the effects of the event or circumstance of Force Majeure being claimed on the enjoyment by such Party of its rights or the performance of its obligations pursuant to the Agreement, as soon as possible after becoming aware thereof.

- 5.7 Notwithstanding anything contained above, a force majeure event shall be valid only after the intimation of the same given by one party is duly acknowledged and approved by the other party.
- 5.8 Notwithstanding anything contained above, a force majeure event shall be valid only after the intimation of the same given by one party is duly acknowledged and approved by the other party.

6.0 INSURANCE

Operator shall provide comprehensive insurance from any Insurance Company, to all equipments covering all risks to replace any equipment / component for the tenure of the project and make over whole of the equipment in working condition to GoM at the close / end of the agreement. Operator shall also provide appropriate (type and amount) insurance cover for all of its employees deployed in the MSWAN project within Meghalaya.

7.0 INDEMNIFICATION

- 7.1 (a) The operator ("**Indemnifying Party**") shall indemnify MITS and hold harmless the other party from any and all damages, losses, penalties, expenses and costs arising from, based on, related to or associated with the inaccuracy of any representation or covenant set forth in the Agreement or the breach of or failure to perform or satisfy any of the provisions of the Agreement or for loss of or damage to property, death or injury to person.
- (b) The Operator shall indemnify MITS and hold it harmless from all losses, claims, causes of action, damages, liabilities, fines, penalties and expenses of all kinds (including legal expenses, court fees and professional advisory service expenses) arising from or out of any adverse claims of any and all persons related to the execution of services as mentioned in Section 5.
- 7.2 Notwithstanding anything expressed or implied in the Agreement to the contrary:-
- (1) MITS shall not be liable to the operator in Agreement, tort, warranty, strict liability or any other legal theory in respect of any cost, expense, loss or damage of an indirect, consequential, incidental, punitive or exemplary nature suffered by the operator including but not limited to loss of use of property, Agreement, production, revenue or goodwill or cost of business interruption or increased costs of working howsoever arising including but not limited to the default or sole or concurrent negligence of a Party and whether or not foreseeable at the date of the Agreement.

- (2) The operator shall indemnify, defend and hold MITS harmless against any and all third party claims.
- (3) such indemnity shall not extend to any loss, death or injury or any expenses relating thereto to the extent that it was caused by any act or omission of either party or the failure of either party to take reasonable steps in mitigation thereof.
- (4) such indemnity shall not be applicable to any loss, damage, cost or expense in respect of, and to the extent that either party is compensated pursuant to the terms of any other agreement or under any policy of insurance.

7.3 For the purpose of clause 7:-

- (1) The MITS shall include all persons directly associated with MITS including its employees (regular or contractual)/Consultants & employees of GoM.
- (2) The Operator shall include its directors, employees (regular or contractual), agents, Affiliates and sub-contractors.

7.4 Nothing in clause 7 whether expressed or implied shall relieve either Party of any express obligation to make any payment due to the other Party under the Agreement.

7.5 Properties and Facilities -

The Operator shall assume full responsibility and liability for the maintenance and operation of its properties and facilities and shall indemnify and hold MITS harmless from all liability and expense on account of any and all damages, claims or actions, including injury to and death of persons, arising from any act, accident or omission in connection with or arising out of the installation, presence, maintenance and operation of properties and facilities of the Operator.

7.6 Control and Possession

The Operator shall be deemed to be in control and possession of the equipment necessary for the proper and normal operation of the MSWAN.

8.0 ASSIGNMENT & SUB CONTRACTS

8.1 Assignment by Operator

The Operator shall not assign, in whole or in part, its rights and obligations to perform under the Agreement to a third party.

8.2 Mergers and Acquisitions

No consent of MITS shall be required, when an assignment by the Operator is the result of, and part of, a corporate acquisition, merger or combination with an affiliated entity or reorganization provided that such entity shall not be released of the obligations of the Operator under the Agreement.

8.3 GoM/MITS Assignment

GoM/MITS may assign its rights and obligations under the Agreement to any other Government Company, Agency, Corporation after giving 30 days notice to the Operator in advance.

8.4 Sub contracts

In order to minimize delays in project execution, bidder will not be bound to take any approval from MITS for subcontracting any of his works at the time of execution of the project, but will broadly mention in his bid the works which are intended to be subcontracted.

9.0 RESOLUTION OF DISPUTES

9.1 If any dispute arises between the Parties hereto during the subsistence or thereafter, in connection with the validity, interpretation, implementation or alleged material breach of any provision of the Agreement or regarding a question, including the questions as to whether the termination of the Agreement by one Party hereto has been legitimate, both Parties hereto shall endeavour to settle such dispute amicably. The attempt to bring about an amicable settlement is considered to have failed as soon as one of the Parties hereto, after reasonable attempts [which attempt shall continue for not less than 30 (thirty) days], give 15 days notice thereof to the other Party in writing.

9.2 Matters of dispute shall be referred to arbitration only after one month of serving a written notice to Principal Secretary/Commissioner & Secretary/ Secretary (IT), GoM followed by one month of serving written notice to Chief Secretary, GoM. In such case, the dispute shall be referred to a sole arbitrator or in case of disagreement as to the appointment of the sole arbitrator to three arbitrators, two of whom will be appointed by each Party and the third appointed by the two arbitrators.

9.3 The place of the arbitration shall be Shillong, Meghalaya.

9.4 The Arbitration proceeding shall be governed by the Arbitration and Conciliation Act of 1996 as amended.

9.5 The proceedings of arbitration shall be in English language.

- 9.6 The arbitrator's award shall be substantiated in writing. The arbitration tribunal shall also decide on the costs of the arbitration procedure.
- 9.7 The Parties hereto shall submit to the arbitrator's award and the award shall be enforceable as final and binding upon the parties.

10.0 CHANGE IN LAW

In the event of any Change in Law that affects the performance of the Operator, the Operator shall be given the benefit or burden resulting from such Change in Law.

11.0 TRANSFER

The Operator shall Transfer in good and working condition all equipment (without any liability) necessary for the proper and normal operation of the MSWAN including but not limited to all constructed sites, laid cables, software, technical designs, technical & operational manuals and also all electrical, civil and mechanical works at SHQ, all DHQs, all SDHQs/BHQs and all co-located & remote offices related to the MSWAN to MITS or its nominee at a nominal/notional cost of Re. 1 at the end of the agreement period.

12.0 TAXES & DUTIES

Operator shall be liable for all taxes and duties etc.

13.0 BOOKS & RECORDS

Operator shall maintain adequate books and records in connection with the Contract and shall make them available for inspection and audit by GoM/MITS during the term of Contract until expiry of the performance guarantee.

14.0 TESTING

- 14.1 Acceptance Test (AT) shall be conducted, before commissioning, by MITS /any appointed third party as per acceptance test document. The required tools/ equipments for testing are to be provided by the operator to meet all the specified parameters /service requirements.
- 14.2 Partial AT and Final AT shall be done for all services at all centres which shall be mutually decided by MITS and the operator.

- 14.3 The necessary travel, lodging and other expenses required by the MITS / Third Party inspection team for acceptance testing to be borne by MITS / Third Party.

15.0 AMENDMENT TO THE AGREEMENT

Amendments to the Agreement may be made by mutual agreement by both the Parties. No variation in or modification in the terms of the Agreement shall be made except by written amendment signed by both the parties. All alterations and changes in the Agreement shall take into account prevailing rules, regulations and laws.

16.0 APPLICABLE LAW & JURISDICTION

The Agreement shall be in accordance with appropriate Laws of Republic of India. Only the courts at Shillong, Meghalaya shall have exclusive jurisdiction to entertain matters arising out of the agreement.

17.0 USE OF AGREEMENT DOCUMENTS AND INFORMATION

- 17.1 The Operator shall not without prior written consent from GoM disclose the Agreement or any provision thereof or any specification, plans, drawings, pattern, samples or information furnished by or on behalf of GoM/MITS in connection therewith to any person other than the person employed by the Operator in the performance of the Agreement. Disclosure to any such employee shall be made in confidence and shall extend only so far as may be necessary for such performance.
- 17.2 The Operator shall not without prior written consent of GoM make use of any document or information made available for the project except for purposes of performing the Agreement.
- 17.3 All project related documents issued by GoM/MITS shall remain the property of GoM/MITS and Originals and all copies shall be returned to GoM/MITS on completion of the Operator's performance under the Agreement, if so required by the GoM.

18.0 NOTICES

- 18.1 Any notice given by one Party pursuant to the Agreement shall be sent to the other Party in writing, by E-mail, Telegram or facsimile and confirmed by Registered post in writing to the Party's address.

- 18.2 A notice shall be effective from the date when Notice in writing is delivered or tendered or affixed at a conspicuous place whichever is earlier.

Section – 4

SPECIAL CONDITIONS OF CONTRACT

Section – 4

Special Conditions of Contract

The following clauses shall supplement the Instructions to Bidders and General Conditions of Contract.

1.0 PROJECT IMPLEMENTATION

The GoM/MITS shall handover SHQ, all DHQs and approx. 50% of all SDHQ/BHQs to successful bidder within 2 months of signing of the agreement. Rest of the sites will be handed over to the successful bidder with in 4 months from the date of signing of the agreement.

1.1 Operator's Responsibility

- 1.1.1 The Operator shall implement the project strictly as per the plan approved by MITS. The implementation plan will take into consideration the following:

Phase I: The Operator shall arrange for completion of pre-dispatch inspection, install and implement SHQ, all DHQ's and offices of SHQ and DHQs including construction & cabling with in a period of 4 months from the date of signing of the Agreement and complete their Partial Acceptance Test to the satisfaction of MITS with in 5 months from the date of signing of the Agreement.

Phase II: The Operator shall install & implement all SDHQ / BHQ and offices of SDHQ/BHQ including Pre Dispatch Inspection, Construction & Cabling with in a period of 7 months from the date of signing of the Agreement and complete the Final Acceptance Test of all SHQ, DHQ, SDHQ / BHQ and offices at all levels to the satisfaction of MITS with in 8 months from the date of signing of the Agreement.

After installation, the Network Operator will submit certificates from respective OEMs; stating that products have been installed as per standard procedures and configured for optimum performance as per the OEM Standards.

The MITS shall complete the acceptance testing procedure within 15 days of offering the system for acceptance in partial as well as final acceptance testing. In case of non-acceptance the bidder will re-offer the system within 7 days.

- 1.1.2 The Operator shall provide the necessary technical support, Standard Operating Procedure (SOP) and other information to

GoM/MITS and its user organizations in implementing MSWAN applications. GoM/MITS at any time during the currency of the Agreement shall have access to the MSWAN sites.

1.1.3 **Training Needs for Meghalaya State:**

The operator shall provide training to the GoM/MITS personnel and persons from its user organisations at no cost to the GoM/MITS. The training will be provided to all the levels viz. State Capital level, District level and Sub-division/Block level. The training will be divided into two categories:

Orientation Training

User Training

Orientation Training: Orientation Training will be provided to top officials. Training will cover overview of MSWAN. The duration will be of one day and for 3 groups.

User Training: The User Training will be for middle level and junior level officers covering functionality of MSWAN and procedure for using it. The training period will be for 3 days and for 10 groups.

For each of the above-mentioned training programmes, an ideal group size of 10-15 persons per group shall be formed.

If the GoM/MITS feels that the proper training has not been provided as per schedule and content then it may decide to provide training to the personnel through third party. The cost incurred by GoM shall be reimbursed by the operator. The training schedule, content and modalities shall be defined jointly by both the parties.

1.2 **Third Party Agency**

GoM/MITS shall appoint a Third Party Agency, which shall monitor the MSWAN during operation at SHQ, DHQ, SDHQ/BHQ & co-located and remote offices. Third Party Agency shall verify the services as mentioned in Section 5 provided by the Operator. The Operator shall co-operate with such Third Party Agency and provide all necessary support and access to tools and information as required by the third party agency for SLA monitoring. Third Party Agency will be responsible for verification, validation of all works/services under the terms & conditions of the Agreement.

Responsibilities of all the stake holders of SWAN (State Government, Consultant, Network Operator and Third Party Monitoring Agency) upto implementation & issue of Acceptance Certificate will be as detailed at Responsibility Matrix, Appendix 2.

1.3 Provision of Space/Utilities

1.3.1 As per implementation plan, GoM/MITS shall arrange the necessary minimum constructed rooms/ space permanent construction for locating State Head Quarter (SHQ), District Head Quarters (DHQs), Sub-Division / Block Head Quarters (SDHQs/BHQs) for operation of the MSWAN at an annual notional rent of Re.1/- per site from the date of making over of the physical possession of that site to the operator and the operator will give necessary **Making Over/Taking Over certificate** to MITS/GoM. The WAN Control Room, Generator Room including other infrastructure requirement (viz. power, water, furniture, air-conditioning, lighting etc.) shall be furnished by the operator at SHQ, all DHQs, SDHQ / BHQ as per the requirement. The requirement for furnishing of WAN Control Room, Video Conference Room and Generator Room is as follows:

WAN Control Room				
Sr. No.	Item	SHQ	DHQ	SDHQ/BHQ
1	Lights (CFL)	40 (Forty) nos. of CFL of minimum 20 watts	16 (Sixteen) nos. of CFL of minimum 20 watts at each DHQ	10 (Ten) nos. of CFL of minimum 20 watts at each SDHQ/BHQ
2	Split AC (with cooling and heating facility)	4 (Four) nos. of Split A/C of 2 ton each	2 (Two) nos. of Split A/C of 1.5 ton each at each DHQ	1 (One) no. of window A/C of 1.5 ton at each SDHQ/BHQ
3	Power Points and cabling modifications	As per requirements		
4	Table	2 (Two) nos.	1 (One) no. at each DHQ	1 (One) no. at each SDHQ/BHQ
5	Chair	10 (Ten) nos.	6 (Six) nos. at each DHQ	4 (Four) nos. at each SDHQ/BHQ

Video Conference Room				
Sr. No.	Item	SHQ	DHQ	SDHQ/BHQ
1	Lights (CFL)	90 (ninety) nos. of CFL of minimum 20 watts	90 (ninety) nos. of CFL of minimum 20 watts at each DHQ	N/A
2	Split AC (with cooling and heating facility)	4 (Four) nos. of Split A/C of 2 ton each	4 (Two) nos. of Split A/C of 2 ton each at each DHQ	N/A
3	Power Points and cabling modifications	As per requirements		

Request For Proposal

Video Conference Room				
4	Table	1 (one) no.	1 (One) no. at each DHQ	N/A
5	Chair	25 (twenty five) nos.	25 (twenty five) nos. at each DHQ	N/A
6	Data Cable	As per requirements		N/A
7	Microphone	Microphone points as required on the table spread evenly to avoid echoes		N/A
Generator Room				
Sr. No.	Item	SHQ	DHQ	SDHQ/BHQ
1	Lights	2 (Two) nos. of CFL of minimum 20 watts	2 (Two) nos. of CFL of minimum 20 watts at each DHQ	2 (Two) nos. of CFL of minimum 20 watts at each SDHQ /BHQ of minimum 20 watts
2	Power Points and cabling	As per requirements		

Arrangement of priority electrical power lines by applying for separate connection at all levels / locations shall be responsibility of the state though the same will be facilitated by the operator. Power connections would be applied for and taken with State being the applicant and connection holder, to avoid any complexity in case of invoking the Exit clause at any time during the contract period. The preparation of the space including electrical, civil and mechanical works shall be carried out by the Operator at their own expense. The electricity utility charge and the meter cost shall be borne by the Operator. The space cannot be used for any purpose other than for delivering the services as mentioned in this document. Operator shall provide the Video studio having infrastructure facilities including Furniture, Lights and Air Conditioning at SHQ and all DHQs. Infrastructure required for installation of equipment including power shall also be the responsibility of the Operator.

- 1.3.2 GoM/MITS may decide at its discretion to change the location of SHQ/ DHQ/ SDHQ/ BHQ during implementation or after implementation but during the Agreement period. The services shall be operational as per Section 5 within a period of 30 days from the date the space is provided by MITS. MITS shall reimburse the actual cost of relocation incurred by the Operator as verified by the Third Party Agency.
- 1.3.3 GoM/MITS shall facilitate for necessary clearances, which shall enable the Operator to undertake civil, electrical, and mechanical works including false ceiling, partitioning, installation of air conditioning equipment, installation of generator sets, installation of UPS equipment, cable laying etc., at the respective sites.
- 1.3.4 The entry and exit to the site for the equipment and personnel of the Operator shall be in accordance with Security Rules and

Regulations that may apply to the Government Campus where the site is located.

1.4 Inspection and Acceptance Testing

Bidder shall intimate MITS/GoM about delivery of equipment at the designated site(s) at least one week in advance so that necessary inspection / testing required can be organized by MITS / GoM or its representative.

1.5 Acceptance Test

Acceptance Test shall be conducted in two steps:

The first step shall involve successful installation of SHQ and all DHQs. The provisional acceptance of these centres shall be defined as Partial Acceptance.

The Second step shall involve successful installation of SHQ, all DHQs and all SDHQs/BHQs. The acceptance of SHQ, all DHQs and all SDHQ/BHQs shall be defined as Final Acceptance.

In the event the Operator is not able to complete the installation linking SHQ, all DHQs and all SDHQs/BHQs as defined by GoM due to non availability of bandwidth from the bandwidth provider, the Operator and MITS may mutually agree to redefine the Network so the Operator can complete installation and conduct the Partial Acceptance Test/ Final Acceptance Test within the specified time.

1.5.1 Partial Acceptance: After successful installation of SHQ and all DHQ's in accordance with the requirements in Section 5, an Acceptance Test shall be conducted. After successful testing by the Third Party Agency a Partial Acceptance Test Certificate shall be issued by MITS to the Operator. The partial acceptance test includes:

1. All hardware and software items must be installed at particular site as per the specification.
2. Availability of all the defined services in the RFP will be verified. The successful bidder shall be required to demonstrate all the features/facilities/functionalities as mentioned in the RFP.
3. Bidder shall submit the detailed test plan for review and approval of the state before commencement of the testing.
4. Full load testing.
5. Successful bidder will arrange the test equipment viz protocol analyzers for H.323, SIP, TCP/IP, RTP, UDP, H.263, OTDR,

Megger, Bit error rate device, RF signal strength analyzer, GPS and any other measuring equipment that would be required for verification of network elements installed and their performances. Successful bidder will also provide documented test results.

1.5.2 **Final Acceptance:** After successful installation of SHQ, all DHQs and all SDHQs / BHQs in accordance with the requirements in Section 5, an Acceptance Test shall be conducted. After successful testing by the Third Party Agency a Final Acceptance Test Certificate shall be issued by MITS to the Operator. The final acceptance test includes:

1. All hardware and software items must be installed at particular site as per the specification.
2. Availability of all the defined services will be verified. The successful bidder shall be required to demonstrate all the features/facilities/functionalities as mentioned in the RFP for each site.
3. Bidder shall submit the detailed test plan for review and approval of the state before commencement of the testing.
4. Full load testing.
5. Successful bidder will arrange the test equipment viz protocol analyzers for H.323, SIP, TCP/IP, RTP, UDP, H.263, OTDR, Megger, Bit error rate device, RF signal strength analyzer, GPS and any other measuring equipment that would be required for verification of network elements installed and their performances. Successful bidder will also provide documented test results.
6. The successful bidder shall facilitate in getting the security audit of the network done by a certified agency hired by MITS / GoM. The cost of the audit would be borne by MITS / GoM.
7. All documentation as defined should be completed before the final acceptance test.
8. The training requirements as mentioned should be completed before the final acceptance test.

1.5.3 The date on which Final Acceptance certificate is issued shall be deemed to be the date of successful commissioning of the MSWAN and the starting date of the BOOT period.

1.5.4 The date on which Final Acceptance certificate is issued shall be deemed to be the date of successful commissioning of the

MSWAN. In case the completion of FAT is held up for more than a quarter after the completion of PAT due to non-completion of less than 10% of sites on account of reasons not attributable to the operator, state would ensure that QGR process is not hampered or delayed and Partial QGR payment would be done for PoPs completed on pro-rata basis.

In case of the situation as explained above, where considerable delay is envisaged in some of the PoPs due to reasons beyond the control of the operator and also the state, provisions would be available to the state to redefine the size of the network, considering the merit of the situation, so that all the provisions of the contract with the Network Operator may apply to the re-defined network and the BOOT process for five years may continue with the re-defined network. This re-definition of the network would be done in consultation with DIT, GoI.

- 1.5.5 For any other delay by the Operator in concluding the activity of PAT / FAT, not covered by the above clause, it shall render the Operator liable to the imposition of appropriate penalties.

2.0 PAYMENT TERMS

2.1 Guaranteed Revenue Payment

- 2.1.1 The Operator shall be paid Minimum Guaranteed Revenue on quarterly basis at the end of each quarter (within one month) for the SHQ, each DHQ and each SDHQ/BHQ which have been accepted in the Final Acceptance Test by MITS based on the certificate provided by the Third Party Agency, at the rates specified by the bidder in of Section 8.
- 2.1.2 Cost mentioned in Guaranteed Revenue Table of **Section-8** would be used for additional requirement in future during the period of agreement.
- 2.1.3 In case of increase in technical requirements (with respect to No. of ports, telephone instruments, features, bandwidth, No. of cables etc) with respect to the maximum requirement as per the technical and operational requirements, the Quarterly Guaranteed Revenue will be revised / modified accordingly on pro-rata basis taking into account the unit rate of the respective item of Guarantee Revenue Table.
- 2.1.4 The Operator's request for payment shall be made at the end of each quarter by invoices along with following supporting documents:

- Performance statistics
- Log of network parameters along with Service Down time calculation and Uptime percentage.
- Any other document necessary in support of the service performance acceptable to MITS.

The Third Party Agency shall verify all the supporting documents as prescribed and acceptable to MITS.

On receipt of such invoice after verification by the Third Party Agency and after deducting Income Tax, other taxes and any Penalties, MITS shall pay the amount within a period of 15 days.

The Operator shall furnish all tax payment receipts to MITS.

2.2 Payment for site preparation

2.2.1 Infrastructure requirement (viz. Site preparation, power, furniture & furnishing, air-conditioning, lighting etc.) is to be considered as a part of respective site viz. state headquarters, district headquarters and sub-division / block headquarters.

2.2.2 The operator shall be released Guaranteed Revenue on quarterly basis at the end of each quarter (within one month) for the site preparation cost of SHQ, each DHQ, and each SDHQ/BHQ which have been accepted in the Final Acceptance Test by MITS based on the certificate provided by the Third Party Agency, at the rates specified by the bidder in of Section 8.

2.2.3 The bidder shall be responsible for maintenance of the sites for the entire period of the contract.

2.3 The currency of payment shall be Indian Rupees.

2.4 If there is any deficiency in the performance of Contractual obligations on the part of the Operator, the Operator shall be liable for the imposition of appropriate Penalties as specified in clause 4 of this section and MITS shall be entitled to deduct such Penalties at source while making payment to the Operator for the services provided as mentioned in Section 5.

2.5 The Operator shall bear the consequences of any change in taxes or laws.

3.0 COMMERCIAL ISSUES

3.1 Bandwidth

State will sign agreement with BSNL for the procurement of Lease Line bandwidth for MSWAN project. The operator will facilitate arrangements for obtaining and maintaining required Bandwidth for this project. For connecting remote blocks a pooled VSAT bandwidth of 512 Kbps shall be obtained from VSAT service provider, operator will be responsible for obtaining and maintaining this bandwidth. The operator shall also facilitate arrangements for obtaining and maintaining required Leased line bandwidth for connecting horizontal office with their respective centre. The payment of bandwidth will be made by operator for all MSWAN leased lines and VSAT bandwidth and MITS will in turn reimburse the same to the operator in actual.

The Operator shall also be solely responsible for coordination and maintenance of the bandwidth during the period of the Agreement. The Operator shall take all necessary steps for restoration of bandwidth in case of any problem and shall report to MITS in writing regarding the action taken. The Operator shall arrange to obtain all relevant consents/ approvals from BSNL / VSAT Service provider if required for operation of MSWAN.

3.1.1 In the event, the traffic demanded by GoM/MITS exceeds the bandwidth capacity of 2 Mbps linking SHQ with DHQs and 2 Mbps linking DHQs with SDHQs/BHQs or 512 Kbps pooled VSAT bandwidth for remote blocks, GoM at their discretion may request the Operator to arrange for such additional bandwidth. When so requested, the Network operator will facilitate to provide additional bandwidth on behalf of the state government from bandwidth service provider as per requirement of the state. The payment, of such additional bandwidth as approved by the Third Party Agency, shall be made by the operator to the bandwidth provider and the same shall be reimbursed by MITS.

3.1.2 The Operator shall be responsible for procurement of Internet Connectivity from Internet Service Provider (To be decided by GoM / MITS) from 4 Mbps upto 8 Mbps at SHQ any time during the currency of the Agreement including access & bandwidth charges, software, interface equipment etc. The payment of internet access & BW charges as levied by ISP will be made by the operator and GoM / MITS will in turn reimburse the same to the operator in actuals.

3.2 Capacity of Equipment

3.2.1 All equipments provided under the agreement should be scalable and be readily capable to cater the increase in bandwidth from 2

Mbps to 8 Mbps between SHQ & each DHQ and 2 Mbps to 4 Mbps between DHQ & each SDHQ/BHQ respectively. In case of remote blocks equipments should be scalable so as to cater the increase in Pooled bandwidth from 512 Kbps to 2 Mbps.

The network equipment should also be able to scale up to add more offices requiring the SWAN services in keeping with overall design and bandwidth constraints.

- 3.2.2 MITS at their discretion during the currency of the Agreement, may arrange or request the Operator to arrange the extra capacity of equipment (if required), for connecting each DHQ with adjacent DHQs.

In case of any additional equipment requested by MITS, the additional equipment shall be installed and be made operational within 30 days of the request made by MITS in writing or within 10 days of equipment being made available to the Operator by MITS. Any delay by the operator shall render the operator liable to the imposition of appropriate penalties.

- 3.2.3 i) In case of GoM/MITS arranging all or some of the aforesaid equipment then the Operator shall be obligated to install, operate and maintain the same. MITS shall pay 3.0% of the cost of the aforesaid equipment to the Operator as operating charges per quarter which shall be added to the Quarterly Guaranteed Revenue.
- ii) In case of Operator arranging for all or some of the aforesaid equipment, the cost as verified by the third party agency for providing the same shall be reimbursed to the Operator by MITS. MITS shall also have the option to make payments for the provision of the aforesaid equipment by amortising the cost over the remaining life of the Agreement at the Interest rate plus 550 basis points. MITS shall pay 3.0% of the cost payable to the Operator (excluding bandwidth cost) as operating charges per quarter. The amortised amount and the quarterly operating charges shall be added to the Quarterly Guaranteed Revenue.

3.3 Interface equipment

- 3.3.1 It shall be the responsibility of the Operator to provide the interface equipment at SHQ, all DHQs, and all SDHQs/BHQs as per Section 5. In case, BSNL is not in a position to provide CPE, then Operator will arrange it at an extra cost. Unit rate per CPE should be offered by the bidder.

- 3.3.2 MITS at their discretion during the currency of the Agreement, may arrange or request the Operator to arrange the extra interface equipment (if required), for connecting various sites.

3.4 Number of Centres

MITS at its discretion can increase or decrease the number of DHQ, SDHQ/BHQ, collocated and remote offices after the signing of the Agreement and adjust the quarterly guaranteed revenue proportionately.

- 3.5 The Operator shall be responsible for providing Software (System Software, Application Software, Device Drivers, etc) required, if any, to meet any additional requirements during the currency of the Agreement without any additional cost to MITS.
- 3.6 During the currency of the Agreement, for any additional requirement of equipment including interface equipment, the specifications shall be provided by the Operator. The Third Party Agency shall verify suitability of the specifications submitted by Operator and recommend to MITS for acceptance. The Operator shall be obligated to undertake integration, operation and maintenance for all additional equipments also.

4.0 PENALTIES

4.1 Penalties for delay in implementation

4.1.1 Failure to complete the Partial Acceptance Test at each & every site

If the Operator fails to complete the Partial Acceptance Test at each & every centre within the time period (s) specified in the implementation plan, MITS may, without prejudice to other remedies under the Agreement, levy as Penalties, a sum equivalent to 0.5 % of the arithmetic sum of the guaranteed revenue for SHQ, all DHQs (including modifications/preparation of structure and laid cables) for the five years payable under the Agreement, for each week or part thereof of delay, until actual delivery of performance. The maximum penalty for delay shall not exceed 5% of the arithmetic sum of five years Guaranteed Revenue for SHQ, all DHQs at state headquarters and each of district headquarters (including modifications/preparation of structure and laid cables). If the delay continues beyond 10 weeks, MITS may terminate the Agreement.

Failure to complete the Final Acceptance Test at each & every site

If the Operator fails to complete the Final Acceptance Tests at each & every site within the time period(s) specified in the implementation plan, MITS may, without prejudice to its other remedies under the Agreement, levy as Penalties, a sum equivalent to 0.5 % of the arithmetic sum of the guaranteed revenue SHQ, all DHQs (including modifications/preparation of structure and laid cables), all SDHQs/BHQs (including modifications/preparation of structure and laid cables) for the five years payable under the Agreement, for each week or part thereof of delay, until actual delivery of performance. The maximum penalty for delay shall not exceed 5% of the arithmetic sum of five years Guaranteed Revenue for SHQ, all DHQs (including modifications/preparation of structure and laid cables), all SDHQ/BHQs (including modifications/preparation of structure and laid cables). If the delay continues beyond 10 weeks, MITS may terminate the Agreement.

- 4.1.2 If GoM/MITS fails to provide space and related clearances for modification/ preparation of the centres in accordance with clause 1.3.1 and 1.3.3 within two months or four months as defined in the clause 1.0 of Section-4 for SHQ, DHQ, SDHQ/BHQ of signing of the Agreement as a result of which the setting up of the centres is delayed and the Operator is not able to adhere to the schedule for completing the Partial and Final Acceptance Tests, in such an event the Operator shall prove the Partial and Final Acceptance Test with the completed centres and if the tests are accomplished within the scheduled time according to the Third Party Agency then the Operator shall not be liable for delays at the centers where set up could not be established due to non availability of space. In such a situation MITS shall be required to pay to the Operator the proportionate quarterly guaranteed revenue for completed centers.

GoM/MITS may provide the sites and related clearances for SHQ, DHQ's, SDHQs/BHQs even after two months or four months as defined in the clause 1.0 of Section 4, from the date of signing of the Agreement as stipulated above. The Operator shall be obligated to complete the centres including Acceptance Test within period already defined, of MITS providing the space and related clearances or the Operator shall complete the centres including Acceptance Test as mentioned in clause 1.1.1, whichever is later. If the Operator fails to prove the Acceptance Test then the Penalties shall be imposed in the following manner for SHQ, the DHQs and the SDHQ/BHQs.

4.2 Operational Penalties

- 4.2.1 The following Penalties for Operational Deficiencies in SHQ shall apply:

The SHQ shall have uptime as prescribed in Clause 5.5.10, Section 5 of this document.

If Uptime is less than the prescribed limits but more than 99.0% during Prime Business Hours (97% during Extended SLA Hours):- for every 0.01% reduction in uptime, 0.5% of current quarter's guaranteed revenue payable under the Agreement shall be levied as Penalty subject to maximum of 10% of current quarter's guaranteed revenue payable under the Agreement.

If Uptime is equal to or less than 99% during Prime Business Hours (97% during Extended SLA Hours) but more than 90% during Prime Business Hours (88% during Extended SLA Hours) the Penalty shall be 20% of current quarter's guaranteed revenue payable under the Agreement.

If Uptime is equal to or less than 90% during Prime Business Hours (88% during Extended SLA Hours) but more than 85% during Prime Business Hours (83% during Extended SLA Hours) the Penalty shall be 40% of current quarter's guaranteed revenue payable under the Agreement. In the event the uptime is more than 85% during Prime Business Hours (83% during Extended SLA Hours) but equal to or less than 90% during Prime Business Hours (88% during Extended SLA Hours) for two or more consecutive quarters, GoM shall have the right to terminate the Agreement and the provisions of clause 4.5 of Section 3 shall apply to such termination.

If Uptime is equal to or less than 85% during Prime Business Hours (83% during Extended SLA Hours) the Penalty shall be 100% of current quarter's guaranteed revenue payable under the Agreement and GoM shall have the right to terminate the Agreement and the provisions of clause 4.6 of Section 3 shall apply to such termination.

- 4.2.2 The SHQ shall not be non- operational continuously for more than 30 minutes. Beyond 30 minutes of Service Downtime, for every 5 minutes of Service Downtime, or part thereof, the penalty shall be 0.5% of current quarter's guaranteed revenue subject to maximum of 10% of current quarter's guaranteed revenue payable under the Agreement.

For the sub clause 4.2.2, if 50% or more number of ports/ positions in any category as defined in Section 5 are non-operational, the SHQ shall be considered as 100% non-operational.

Whichever Penalties under sub clauses 4.2.1 and 4.2.2 above, is higher shall be the applicable penalty.

- 4.2.3 Each DHQ shall have uptime as prescribed in Clause 5.5.10, Section 5 of this document.

If Average Uptime is less than the prescribed limits but more than 99.0% during Prime Business Hours (97% during Extended SLA Hours):- For every 0.01% reduction in Uptime, 0.5% of current quarter's guaranteed revenue payable for the DHQ shall be levied as Penalty subject to maximum of 10% of current quarter's guaranteed revenue payable under the Agreement.

If Average Uptime is equal to or less than 99% during Prime Business Hours (97% during Extended SLA Hours) but more than 90% during Prime Business Hours (88% during Extended SLA Hours) the Penalty shall be 20% of current quarter's guaranteed revenue payable for the DHQ under the Agreement.

If Average Uptime is equal to or less than 90% during Prime Business Hours (88% during Extended SLA Hours) but more than 85% during Prime Business Hours (83% during Extended SLA Hours) the Penalty shall be 40% of current quarter's guaranteed revenue payable for the DHQ under the Agreement. In the event the uptime is more than 85% during Prime Business Hours (83% during Extended SLA Hours) but equal to or less than 90% during Prime Business Hours (88% during Extended SLA Hours) for two or more consecutive quarters, GoM shall have the right to terminate the Agreement and the provisions of clause 4.6 of Section 3 shall apply to such termination.

If Average Uptime is equal to or less than 85% during Prime Business Hours (83% during Extended SLA Hours) the Penalty shall be 100% of current quarter's guaranteed revenue payable for the DHQ under the Agreement and GoM shall have the right to terminate the Agreement and the provisions of clause 4.6 of Section 3 shall apply to such termination.

- 4.2.4 A DHQ shall not be non-operational continuously for more than 90 minutes. Beyond 90 minutes of Service Downtime, for every 15 minutes of Service Downtime, or part thereof, the penalty of 0.5% of current quarter's guaranteed revenue payable for the DHQ under the agreement shall be levied subject to maximum of 10% of current quarter's guaranteed revenue payable for the DHQ under the Agreement.

For the sub clause 4.2.4, if 50% or more number of ports/positions in any category as defined in Section 5 is non-operational, the DHQ shall be considered as non-operational.

Whichever Penalties under sub clause 4.2.3 and 4.2.4 above, is higher shall be the applicable penalty.

- 4.2.5 Each SDHQ / BHQ shall have uptime as prescribed in Clause 5.5.10, Section 5 of this document.

If Average Uptime is less than the prescribed limits but more than 85% during Prime Business Hours (83% during Extended SLA Hours):- For every 0.01% reduction in Uptime, the penalty of 0.5% of current quarter's guaranteed revenue payable for the SDHQ / BHQ shall be levied subject to maximum of 10% of current quarter's guaranteed revenue payable under the Agreement.

If Average Uptime is equal to or less than 85% during Prime Business Hours (83% during Extended SLA Hours) but more than 80% during Prime Business Hours (78% during Extended SLA Hours) the Penalty shall be 20% of current quarter's guaranteed revenue payable for the SDHQ / BHQ under the Agreement.

If Average Uptime is equal to or less than 80% during Prime Business Hours (78% during Extended SLA Hours) but more than 75% during Prime Business Hours (73% during Extended SLA Hours) the Penalty shall be 40% of current quarter's guaranteed revenue payable for the SDHQ / BHQ under the Agreement. In the event the uptime is more than 75% during Prime Business Hours (73% during Extended SLA Hours) but equal to or less than 80% during Prime Business Hours (78% during Extended SLA Hours) for two or more consecutive quarters, GoM shall have the right to terminate the Agreement and the provisions of clause 4.6 of Section 3 shall apply to such termination.

If Average Uptime is equal to or less than 75% during Prime Business Hours (73% during Extended SLA Hours) the Penalty shall be 100% of current quarter's guaranteed revenue payable for the SDHQ / BHQ under the Agreement and GoM shall have the right to terminate the Agreement and the provisions of clause 4.6 of Section 3 shall apply to such termination.

- 4.2.6 SDHQ / BHQ shall not be non - operational continuously for more than 24 hours. Beyond 24 hours of Service Downtime, for every 2 hours of Service Downtime, or part thereof, 0.5% of current quarter's guaranteed revenue payable for the SDHQ / BHQ under the Agreement shall be levied as penalty subject to a maximum of 10% of current quarter's guaranteed revenue payable for SDHQ / BHQ under the Agreement.

For the sub clause 4.2.6, if 50% or more number of ports/ positions in any category as defined in Section 5 are non-operational, the SDHQ / BHQ shall be considered as non-operational.

Whichever Penalties under sub clause 4.2.5 and 4.2.6 above, is higher shall be the applicable Penalty.

- 4.2.7 The Penalties as per clause 4.2.1/ 4.2.2; 4.2.3/ 4.2.4; 4.2.5/ 4.2.6 ; 4.2.7/4.2.8 shall be calculated for SHQ, the DHQs, SDHQ/BHQs separately and the sum of all such penalties as applicable shall be computed and deducted from the current quarter's guaranteed revenue of SHQ, respective DHQ, SDHQ/BHQ.

4.3 Penalties for misuse

In case of misuse of bandwidth/ Internet at the instance of operator, the penalty imposed on the Operator, without prejudice to GoM's/MITS's other remedies under the Agreement, shall be 200% of the quarterly guaranteed revenue under the Agreement for all the centres. GoM/MITS may also terminate the Agreement.

5.0 REPRESENTATIONS AND WARRANTIES

5.1 Representations and Warranties by the Operator

- 5.1.1 It is a company/enterprise duly organized and validly existing under the laws of India and has all requisite legal power and authority and corporate authorisations to execute the Agreement and carry out the terms, conditions and provisions hereof;
- 5.1.2 It has in full force and effect all requisite clearances, approvals and permits necessary to enter into the Agreement and perform its obligations hereof;
- 5.1.3 It will have the legally valid and enforceable title to all Equipment as may be necessary for proper functioning and it will be free from all encumbrances, liens, charges, any security interest and adverse claims of any description;
- 5.1.4 The Agreement and the transactions and obligations hereof do not contravene its constitutional documents or any law, regulation or government directive and will not contravene any provisions of, or constitute a default under, any other Agreement or instrument to which it is a party or by which it or its property may be bound or any of its obligations or undertakings by which it or any of its assets are bound or cause a limitation on its powers or cause it to exceed its authorized powers;

- 5.1.5 There is no pending or threatened actions, suits or proceedings affecting the Operator or its affiliates or any of their respective assets before a court, governmental agency, commission or arbitrator or administrative tribunal which affects the Operator's ability to perform its obligations under the Agreement; and neither Operator nor any of its affiliates have immunity from the jurisdiction of a court or from legal process (whether through service of notice, attachment prior to judgement, attachment in aid of execution or otherwise);
- 5.1.6 The Operator confirms that all representations and warranties of the Operator set forth in the Agreement are true, complete and correct in all respects;
- 5.1.7 No information given by the Operator in relation to the Agreement, project documents or any document comprising security contains any material mis-statement of fact or omits to state as fact which would be materially adverse to the enforcement of the rights and remedies of GoM or which would be necessary to make any statement, representation or warranty contained herein or therein true and correct.
- 5.1.8 All equipment including material to be installed by the Operator in the MSWAN shall be new. All equipment shall conform to the codes, standards and regulations applicable to networking facilities and benefit from the usual manufacturer's guarantees.

5.2 Representations and Warranties by MITS

- 5.2.1 It has full legal right; power and authority to execute the MSWAN project and to enter into and perform its obligations under the Agreement and there are no proceedings pending.
- 5.2.2 The Agreement has been duly authorized, executed and delivered by MITS and constitutes valid, legal and binding obligation of MITS.
- 5.2.3 The execution and delivery of the Agreement with the Operator does not violate any statutory judgement, order, decree, regulation, right, obligation or rule of any court, government authority or arbitrator of competent jurisdiction applicable in relation to MITS, its assets or its administration.

5.3 Each Day during the Agreement

The Parties agree that these representations and warranties are taken to be made on each Day (including holidays) during the term of the Agreement.

5.4 No title to the equipment

The Operator and GoM/MITS agree that GoM/MITS shall have no title to any of the equipment made available for delivery of services by the Operator during the period of the Agreement. After 5 years, it shall be transferred to GoM/MITS.

6.0 SUCCESSFUL BIDDER'S RESPONSIBILITIES

- 6.1 The successful bidder shall provide his solution on the basis of continuous availability of spares for the period of the Agreement and two years thereafter.
- 6.2 The successful bidder shall facilitate necessary arrangements for obtaining and maintaining required number of leased / ISDN/ dial-up lines/ VSAT connectivity etc. with sufficient capacity from Bharat Sanchar Nigam Limited (BSNL)/ VSAT Service provider to meet MSWAN requirements.
- 6.3 It shall be the responsibility of the successful bidder to provide Internet Connectivity from 4 Mbps upto 8 Mbps at SHQ as per requirement during the currency of agreement. The payment of such internet access & BW charges as levied by ISP shall be borne by MITS.
- 6.4 For data services, the successful bidder shall be responsible for all network elements including system software and line interface units at the SHQ, DHQs and SDHQs/BHQs. The successful bidder shall demonstrate the functioning of data service at each site.
- 6.5 For Voice & Video Conference services, end to end requirement including the bandwidth shall be the responsibility of the successful bidder at SHQ, DHQs, SDHQs/BHQs.
- 6.6 The WAN control room, Video conference room (as per the requirement), Generator Room including other infrastructure requirement (viz. power, water, furniture, air-conditioning, lighting etc.) shall be furnished by the operator at SHQ/DHQ/SDHQ/BHQ as per the requirement.
- 6.7 Separate grounding pits for equipment earthing shall be provisioned at all the levels/ locations by the successful bidder.
- 6.8 All tools/ equipments required for testing shall be made available by the successful bidder throughout the period of contracted service.
- 6.9 Bidders shall note that details as illustrated in this document are for reference only and by no means exhaustive. In case, any additional

equipment, software and materials are necessary to meet the requirements, the same shall be provisioned and clearly mentioned by the bidder in his bid.

7.0 APPROVALS/ CLEARANCES

- 7.1 Necessary approvals/ clearances from DoT/ TEC/ TRAI/ Concerned authorities/ BSNL/ WPC/ any service provider, for establishing the network and connecting different Network elements/ ports to BSNL/ VSAT services/ any service provider's circuits, shall be obtained by the operator.
- 7.2 Necessary approvals/ clearances from concerned authorities, as required, for fire protection, government duties/ taxes/ octroi, shall be obtained by the operator.
- 7.3 Necessary approvals/ clearances, from concerned authorities (like Municipalities, Public Works Department (PWD), Department of Irrigation, State Electricity Board etc. for "Right of way"), as required, shall be obtained by the operator for laying their own cables to meet MSWAN requirements
- 7.4 Necessary approvals/ clearances from concerned authorities, as required, for providing Internet Service shall be obtained by the operator
- 7.5 MITS / GoM shall facilitate the approval process as and when required but obtaining necessary approvals from the concerned authorities would be the responsibility of the successful bidder

Section – 5

SCHEDULE OF REQUIREMENT

Section – 5

SCHEDULE OF REQUIREMENT

5.1 MSWAN Description

The upcoming MSWAN is going to be a converged network providing voice, video & data services throughout the state at all the levels viz. SHQ, DHQ & SDHQ / BHQ. MSWAN is required to be open standards based, scalable, high capacity network to carry Voice, Data and Video traffic between designated levels & offices of Government of Meghalaya (GoM) at State, District and Subdivision / Block levels. There will be two connectivities, Vertical and Horizontal.

The vertical connectivity of MSWAN will connect the SHQ level to DHQ level & subsequently DHQ level to SDHQ / BHQ level through lease circuits of 2 Mbps using STM or Ch E3 or Ethernet or E1 ports as appropriate for individual level. At vertical level, wherever the lease circuits are not available, a VSAT based connectivity will be there. The Network should have single point Gateway of adequate capacity to connect to Internet.

Horizontal connectivity will connect all designated government offices to their respective centre (SHQ/DHQ/SDHQ/BHQ). The connectivity to the end user is based on either one or more of standard technologies like leased circuits, Radio frequency circuits, OFC or using Ethernet ports as appropriate for the individual offices.

The Network Connectivity is shown in fig 5.1.

MSWAN shall be built vertically on three tiers of Network connectivity comprising:

- Primary Tier consisting of SHQ
- Secondary Tier consisting of DHQs
- Tertiary Tier consisting of SDHQs / BHQs

The operator shall be solely and exclusively responsible to Design, Finance, Build – Own – Operate, Maintain and Transfer the network that fulfils the requirements as defined in this section and to provide the services as specified in the RFP. The operator is however free to specify any component not covered in this section but required to make the proposed network fully operational and achieve the proposed service level agreement.

The Leased line bandwidth provider will be Bharat Sanchar Nigam Limited (BSNL). The backup to leased line will be PRI / BRI at different levels. VSAT service for connecting remote BHQs is to be taken from an established service provider having a VSAT footprint in state of Meghalaya.

Services to GoM and its user organizations: -

Through MSWAN, the operator shall provide voice, video, and data communication services to GoM and its user organizations as per technical and operational requirements. The technical specifications provided in this section are the minimum suggestive specifications for design and implementation of MSWAN. However the scalability and overall MSWAN services requirements takes precedence over the detailed specifications.

CENTRES

Total number of centres at various levels shall be as below:

Level	Number of Centres
SHQ	1
DHQ	7
SDHQ	8
BHQ	39
Total	55

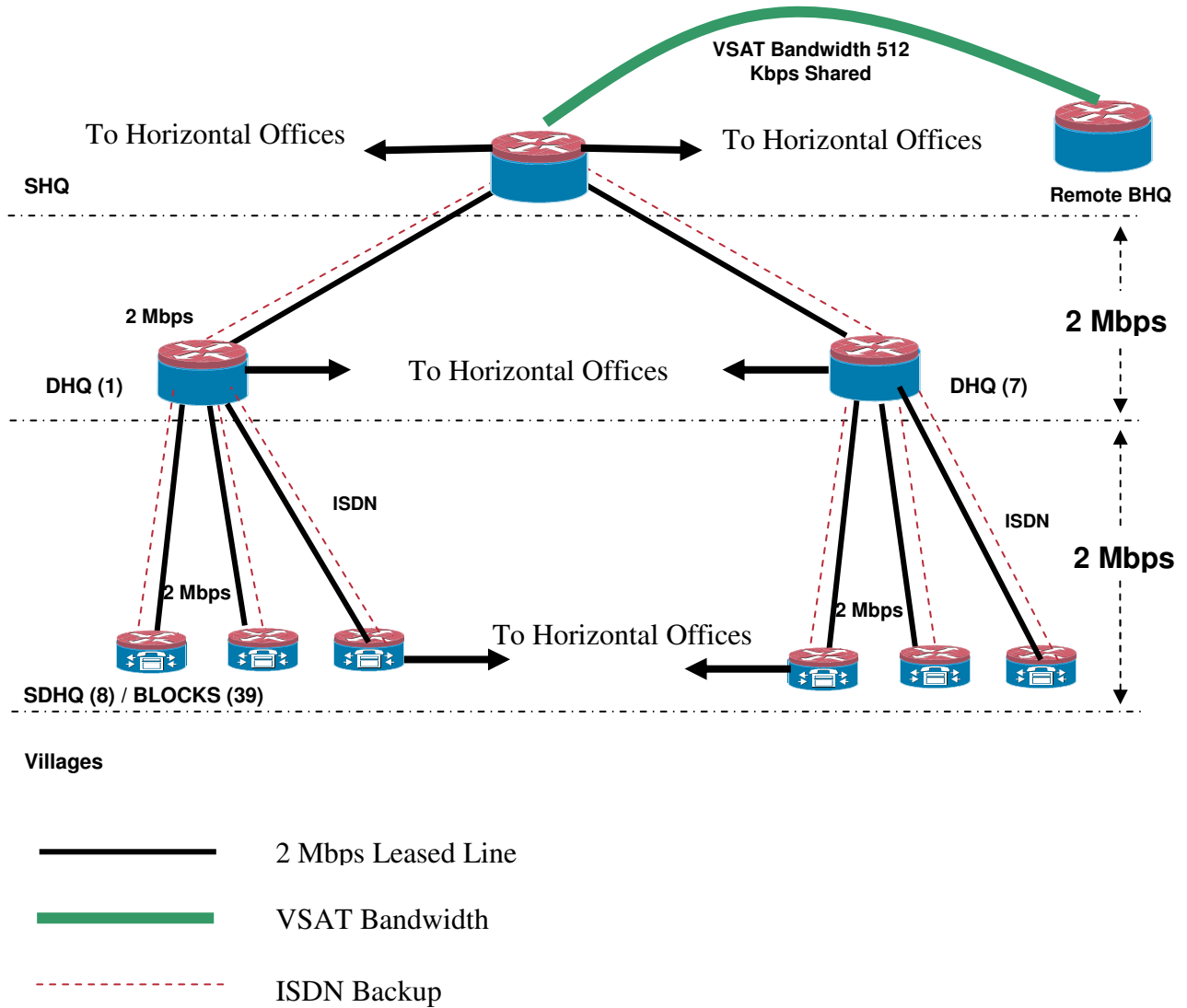


Fig 5.1

Network Connectivity – Meghalaya State Wide Area Network (MSWAN)

5.1.1 MSWAN Architecture

As mentioned earlier, MSWAN will be a three tier architecture. At the top most tier, there would be SHQ located at Shillong. The 7 DHQ's below would each have leased line connectivity to the SHQ. The SDHQ's and BHQ's are categorized as a single tier. They would be connected to their respective DHQ's. The detailed listing of Districts and their respective sub divisions and blocks is given in the POP List (Appendix -1).

SHQ will be connected to the internet through a minimum 4 Mbps line. The internet link will be terminated on a separate Internet router. MSWAN backbone shall have the provision of connectivity of Data Center and DR site as and when required at SHQ or DHQ level.

5.1.2 User Requirements

User Requirements: (All figures are Indicative)

Levels		User Requirements		
		Vertical (Centre)	Horizontal (Remote Offices)	Total
Voice Requirements				
SHQ		160	190	350
DHQ*	Category 1	30	60	90
	Category 2	15	30	45
	Category 3	25	35	60
SDHQ		4	4	8
BHQ		3	0	3
Data Requirements				
SHQ		200	300	500
DHQ*	Category 1	50	75	125
	Category 2	30	50	80
	Category 3	50	50	100
SDHQ		6	5	11
BHQ		5	0	5
Video Requirements				
SHQ		10	5	15
DHQ*	Category 1	1	1	2
	Category 2	1	1	2

	Category 3	1	1	2
SDHQ		1 (Desktop Based)	0	1
BHQ		1 (Desktop Based)	0	1

* All the districts (DHQ) in Meghalaya have been divided among three categories based on their geographical spread over, status of industrialization, population, number of offices and users as follows:

Categories	Districts
Category I	East Khasi Hills
Category II	West Khasi Hills, East Garo Hills, South Garo Hills, Ribhoi, Jaintia Hills
Category III	West Garo Hills

The indicative user requirement for voice & data services within next 5 years (duration of project) is estimated to be double of current requirement. The bidder has to position the main hardware accordingly to meet the requirement for entire project duration.

Note: Right now bidder has to quote for:

30, 5 and 1 no. of IP phones for SHQ, each DHQ & each SDHQ/BHQ respectively for voice requirement and 3 & 1 no. of VC end points for SHQ and each DHQ respectively for video requirement. For SDHQs/BHQs a desktop (software) based video conferencing is the requirement.

5.1.3 Bandwidth Requirement:

Path	Initial	Future (Anytime)
SHQ to DHQ	2 Mbps	8 Mbps or more
DHQ to SDHQ / BHQ	2 Mbps	4 Mbps or more
SHQ to Remote BHQs	512 Kbps VSAT BW shared	2 Mbps Shared
Internet	4 Mbps	8 Mbps or more

5.1.4 Man Power Requirements

5.1.4.1 The operator shall deploy qualified and experienced manpower for implementation and operations of the MSWAN.

5.1.4.2 The following are the minimum qualification needed for the Manpower for this project:

a) For State Head Quarter:

Project Manager (one in Number): Bachelor of Engineering from reputed University/Institute or equivalent with at least 6 years relevant experience and OEM Network Certification

Network Engineer (3 in Number): Bachelor of Engineering from reputed University/Institute or equivalent with at least 2 years relevant experience and OEM Network Certification

Helpdesk (3 in Number): Science Graduate with Computer Networking qualification, Helpdesk experience including technical trouble shooting of minimum 12 months

The manpower at SHQ will look after the SHQ centre and all the offices coming in SHQ.

b) For District Head Quarters (2-3 each):

The manpower at DHQ will look after the DHQ centre, SDHQs & BHQs coming under that DHQ, and all the horizontal offices coming in that DHQ.

Resource(s) deployed at this level should possess diploma in engineering with two years relevant experience.

5.1.4.3 The above manpower requirement is minimum and indicative. However it will be operator's obligation to augment manpower to ensure MSWAN functionality along with its components as per the uptime requirements.

5.1.4.4 The operator shall provide for the need of increased manpower requirement whenever size of the network is increased for any reasons.

5.1.4.5 The operator shall clearly indicate the sourcing of manpower. It is desirable that the Local manpower be preferred. Prevalent Rules and Regulations of Policies of State on Labor and Employment shall be abided and followed by the operator.

5.1.5 Interconnectivity with External Networks

Bidder has to ensure seamless interoperability and interconnectivity of MSWAN with other external networks like NICNet or any other network as required by central or any state government.

5.2 NETWORK CONNECTIVITY

5.2.1 Primary Tier / SHQ

The Primary Tier of MSWAN shall link SHQ (State capital, Shillong) to the 7 DHQs using lease circuits of 2 Mbps each initially which will be upgradable upto 8 Mbps or more whenever required by GoM/MITS.

As the SHQ Centre will comprise of SHQ aggregation point as well as offices within the notified SHQ premises. SHQ will also be connected by leased circuit to the VSAT service provider hub as backhaul link for connectivity to remote blocks.

The SHQ is going to be located at Secretariat building, Shillong and serve as Network Operation Center (NOC) for the upcoming network. The NOC of MSWAN must be able to connect to the data center and Disaster Recovery (DR), which may come up in future. The Secretariat building premises with co-located offices (within range of 500 mtr.) will be known as the SHQ & bidder has to facilitate the WAN services to all collocated and remote offices. The network operator shall facilitate the connectivity of LAN with router/switch.

The SHQ is the primary component of the MSWAN thus the availability of SHQ is highly critical. This tier will also connect various offices of GoM located at Shillong with MSWAN and provide voice, video and data services.

Backup for leased circuits connectivity to DHQs at this level will be using 2 number of ISDN PRIs.

The co-located and remote offices in the state capital will be connected to SHQ. There are around 15 co-located and 20 remote offices spread over the city of Shillong that need to be currently connected to MSWAN. Though in future number of remote offices may increase to 40, bidder has to size the network equipments to meet the requirement for future increase in number of remote offices.

Co-located offices will be connected directly to SHQ using LAN technologies. While the connectivity of the remote offices at SHQ will be through leased line (50%) or OFC (25%) or RF (25%).

The quantities mentioned above are only tentative and actual number of remote offices and their mode of connectivity will be decided at the time of implementation of the project. The list of such sites will be decided by MITS / GoM. In case, LAN with CAT6 cabling already exists at such horizontal offices (co-located and remote) then bidder shall integrate it with MSWAN and provide voice, video and data services as per the requirement.

The different media for connecting remote offices with SHQ will be as follows:

SI No	Connectivity	No. of Offices
1	Fiber Cable	5
2	Wireless (RF)	5
3	Leased Line	10

This figure is only indicative and may change after conducting accurate survey during implementation time.

SHQ will be connected to the internet through a minimum 4 Mbps line. The internet link is terminated on a separate Internet router. SHQ NOC should also have provision for connectivity to NICNet network.

The different sections of the MSWAN such as Intranet servers, internet and secretariat LAN would be segregated through a firewall system. MSWAN users will access internet through internet link at SHQ NOC using proxy server. A Network Management System (NMS) has to be deployed at SHQ for management and monitoring of MSWAN.

5.2.2 Secondary Tier / DHQ

Secondary tier (DHQ) will connect to SHQ and SDHQs/BHQs with 2 Mbps links with a provision of expansion at all levels. The DHQ is going to be located at the respective Deputy Commissioner / Collector's office. The DC office with co-located offices (within 500 mtr.) will be known as the DHQ & bidder has to facilitate the WAN services with elementary support / integration for LAN services for the premises. DHQ shall also have provision for connecting to the NICNet network.

The co-located and remote offices in the districts will be connected to respective DHQ. There are around 8 co-located and

10 remote offices per district that need to be currently connected to MSWAN. Though in future number of remote offices may increase to 20, bidder has to size the network equipments to meet the requirement for future increase in number of remote offices.

Co-located offices will be directly connected to their DHQ using LAN technologies. While the connectivity of the remote offices will through leased line (50%) or OFC (25%) or RF (25%).

The quantities mentioned above are only tentative and actual number of remote offices and their mode of connectivity will be decided at the time of implementation of the project. The list of such sites will be decided by MITS / GoM. In case, LAN with CAT6 cabling already exists at such horizontal offices (co-located and remote) then bidder shall integrate it with MSWAN and provide voice, video and data services as per the requirement.

The different media for connecting remote offices with DHQ will be as follows:

SI No	Connectivity	No. of Offices
1	Fiber Cable	2
2	Wireless (RF)	3
3	Leased Line	5

This figure is only indicative and may change after conducting accurate survey during implementation time.

5.2.3 Tertiary Tier / SDHQ / BHQ

This level will be responsible for its upward connectivity to DHQ initially with 2 Mbps, with a provision of expansion. A centre at this level can either be a SDHQ or BHQ.

The blocks where Leased line circuits are not available, a VSAT connectivity with 512 Kbps bandwidth shared amongst all the remote BHQs is to be provided. Currently there are around 14 such blocks in the state. The list of such blocks is given in Appendix-1.

The office of Subdivisional officer / Block Development Officer with co-located offices (within 500 mtr.) will be known as SDHQ / BHQ respectively & bidder has to facilitate the WAN services with elementary support / integration for LAN services for the premises.

The co-located and remote offices in a sub division will be connected to respective SDHQ. There are around 4 co-located

and 2 remote offices per subdivision that need to be currently connected to MSWAN. Though in future number of remote offices may increase to 4, bidder has to size the network equipments to meet the requirement for future increase in number of remote offices.

At present in BHQs only 4 co-located offices from the BHQ centre are required to be connected. Though in future 2 number of remote offices may be connected to a BHQ, bidder has to size the network equipments to meet the requirement for future addition of remote offices.

Co-located offices will be connected directly to SDHQ / BHQ using LAN technologies. While the connectivity of the remote offices at SDHQ will be through leased line (50%) or RF (50%).

The quantities mentioned above are only tentative and actual number of remote offices and their mode of connectivity will be decided at the time of implementation of the project. The list of such sites will be decided by MITS / GoM. In case, LAN with CAT6 cabling already exists at horizontal offices (co-located and remote) then bidder shall integrate it with MSWAN and provide voice, video and data services as per the requirement.

The different media for connecting remote offices with SDHQ will be as follows:

SI No	Connectivity	No. of Offices
1	Wireless (RF)	1
2	Leased Line	1

In some BHQs (around 14) currently the lease circuits are not available from BSNL, hence a VSAT based connectivity has to be proposed there. The VSAT solution will be a centralized architecture based network. These remote BHQs will have the VSAT equipments for connecting to the service provider hub sharing 512 Kbps shared VSAT bandwidth between them. From the service provider hub, the entire traffic coming from the remote BHQ sites will then get routed to the central site (SHQ) using backhaul terrestrial media (Leased Line) of sufficient capacity (512 Kbps expandable to 2 Mbps).

5.2.4 Voice Channel Requirements

The voice channel requirements are based on the following criteria:

- (i) SHQ, all DHQs and all SDHQs / BHQs shall handle co-located and remote offices voice requirement.
- (ii) The Bidder shall design the IP-addressing schema and Voice Dial Plan schemes for the SWAN. Wherever applicable and feasible it should be within the guidelines specified by DIT, GoI.
- (iii) For estimating the number of simultaneous calls at any location, a ratio of 5:1 is assumed i.e. out of 5 possible users; only 1 will make a call at any given time.
- (iv) Any location on the network should be able to make voice calls at any other office using a specified dialing pattern based on the area codes/STD or any other scheme provided by GoM.

There are two type of IP phones to be provided in MSWAN as detailed below:

Sl No	Level	Quantity (No)	
		IP Phone Type 1	IP Phone Type 2
1	SHQ	20	10
2	DHQ	28	7
3	SDHQ	8	0
4	BHQ	39	0
TOTAL		95	17

5.3 NETWORK REQUIREMENTS

The network shall integrate multiple services - Voice, Data & Video and carry them on a single backbone. It shall be flexible enough to support different configurations needed. It shall be scalable and capable of using alternate communication channels.

The bidder shall go through all requirements mentioned in this document and meet the same.

5.4 NETWORK DESIGN

- i. The proposed MSWAN shall be based on a technology, which provides for efficient delivery of multiple services such as Voice, Data and Video in an enterprise network.

- ii. GoM/MITS at their discretion can increase or decrease the number of DHQ, SDHQ / BHQ, horizontal offices after the signing of the agreement and adjust the quarterly guaranteed revenue proportionately.
- iii. The network shall route the data traffic as per the requirement from any location to any other location. The network shall allow Internet connectivity to all / selective users at all / selective centres / locations as per requirement using the same network infrastructure.
- iv. The network shall route the voice traffic based on uniform numbering scheme. The numbering scheme will be mutually discussed and decided with the successful bidder.
- v. The Network shall have industry efficient compression engine to optimize bandwidth utilization.
- vi. The bidder shall design the LAN Architecture, do the structured cabling, power cabling and all related works at all centres identified for successful installation and implementation of MSWAN.
- vii. GoM has already implemented networks at different locations/ departments/ offices in Meghalaya. The proposed network design shall allow the connectivity of existing networks with MSWAN using standard protocol. It is the responsibility of the bidder to connect the existing networks with MSWAN. The bidder will also provide the gateway to connect National Network Backbone (NICNet) to the upcoming MSWAN. This integration with other networks should allow transmission of data, voice and video communications securely between these networks.
- viii. The network design shall support all relevant industry standard protocols. The network protocol to be used would be the industry standard Internet Protocol.
- ix. The MSWAN shall be certified by the respective OEMs for individual components/systems.
- x. The bidder shall provide complete Network design; details of components used along with the make & model and ensure the complete compliance of requirements.
- xi. The design shall have sufficient diagnostic facilities to identify & locate the faults and easy rectification of faults. The bidder shall specify the details & level of diagnostics provided.
- xii. The equipments / interfaces shall comply with relevant ITU-T/ IEEE/ IETF/ EIA/ TIA/ ANSI/ NEBS/ TEC etc. standards as applicable.
- xiii. Voice communication

1. The MSWAN shall have voice solution at all the tiers including horizontal offices.
 2. Any user in the network shall be able to communicate with any other user in the network.
 3. The bandwidth used for the purpose of voice communication shall be optimized and compressed.
- xiv. Hotline on IP EPABX
1. One Hotline shall be available between each DHQ and SHQ.
 2. Voice system shall allow the user at one end to just lift the handset and the ring shall automatically go at the predefined end without dialing any number
- xv. IPv6 Migration Roadmap

The Bidder shall provide assurance for migration to IPV6 from IPV4 alongwith his bid. He will migrate the complete system to IPv6 as and when asked by MITS/GoM without any additional cost to the state. Failure to do so at such time would be considered as non-performance and will be treated as Default on Operator's part and the provisions of clause 4.7 of Section-3 of this RFP may be applied by MITS/GoM.

5.5 OPERATIONAL REQUIREMENTS

- 5.5.1 The equipment shall operate at places where the ambient temperature, humidity and at altitudes common to Meghalaya. Cooling equipment (with option of heating) has to be provided by operator as per requirement.
- 5.5.2 Lighting protection / conductor will be used at all the sites.
- 5.5.3 Upkeep & maintenance of premises at all levels will be the responsibility of the bidder.
- 5.5.4 Bidder shall facilitate the arrangement of priority electrical power lines by applying for separate connection at all levels / locations for this project. The electricity utility charges and the meter cost shall be borne by the Operator. It is the responsibility of the Operator to arrange all other requirements for installation, operation and maintenance of MSWAN. The operator should comply with the interoperability guidelines issued by DIT in future as well as it will adhere to security guidelines issued by CERT-In from time to time.

- 5.5.5 Help desk facility shall be available for providing procedural/ technical assistance to the users on all days of a year & 24 hours/ day. (This helpdesk should be available through “Toll free number”).
- 5.5.6 All technical manuals (two sets) necessary for installation, operations & maintenance as applicable shall be provided by the bidder, one set at each SHQ, DHQ, SDHQ/BHQ and another set at the central location.
- 5.5.7 **"Service Down Time"** (SDT) means the time period when specified services with specified technical and operational requirements as mentioned in this section are not available to GoM and its user organizations. The network shall be operational on all days of a year and 24-hours/ day at all levels except at BHQ and SDHQ levels, where the network shall be operational on all days of a year from 09:00 Hours to 22:00 Hours. The bidder shall provide sufficient manpower for operation & maintenance of the network.

The network is considered as operational when all centres at all tiers/ levels are working, providing all/ specified services as mentioned in this section in full capacity at all locations in the network. In case of failure of an aggregate port (i.e. port connecting a centre with other centre) of a centre, all services at all positions of the lower level among the two shall be considered as Down/ non-operational.

In case of non-availability of services from BSNL / VSAT service provider, the successful bidder will have to arrange a documentary evidence of same (Down time) from a concerned competent authority. In which case the penalty, if any shall not be levied on the bidder.

For calculation of SDT the day is divided in:

Prime Business Hours = 09:00 Hours to 18:00 Hours on Weekdays

Extended SLA Hours (SHQ & DHQ) = 18:00 Hours to 09:00 Hours on Weekdays & 00:00 Hours to 24:00 Hours on Sundays and all other State Govt. holidays.

Extended SLA Hours (SDHQ, BHQ) = 18:00 Hours to 22:00 Hours on Weekdays & 09:00 Hours to 22:00 Hours on Sundays and all other State Govt. holidays.

For calculation of SDT if more than 50% of ports/ service positions (voice / data / video) are down/ non-operational in a centre, then the centre is considered as 100% down/ non-operational.

Service Down Time (SDT) shall be calculated, including the down time due to Power failure (**except for the video conferencing rooms at SHQ, DHQs**) but excluding the service down time due to BSNL/ VSAT Service provider/ other Basic Service Provider circuit failure and Force Majeure, as follows: (all time shall be in minutes)

$$\text{SDT} = (\text{Voice SDT} + \text{Data SDT} + \text{Video SDT}) / 3$$

Voice SDT = Sum of down time of voice service from all voice service positions/ Total number of voice service positions

Data SDT = Sum of down time of data service from all data service ports/ Total number of data service ports

Video SDT = Sum of down time of video service from all video service positions/ Total number of video service positions

5.5.8 Uptime shall be calculated as follows: (all time shall be in minutes)
 Total uptime in a quarter = Total time in a quarter – Service down Time in a quarter

5.5.9 The %uptime shall be as follows:

During Prime Business Hours:

Tier	% Uptime
At SHQ	- 99.90%
At DHQ	- 99.50%
At SDHQ/BHQ	- 92 %

During Extended SLA Hours:

Tier	% Uptime
At SHQ	- 97.90%
At DHQ	- 97.50%
At SDHQ/BHQ	- 90 %

5.5.10 The maximum approximate down time allowed on any single occasion shall be as follows:

Non availability of any/ all services at SHQ	- 30 minutes
Non availability of any/ all services at any DHQ	- 90 minutes
Non availability of any/ all services at any SDHQ / BHQ	- 24 hours

- 5.5.11 Operator shall provide training as per Clause No. 1.1.3 of Section-4.
- 5.5.12 Preventive Maintenance (PM) shall be done on quarterly basis for verifying the proper functioning of the Network/ Network elements and to detect the likelihood failure of components and the wear & tear of all moving components. The Preventive Maintenance (PM) schedule shall be finalized by the operator in consultation with GoM/ any appointed third party. The services shall not be affected during Preventive Maintenance (PM.)

5.6 REDUNDANCY

In order to meet operational requirements of all services as mentioned above in the RFP document, bidder would provide additional redundancy of different network elements at all the levels of MSWAN as deemed necessary and essential. Bidder will give details of the same in support of that.

5.7 INTERFACES

- 5.7.1 The network shall have the required interfaces as per details provided at all the levels.
- 5.7.2 The bidder should comply the bandwidth requirements with asked specifications.
- 5.7.3 All the routers and switches to be used in the network shall be interoperable with each other.
- 5.7.4 The network shall have an interface for Internet connectivity of 4 Mbps upgradable to 8 Mbps on a separate Internet Router at SHQ.

5.8 SECURITY

The following security features shall be available using industry standard protocols (Bidders to provide the detail for ensuring this):

- 5.8.1 As the network shall be used by various agencies of GoM, therefore the successful bidder is required to prepare detailed IT security policy & security architecture. The bidder shall also ensure SWAN security to be in line with DIT-Gol guidelines.
- 5.8.2 Traffic Filtering protocols
- 5.8.3 Link authentication protocols.

5.8.4 Routing Authentication Protocol

5.8.5 User authentication for access.

5.8.6 The Router shall have the following security features:

5.8.6.1 All the services like voice, video and data should have resources & QoS configured as per the requirement and if any resource is to be allocated then network should be able to dynamically allocate the same.

5.8.6.2 The logging messages can also be controlled as per the requirement.

5.8.6.3 Shall support standard based protocols, like SNMP/SNMP V2/SNMP V3 and RMON.

5.8.6.4 Multiple Privilege Levels shall be provided to have different level of access.

5.8.6.5 Router should be able to integrate with RADIUS Software for AAA functionality

(a) Shall have a graphical user interface (GUI) that simplifies and distributes configuration for user profiles, group profiles.

(b) Password support shall include standard protocol for a flexible solution.

(c) Disabling an account on a specific date.

(d) Disabling an account after N failed attempts.

(e) View logged-in user list.

(f) Accounting and audit information stored in industry standard format for convenient import into billing applications.

5.8.7 The operator shall provide sufficient security for the physical access of the network and also for network elements.

5.9 REQUIREMENT OF PRIMARY TIER - SHQ

The connectivity considered at this layer, has redundancy at the processor and power supply levels. The Channelised STM1 interface has been considered to ensure the flexibility of logical configuration & scalability for link bandwidth without upgrading the hardware. 2nos of PRI are also required to ensure the backup connectivity at this level. All PRI ports may be either internal or external to the core WAN router.

5.9.1 Specifications for the core router at Primary Tier are as follows:

- 5.9.1.1 The proposed equipment should support high port densities and it must provide integration of multi-services like voice, data and video with either internal or external devices to core router. It shall have the capability to support multiple technologies.
- 5.9.1.2 Router should have redundant control processor and redundant AC power supply.
- 5.9.1.3 **Equipment shall support variety of interfaces like:**
 - 5.9.1.3.1 Ch-STM1
 - 5.9.1.3.2 Ch-E3 / E3
 - 5.9.1.3.3 Ch-E1, E1, V.35, G.703
 - 5.9.1.3.4 Multiple GE as per IEEE 802.3z and 802.3ab, FE as per IEEE 802.3u
- 5.9.1.4 Backplane performance of at least 10 Gbps
- 5.9.1.5 Forwarding throughput of atleast 15 Mpps
- 5.9.1.6 The performance of the router should remain the same in case of failure of one of the CPU module.
- 5.9.1.7 It should be 19 inch rack mountable.
- 5.9.1.8 MLPPP for link aggregation
- 5.9.1.9 High Availability Requirements; shall support the following.
 - 5.9.1.9.1 Multiple storage of multiple images & configurations
 - 5.9.1.9.2 VRRP/HSRP
 - 5.9.1.9.3 Online insertion & removal of cards
- 5.9.1.10 **Protocol Support:**

- 5.9.1.10.1 Shall have IPv4 features (also refer Network Design clause 5.4 of this section)
- 5.9.1.10.2 Shall have RIP and OSPF for IPv4 (also refer Network Design clause 5.4 of this section)
- 5.9.1.10.3 Shall support multicast routing protocols: IGMPv1, v2, v3, PIM-SM and PIM-DM, DVMRP, BGP
- 5.9.1.10.4 Support for IP forwarding Layer 2 and Layer 3 Multiprotocol Label Switching (MPLS) VPNs
- 5.9.1.10.5 Should support Diffserv QoS / MPLS CoS
- 5.9.1.10.6 Should support MPLS traffic engineering, MPLS DiffServe aware traffic engineering, MPLS Traffic-engineering fast reroute
- 5.9.1.10.7 Should Support Point-to-point Ethernet, PPP transport over MPLS
- 5.9.1.10.8 Should support multiple MPLS application like MPLS L3 VPN combined with MPLS Traffic-Engineering
- 5.9.1.11 **Security Features:**
 - 5.9.1.11.1 IP Tunneling supporting multicasting features
 - 5.9.1.11.2 Firewall features.
 - 5.9.1.11.3 MD-5 route authentication for RIP, OSPF, IS-IS and BGP
 - 5.9.1.11.4 Shall support multi-level of access
 - 5.9.1.11.5 AAA support using Radius / TACACS
 - 5.9.1.11.6 DoS prevention through TCP Intercept
 - 5.9.1.11.7 DDoS protection
 - 5.9.1.11.8 IP Access list to limit Telnet and SNMP access to router
 - 5.9.1.11.9 Multiple privilege level authentications for console and telnet access
 - 5.9.1.11.10 ACLs for controlled forwarding
 - 5.9.1.11.11 It should have IPSEC with AES / 3DES encryption

5.9.1.12 Quality of Service (QoS) support:

- 5.9.1.12.1 Policy based routing, IP Precedence, DSCP for classification.
- 5.9.1.12.2 Priority queuing, Class based weighted fair queuing for congestion management.
- 5.9.1.12.3 Committed Access Rate (CAR) / Committed Information Rate (CIR) for Traffic Conditioning.
- 5.9.1.12.4 RSVP for signaling
- 5.9.1.12.5 cRTP / LFI / Diffserv for link efficiency mechanisms or traffic optimization.
- 5.9.1.12.6 Per VLAN QOS / VLAN per QoS

5.9.1.13 Debug alarms & Diagnostics:

- 5.9.1.13.1 Display of input and output error stats on all interfaces.
- 5.9.1.13.2 Trace-route, Ping and extended Ping
- 5.9.1.13.3 Support for monitoring of Traffic flows
- 5.9.1.13.4 Support for SLA monitoring for metrics like delay, latency, jitter, packet loss

5.9.1.14 Management

- 5.9.1.14.1 Shall have support for Web / GUI based management / CLI / Telnet and SNMPv3.
- 5.9.1.14.2 RMON support for history, statistics, alarms and events

5.9.1.15 Link Efficiency Mechanisms

- 5.9.1.15.1 Support load balancing of different links with dynamic BW management, re-routing without failure of existing sessions.
- 5.9.1.15.2 The delay sensitive traffic like voice and video has to be prioritized over data at the link level with standard based QoS / Queuing mechanisms.

5.9.1.16 The router should provide:

- 5.9.1.16.1 Redundant AC power supply

5.9.1.16.2 Redundant Processor

5.9.1.16.3 1 Nos. of Ch STM-1 Interface **OR** 2 Nos. of Ch E3 Interfaces.

5.9.1.16.4 2 Nos. of 1000 Mbps Ethernet ports

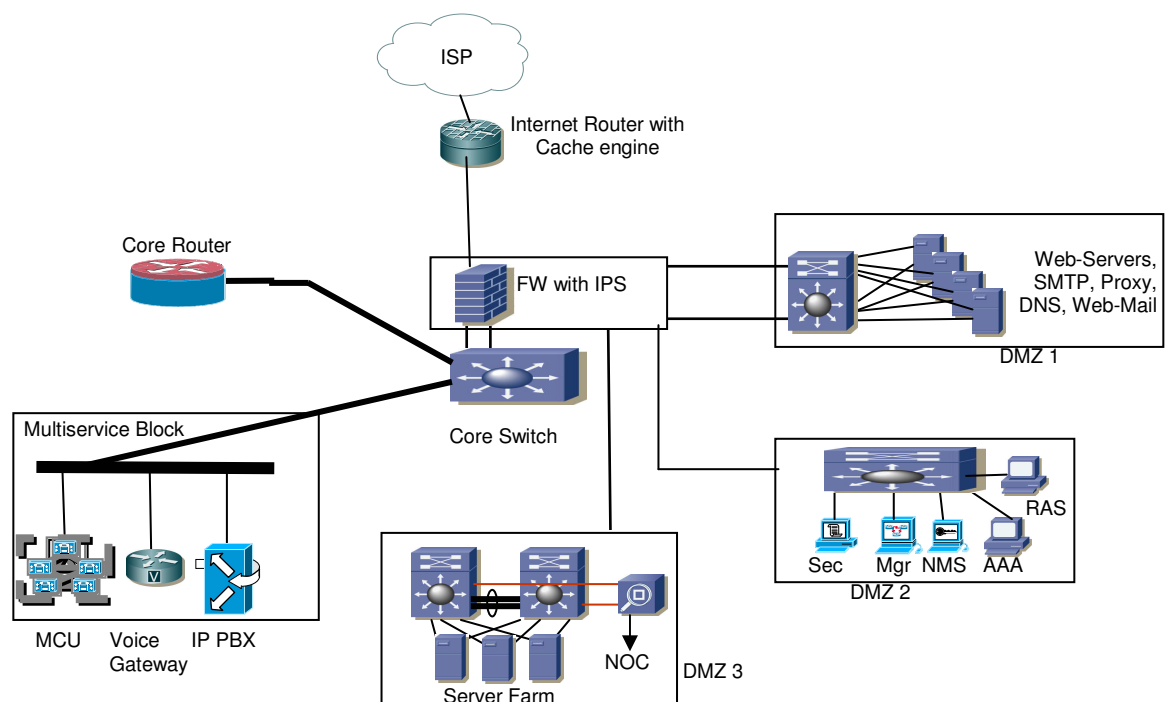
5.9.1.16.5 2 Nos. of Ch E1 ports

5.9.1.16.6 3 Free Slots for future expansion

5.9.1.16.7 2 Nos. of ISDN PRI ports (Either Internal or External to the core router)

5.10 NETWORK OPERATION CENTER (NOC):

The network architecture of NOC will have non-blocking switching system to control the access coming from Internet & from DHQ will be taken care by creating demilitarized zones (DMZ). The internet access has been considered to be centralized. All the offices across the state will be allowed internet access only through the SHQ. The internet access has been provided for public access for certain defined applications which will provide services to citizens. The network shall have an option for the mobile users of state to access the external as well internal applications / network, after validating their credentials.



NOC Architecture

The security setup going to be deployed shall insure the prevention against internal / external threats, virus breakouts etc. The high performance firewall and IPS module will be deployed with central switch.

The management zone will have management platforms for the security appliances and the network devices in whole. The multi-service block will have IP-PBX, voice gateway & MCU. Other equipments will be LAN switches in cluster mode, firewall, IDS / IPS sensors, antivirus system, internet gateway, NMS, AAA, cache engine etc.

5.10.1 Core Switch Specifications:

5.10.1.1 The switch should be chassis based and should support layer 2 to layer 4 functionality.

5.10.1.2 Backplane performance of atleast 175 Gbps

5.10.1.3 Forwarding throughput of atleast 250 Mpps

5.10.1.4 Switch should have redundant control processor and redundant AC power supply.

5.10.1.5 The performance of the switch should remain the same in case of failure of one of the CPU module.

5.10.1.6 The switch should support port based access control list

5.10.1.7 It should support four groups of RMON & external probe has to be supported

5.10.1.8 Layer 2 Features:

5.10.1.8.1 Layer 2 switch ports and VLAN trunks

5.10.1.8.2 IEEE 802.1Q VLAN encapsulation

5.10.1.8.3 Support for at least 1000 VLAN IDs

5.10.1.8.4 Dynamic Trunking or equivalent

5.10.1.8.5 Trunking VLAN facility or equivalent

5.10.1.8.6 802.1s, 802.1w

5.10.1.8.7 IGMP snooping v1 and v2

5.10.1.8.8 Port trunking technology across line cards

5.10.1.9 **Layer 3 Features:**

5.10.1.9.1 Static IP routing

5.10.1.9.2 IP routing protocols

5.10.1.9.3 Open Shortest Path First

5.10.1.9.4 Routing Information Protocol

5.10.1.9.5 Border Gateway Protocol Version 4

5.10.1.9.6 PIM Sparse Mode

5.10.1.9.7 VRRP/HSRP

5.10.1.9.8 IGMP v1, v2, and v3

5.10.1.9.9 IGMP filtering on access and trunk ports

5.10.1.9.10 Distance Vector Multicast Routing Protocol

5.10.1.9.11 Internet Control Message Protocol (ICMP) support

5.10.1.9.12 ICMP Router Discovery Protocol

5.10.1.10 **Security:**

5.10.1.10.1 Dynamic Host Configuration Protocol (DHCP) snooping

5.10.1.10.2 RADIUS, which enable centralized control of the switch and restrict unauthorized users from altering the configuration

5.10.1.10.3 Standard and extended ACLs on all ports

5.10.1.11 **Equipment should provide:**

5.10.1.11.1 Redundant power supply

5.10.1.11.2 Redundant processor

5.10.1.11.3 48* 10/100/1000 BaseT Ethernet ports

5.10.1.11.4 8 No of 1000 Base LX Ports

5.10.1.12 Mangement Features

5.10.1.12.1 SNMP

5.10.1.12.2 RMON

5.10.1.12.3 Switch should support Port Mirroring

5.10.1.12.4 Switch must be remotely managed

5.10.2 Other Switch:

5.10.2.1 Performance:

5.10.2.2 Switching Fabric of 13 Gbps or higher.

5.10.2.3 24 Nos. 10/100/1000 BaseT Mbps & 4 GE uplink ports (fiber uplinks should support GE 1000BaseT, LX and SX).

5.10.2.4 Resilient architecture with scalability to support additional ports

5.10.2.5 It should support L3 functionalities.

5.10.2.5.1 Static IP routing

5.10.2.5.2 IP routing protocols

5.10.2.5.3 Open Shortest Path First

5.10.2.5.4 Routing Information Protocol

5.10.2.5.5 VRRP/HSRP

5.10.2.6 It should support IPv4 (also refer Network Design clause 5.4, Section 5).

5.10.2.7 Security:

5.10.2.7.1 Support for Unicast MAC filtering

- 5.10.2.7.2 Support for Unknown unicast and multicast port blocking
- 5.10.2.7.3 Support for Bidirectional data on the Switched Port Analyzer
- 5.10.2.7.4 TACACS+ / RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.
- 5.10.2.7.5 Support for MAC address notification

5.11 Requirement for connecting Horizontal offices of SHQ

The requirement at the SHQ is to connect around 15 co-located and 20 remote offices in Shillong city to provide voice, data and video services. Some of the points that have to be kept in mind while designing a solution are:

- 5.11.1 The government offices are not of permanent nature. The Government offices are likely to be relocated over a period of time.
- 5.11.2 The lease line connectivity for connecting horizontal office to SHQ (wherever proposed) should be of suitable capacity.
- 5.11.3 The horizontal offices are spread over a distance of 0 - 20 Kms from SHQ.
- 5.11.4 The number of offices may be increased or decreased on the discretion of GoM in due course of time.
- 5.11.5 The connectivity from SHQ to different horizontal offices has to be decided by the operator after analyzing various options and arriving at most feasible solution in consultation with GoM.

5.12 REQUIREMENT OF SECONDARY TIER

The District HQ connectivity will be responsible for connecting two tiers: viz. SHQ and SDHQ / BHQ. The core router at DHQ level shall have either 1 number of Channelized E3 port or 12 number of E1 ports for SHQ and SDHQ/BHQ Connectivity. Though the core router for South Garo Hills DHQ must be having 12 E1 ports for SHQ and SDHQ/BHQ connectivity. 2 number of ISDN PRI are required to ensure backup connectivity at this level. All PRI ports may be either internal or external to core WAN router.

5.12.1 Specifications of DHQ core router

- 5.12.1.1 The proposed equipment should support high port densities and it must provide integration of multiservices like voice, video and data with either internal or external devices to core router. It shall have the capability to support multiple technologies.
- 5.12.1.2 Shall support variety of interfaces like:
 - 5.12.1.2.1 Ch-E3 / E3
 - 5.12.1.2.2 Ch-E1, E1
 - 5.12.1.2.3 ISDN PRI internal or external
 - 5.12.1.2.4 V.35, G.703
 - 5.12.1.2.5 GE as per IEEE 802.3z & 802.3ab and FE as per IEEE 802.3u
 - 5.12.1.2.6 Backplane performance of at least 725 Mbps
 - 5.12.1.2.7 Forwarding throughput of at least 1 Mpps
 - 5.12.1.2.8 MLPPP for link aggregation
- 5.12.1.3 Shall meet high availability requirements and provide support for the following:
 - 5.12.1.3.1 Multiple storage of multiple images & configurations
 - 5.12.1.3.2 VRRP/HSRP
 - 5.12.1.3.3 Online insertion & removal of cards
- 5.12.1.4 Shall have protocol support for:
 - 5.12.1.4.1 IPv4 features (also refer Network Design clause 5.4, Section 5 for migration from Ipv4 to Ipv6)
 - 5.12.1.4.2 Multicast routing protocols support: IGMPv1, v2 (RFC 2236), PIM-SM (RFC2362) and PIM-DM, DVMRP
 - 5.12.1.4.3 IP forwarding Layer 2 and Layer 3 Multiprotocol Label Switching (MPLS) VPNs, MPLS layer 2 VPN.
 - 5.12.1.4.4 Diffserv QoS / MPLS CoS
 - 5.12.1.4.5 MPLS traffic engineering, MPLS DiffServe aware traffic engineering, MPLS Traffic-engineering fast reroute

- 5.12.1.4.6 Point-to-point Ethernet, PPP transport over MPLS
- 5.12.1.5 Shall provide following security features:
 - 5.12.1.5.1 IP Tunneling supporting multicasting features internally or externally
 - 5.12.1.5.2 Firewall features
 - 5.12.1.5.3 MD-5 route authentication for RIP, OSPF
 - 5.12.1.5.4 Multi-level of access
 - 5.12.1.5.5 SNMPv3 authentication
 - 5.12.1.5.6 AAA support using Radius / TACACS
 - 5.12.1.5.7 DDoS protection
 - 5.12.1.5.8 IPSEC with AES / 3DES encryption and Remote Access internally or externally
 - 5.12.1.5.9 Multiple privilege level authentication for console and telnet access
 - 5.12.1.5.10 ACLs for controlled forwarding
- 5.12.1.6 Shall provide Quality of Service (QoS) with support of:
 - 5.12.1.6.1 Policy based routing, IP Precedence, DSCP for classification
 - 5.12.1.6.2 Priority queuing, Class based weighted fair queuing for congestion management.
 - 5.12.1.6.3 Committed Access Rate (CAR) / Committed Information Rate (CIR) for Traffic Conditioning.
 - 5.12.1.6.4 RSVP for signaling
 - 5.12.1.6.5 cRTP/LFI/Diffserv for link efficiency mechanisms or traffic optimization.
 - 5.12.1.6.6 Per VLAN QOS / VLAN per QoS
- 5.12.1.7 Shall provide debug alarms and diagnostics for:
 - 5.12.1.7.1 Display of input and output error stats on all interfaces.

- 5.12.1.7.2 Trace-route, ping and extended ping.
- 5.12.1.7.3 Monitoring of traffic flows
- 5.12.1.7.4 SLA monitoring for metrics like delay, latency, jitter, packet loss
- 5.12.1.8 Shall have following management features:
 - 5.12.1.8.1 Support for Web / GUI based management / CLI / Telnet and SNMPv3.
 - 5.12.1.8.2 Remote management through console
- 5.12.1.9 Should have support for redundant power supply
- 5.12.1.10 **Each router should be 19” rack mountable and provide:**
 - 5.12.1.10.1 1 No of Ch-E3 **OR** 12 Nos of E1
 - 5.12.1.10.2 2 Nos of Ch-E1
 - 5.12.1.10.3 2 Nos of 10/100 Mbps Ethernet ports
 - 5.12.1.10.4 2 Free Slots for future expansion
 - 5.12.1.10.5 2 Nos. of ISDN PRI ports (Either Internal or External to the core router)
- 5.12.2 DHQ Switch Specifications:**
 - 5.12.2.1 Minimum of 13 Gbps Passive Backplane Design
 - 5.12.2.2 Should have support for Redundant Power Supply
 - 5.12.2.3 24 Number of 10/100 Base-T ports
 - 5.12.2.4 4 Number of 1000 BaseX Ports (It should support 1000BaseT, LX and SX modules)
 - 5.12.2.5 VLAN Support – Port based VLANs
 - 5.12.2.6 Support for RADIUS / TACACS
 - 5.12.2.7 Should support SNMP, Web / GUI, CLI
 - 5.12.2.8 Layer 2 Features:

- 5.12.2.8.1 IGMP Snooping
- 5.12.2.8.2 802.1s, 802.1w & 802.1d
- 5.12.2.8.3 Dynamic Trunking or equivalent
- 5.12.2.8.4 VLAN Trunking or equivalent
- 5.12.2.8.5 Multicast support
- 5.12.2.9 Layer 3 Features:
 - 5.12.2.9.1 Layer 3 Support: Static Routes / Routing, RIP
 - 5.12.2.9.2 DVMRP, PIM
- 5.12.2.10 Quality of Services (QoS):
 - 5.12.2.10.1 Priority Queues
- 5.12.2.11 Security Features:
 - 5.12.2.11.1 Access Control Lists (ACLs)
 - 5.12.2.11.2 RADIUS / TACACS
 - 5.12.2.11.3 DHCP
- 5.12.2.12 Management Feature
 - 5.12.2.12.1 SNMP
 - 5.12.2.12.2 RMON
 - 5.12.2.12.3 Switch must be remotely managed

5.13 Requirement for connecting Horizontal offices of DHQ

The requirement at each DHQ is to connect around 8 co-located and 10 remote offices to provide voice, data and video services. Some of the points that have to be kept in mind while designing a solution are:

- 5.13.1 The government offices are not of permanent nature. The Government offices are likely to be relocated over a period of time.
- 5.13.2 The lease line connectivity for connecting horizontal office to DHQ (wherever proposed) should be of suitable capacity.

- 5.13.3 The horizontal offices are spread over a distance of 0 - 20 Kms from DHQ.
- 5.13.4 The number of offices may be increased or decreased on the discretion of GoM in due course of time.
- 5.13.5 The connectivity from DHQ to different horizontal offices has to be decided by the operator after analyzing various options and arriving at most feasible solution in consultation with GoM.

5.14 REQUIREMENT OF TERTIARY TIER

The SDHQ / BHQ to DHQ Connectivity has been considered to be 2 Mbps and scalable to 4 Mbps or more. This router will be augmenting the Wireless connectivity from the Villages/CSCs/CICs.

5.14.1 Specifications for the Router at the Tertiary Tier are as follows:

5.14.1.1 Performance:

5.14.1.1.1 High performance traffic forwarding

5.14.1.1.2 Shall support variety of interfaces like:

5.14.1.1.2.1 GE as per IEEE 802.3z and 802.3ab, FE as per IEEE 802.3u.

5.14.1.1.2.2 Ch-E1, E1

5.14.1.1.2.3 ISDN BRI / PRI

5.14.1.1.2.4 V.35, G.703

5.14.1.1.3 Performance enhancement - IP Services like IP tunneling supporting multicasting features, ACLs, IPSEC VPNs, Firewalling, NAT.

5.14.1.1.4 MLPPP for link aggregation

5.14.1.1.5 Voice traffic optimization with features like LFI / cRTP / Diffserv

5.14.1.1.6 200 Kpps or more forwarding performance for SDHQ router and 150 Kpps or more forwarding performance for BHQ router.

- 5.14.1.2 Shall meet high availability requirements and support the following:
 - 5.14.1.2.1 Fast reboot for minimum network downtime
 - 5.14.1.2.2 Multiple storage of multiple images and configurations
 - 5.14.1.2.3 VRRP / HSRP
- 5.14.1.3 Shall have protocol support for
 - 5.14.1.3.1 Routing protocols like RIP and OSPF
 - 5.14.1.3.2 Multicast routing protocols support: IGMPv1, v2, PIM-SM and PIM-DM and DVMRP
 - 5.14.1.3.3 IPSEC with 3DES / AES encryption
- 5.14.1.4 Shall have following security features:
 - 5.14.1.4.1 IP Tunneling supporting multicasting features.
 - 5.14.1.4.2 NAT
 - 5.14.1.4.3 MD-5 route authentication for RIP, OSPF and BGP
 - 5.14.1.4.4 SNMPv3 authentication
 - 5.14.1.4.5 AAA support using Radius / TACACS
 - 5.14.1.4.6 CHAP authentication for P-to-P links
 - 5.14.1.4.7 Multiple privilege level authentication for console and telnet access
 - 5.14.1.4.8 ACLs
- 5.14.1.5 Shall have Quality of Services (QoS) with following features:
 - 5.14.1.5.1 Priority Queues

- 5.14.1.5.2 Support for L3 filtering capabilities for inter VLAN traffic
- 5.14.1.6 Shall provide debug alarms & diagnostics with following features:
 - 5.14.1.6.1 Display of input and output error stats on all interfaces.
 - 5.14.1.6.2 Trace-route, Ping and extended Ping
 - 5.14.1.6.3 Support for monitoring of Traffic flows
 - 5.14.1.6.4 Support for SLA monitoring for metrics like delay, latency, jitter, packet loss
- 5.14.1.7 Shall provide following management features
 - 5.14.1.7.1 SNMP
 - 5.14.1.7.2 Remote management
 - 5.14.1.7.3 Policy Based Management
- 5.14.1.8 Each SDHQ Router should provide:
 - . 2 No. of 10/100 Mbps ports
 - . 2 Nos. of E1 ports
 - . 2 Nos. of Ch E1 ports
 - . 1 No. of ISDN BRI port
- 5.14.1.9 Each BHQ Router should provide:
 - . 2 No. of 10/100 Mbps ports
 - . 2 Nos. of E1 ports
 - . 1 No. of Ch E1 ports
 - . 1 No. of ISDN BRI port

5.14.2 SDHQ / BHQ Switch specifications

- 5.14.2.1 Switching Capacity: 8 Gbps
- 5.14.2.2 Forwarding Rate: 6 Mpps
- 5.14.2.3 The switch should provide 24 no. of 10/100 BaseT ports and 2 No of 1000 base SFP/GBIC ports with an option of TX, SX and LX.
- 5.14.2.4 IEEE 802.1d Spanning Tree Protocol
- 5.14.2.5 IEEE 802.1p Class of service (CoS) classification

- 5.14.2.6 IEEE 802.1q VLAN
- 5.14.2.7 IEEE 802.1w Rapid Convergence Spanning Tree Protocol
- 5.14.2.8 IEEE 802.1x Port Access Authentication
- 5.14.2.9 IGMP (v1, v2, and v3) snooping
- 5.14.2.10 The switch must be configurable using GUI and console.
- 5.14.2.11 It should be possible to monitor:
 - 5.14.2.11.1 Connectivity
 - 5.14.2.11.2 Daily traffic
 - 5.14.2.11.3 Suspected problems
 - 5.14.2.11.4 Specific ports that could be causing problems

5.14.3 Requirement for connecting Horizontal offices of SDHQ / BHQ

The requirement at each SDHQ is to connect around 4 co-located and 2 remote offices to provide voice, data and video services. In case of blocks there will only be the BHQ POP and it will connect to around 4 co-located offices. Some of the points that have to be kept in mind while designing a solution are:

- 5.14.3.1 The government offices are not of permanent nature. The Government offices are likely to be relocated over a period of time.
- 5.14.3.2 The lease line connectivity for connecting horizontal office to SDHQ should be of suitable capacity.
- 5.14.3.3 The horizontal offices are spread over a distance of 0 - 10 Kms from SDHQ/BHQ.
- 5.14.3.4 The number of offices may be increased or decreased on the discretion of GoM in due course of time.
- 5.14.3.5 The connectivity from SDHQ/BHQ to horizontal offices has to be decided by the operator after analyzing various options and arriving at most feasible solution in consultation with GoM.

5.14.4 VSAT Equipments at BHQ for vertical connectivity

5.14.4.1 Indoor Unit specifications:

S.No	In-Door Unit (IDU)	Specification
1	<u>In route</u>	
a)	In route data rate capability	From 60 kbps up to 1.5 Mbps or more without any modification in VSAT equipment
b)	Modulation	GMSK / QPSK
c)	In route Access	FTDMA / MFTDMA
d)	Bit Error Rate (BER)	Better than 1×10^{-7}
2	<u>Out route</u>	
a)	Out Route Data rate	The Out route data rate should be scalable to 60 Mbps or more
b)	Out route format	DVB-S / DVB-S2
c)	Modulation	QPSK or better
d)	Bit Error Rate(BER)	Better than 1×10^{-7}
3	<u>Physical Interface</u>	
a)	No. of Ethernet Ports	One
b)	Port Speeds	10/100 Mbps
c)	Data Transport Protocols	TCP/IP and UDP, TCP acceleration, DHCP, NAT, Access List
4	<u>Other essential Features</u>	Should be compatible with either RIP2 or EIGRP routing protocol for smooth integration with Network.
5	<u>The IDU shall support –</u>	
		Packet filtering,
		TCP spoofing,
		QOS on both inbound and outbound
6	<u>Access Schemes on Inbound</u>	
		Guaranteed bandwidth/Reservation Access
		Bandwidth on Demand
		Dedicated Access
7	<u>Environmental specifications</u>	
a)	Temperature	0° to 40° C operating, -20° to 70 °C Storage
b)	Humidity	95% RH Non condensing at 0° to 40° C

5.14.4.2 Antenna Specifications for Remote VSAT

Sr. No.	Parameter	Minimum specification required
	<u>Antenna</u>	
a)	Antenna Size (Diameter)	1.2 Meters (minimum)
b)	Mount Type	Non-Penetrating mount, Elevation over Azimuth
c)	Type of Feed	Offset feed

d)	Operating Band	Ku Band
e)	Tx Gain (Mid Band)	≥ 36.0 dB
f)	Rx Gain (Mid Band)	≥ 33.0 dB
g)	Antenna Adjustment Range	In Azimuth- 0° to 360° Continuous In Elevation- 5° to 90° Continuous
h)	Wind Loading	Operational- 80 Kmph Survival- 200 Kmph
	<u>Radio Frequency Unit- Transmit</u>	
a)	Transmit (Output) Frequency	In Ku Band
b)	Receive (Input) Frequency	950 to 1700 MHz, L Band
c)	Output Power	2 Watt (depending on the link budget)
	<u>Radio Frequency Unit- Receive</u>	-
a)	Input Frequency	In Ku Band
b)	Output Frequency	950 to 1700 MHz, L Band
c)	DC power requirement	External
	<u>Environmental specification of ODU</u>	-
	Temperature Range	-10 to +50 C (operating)

5.15 Requirement of Voice System

The IP Telephony deployment will have Centralized architecture. The IP-PBX will be deployed centrally at the State HQ, while the IP Phone users will be spread across the State. The IP telephones should be registered to the IP-PBX either using LAN if the user is located locally or WAN if the users are located remotely. The WAN network to be built for Data traffic will be used to connect the IP phones located in the remote sites. The same IP WAN will carry call control signaling between the central site and the remote sites. The centralized IP PBX will control the entire IP telephony network. It will perform the major tasks such as Call Processing, Controlling, Switching, etc. In this model the remote sites rely on the centralized IP PBX to handle their call processing.

The scalability of the solution holds the key and it must be ensured that the solution is scalable in future. The solution must support clustering over the WAN. This will ensure minimum downtime with minimal outage. Also, the IP Telephony design should be scalable enough to provide distributed call processing when the number of users grows. The bandwidth and other related requirements will be worked over again as and when upgradation is desired by the State.

The IP Telephony design should have integrated capability to support Video calls also as and when required with minor upgrades. The service can be utilized for ad-hoc Video conferencing / Video calling for urgent situations.

5.15.1 IP Telephony Specifications:

- 5.15.1.1 The IP Telephony system should be an integrated telephony solution for IP Phones, gateways over IP architecture and should be scalable to support upto 1200 users. However, the present requirements will have 900 users across the State network. System should be capable of supporting standard Operating Systems.
- 5.15.1.2 The IP Telephony system shall have centralized architecture so that a single system located at SHQ can support all end points viz. IP phones, analog phones, gateways etc. across state network containing multiple sites connected across wide area network.
- 5.15.1.3 The IP Telephony system at the SHQ should have NO single point of failure. The bidder should provide a detailed description of the call flow of their system.
- 5.15.1.4 To ensure high uptimes and availability, it should be possible to have IP Telephony Server redundancy in between DC and DR sites (which will come in future) configured in load sharing. The IP Telephony servers creating spatial redundancy must support all the features transparently and must have a common dial plan. The round trip delay and bandwidth required for achieving the functionality will be ensured in co-ordination with the Service Provider.
- 5.15.1.5 The IP telephony solution should have codec support for G.711@64kbps, G.729A/B@8kbps. The compression codecs will be required for efficient utilization of the bandwidth resources.
- 5.15.1.6 Should provide the directory of all users of the region so that the users can search them using their IP Phones on the directory by first name or last name and can make calls to them.
- 5.15.1.7 The users should be able to configure their own settings for their phone like speed dials, call forward settings etc through web interface / GUI and IP Phone without the intervention of the administrator.
- 5.15.1.8 Silence suppression, voice activity detection. The purpose of the feature is to detect silence periods in the voice signal and temporarily discontinue transmission of the signal during the silence period. This saves bandwidth and allows the far-end to adjust its jitter-buffer.

5.15.1.9 Should provide Secure HTTP (HTTPS) support for management interface and user interface through which user changes his own settings.

5.15.1.10 The IP Telephony system must support open XML standard so that external XML based applications can be accessed from the IP Phones.

5.15.1.11 Should provide QoS statistics

5.15.2 Administrative Features:

5.15.2.1 Call detail records

5.15.2.2 CDR Analysis and Reporting Tools

5.15.2.3 Centralized, replicated configuration database, distributed Web based management

5.15.2.4 Configurable Call Forward Display

5.15.2.5 Database automated change notification

5.15.2.6 Date and time display

5.15.2.7 Lightweight Directory Access Protocol (LDAP) Version 3 directory interface to selected vendor's LDAP directories

i. Active Directory

ii. Standard LDAP based Directory

5.15.2.8 Debug information to common syslog file

5.15.2.9 Device-downloadable feature upgrades—Phones, hardware transcoder resource, hardware conference bridge resource, VoIP gateway resource

5.15.2.10 Dynamic Host Configuration Protocol (DHCP)

5.15.2.11 Dialed Number Analyzer (DNA)

5.15.2.12 Dialed number translation table (inbound and outbound translation)

5.15.2.13 Dialed number identification service

5.15.3 User Features

- 5.15.3.1 Abbreviated Dial
- 5.15.3.2 Answer and answer release
- 5.15.3.3 Barge
- 5.15.3.4 Callback busy, no reply to station
- 5.15.3.5 Call connection
- 5.15.3.6 Call coverage
- 5.15.3.7 Call forward—all
- 5.15.3.8 Call forward—busy
- 5.15.3.9 Call forward—no answer
- 5.15.3.10 Call hold and retrieve
- 5.15.3.11 Call Join
- 5.15.3.12 Call park and pickup
- 5.15.3.13 Call pickup group-universal
- 5.15.3.14 Call status per line (state, duration, number)
- 5.15.3.15 Call waiting and retrieve (with configurable audible alerting)
- 5.15.3.16 Calling Line Identification
- 5.15.3.17 Calling Line Identification Restriction call by call
- 5.15.3.18 Calling party name identification
- 5.15.3.19 Conference Barge
- 5.15.3.20 Conference List and Drop any party
- 5.15.3.21 Direct inward dial (DID)
- 5.15.3.22 Direct outward dial (DOD)

- 5.15.3.23 Directory dial from phone—corporate, personal
- 5.15.3.24 Directories—missed, placed, received calls list stored on selected IP phones
- 5.15.3.25 Distinctive rings
- 5.15.3.26 Distinctive ring per phone
- 5.15.3.27 Drop last conference party (ad-hoc conferences)
- 5.15.3.28 Extension mobility support
- 5.15.3.29 Hands-free, speakerphone
- 5.15.3.30 Immediate Divert to voicemail
- 5.15.3.31 Last number redial
- 5.15.3.32 Malicious Call ID and Trace

5.15.4 IP Phone Specifications:

5.15.4.1 IP Phone (Type I)

- 5.15.4.1.1 Minimum of 5 programmable backlit line/feature buttons and four interactive soft keys that guide a user through call features and functions
- 5.15.4.1.2 802.1af POE (15.4W) and Power Adapter Options for power.
- 5.15.4.1.3 High-resolution grayscale pixel-based LCD (min of 300 x 200)
- 5.15.4.1.4 Support for XML-based Services.
- 5.15.4.1.5 Internal 2-port 10/100BaseT Ethernet switch
- 5.15.4.1.6 Support for G.711 μ and G.729a audio compression codecs.
- 5.15.4.1.7 Support differentiated services code point (DSCP) and 802.1Q/p standards.
- 5.15.4.1.8 Phone should support manufacturing-installed digital certificates, device authentication, and encryption.
- 5.15.4.1.9 It should be possible to assign IP address statically configured or configured through the DHCP client

5.15.4.1.10 Comfort-noise generation and voice activity detection (VAD) programming

5.15.4.1.11 The phone should support SIP / H.323

5.15.4.1.12 Video telephony Support

5.15.4.2 IP Phone (Type II)

5.15.4.2.1 IEEE 802.1Q /p VLAN tagging and traffic prioritization

5.15.4.2.2 802.1Q VLAN-based switching of traffic between the phone and access switch

5.15.4.2.3 Differentiated Services Code Point (DSCP) tagging

5.15.4.2.4 G.711a, G.711u, and G.729ab audio compression coders-decoders (codecs)

5.15.4.2.5 10/100BASE-T Ethernet connection through an RJ-45 interface for LAN connectivity

5.15.4.2.6 Software upgrade supported using a Trivial File Transfer Protocol (TFTP) server

5.15.4.2.7 Voice activity detection, silence suppression, comfort-noise generation, and error concealment

5.15.4.2.8 The phone should support SIP / H.323

5.15.4.2.9 PoE support and should have an option compatible OEM made power adapter.

5.15.4.2.10 XML Applications Support

5.15.4.2.11 Hearing-aid compatible (meets American Disabilities Act [ADA] requirements).

5.15.4.2.12 Pixel-based display

5.16 Requirements of Video Conference

5.16.1 Multipoint Conference / Control Unit (MCU) features:

5.16.1.1 Should support the following network interface options in addition to directly connected end-points: -

- (a) ISDN-PRI
- (b) V.35
- (c) H323- version 4 and SIP

- 5.16.1.2 MCU shall support both desktop software based end points and hardware based endpoints.
- 5.16.1.3 The software and hardware based video endpoints should be from same OEM as that of the MCU to avoid any kind of interoperability / compatibility issues.
- 5.16.1.4 All the equipment systems to be offered in the bid must be built on the base of latest ITU-T standards related to video conference and transmission on TCP/IP network: Video conference connection: H.323, H.320, V.35 & SIP protocols to be supported.
- 5.16.1.5 Audio encoding: G.711, G.722, G.728, G.722.1
- 5.16.1.6 Video encoding: H.261, H.263, H.264
- 5.16.1.7 MCU should support minimum 55 endpoints in multiple concurrent sessions. The MCU will be installed in an IP network and any PC on the IP network should be able to join any ongoing conference using web camera and audio facility. The speed of the MCU per video link should be @ 384 kbps in a concurrent session, even with a PC as a node. The endpoints can be hardware based and/or Software based.
- 5.16.1.8 The MCU should be capable of supporting H.323 and SIP based participants in the same conference.
- 5.16.1.9 The MCU should be capable of supporting AES Encryption at conference level and individual participant level.
- 5.16.1.10 Should provide the ability to directly connect IP endpoints to the MCU in separate multiple reserved/scheduled conferences without involving the external gatekeeper. The IP endpoints should be able to participate in Ad-hoc conference involving the gatekeeper. The gatekeeper supplied should also be from the same MCU manufacturer. The Gatekeeper should be software based application from the same manufacturer supporting minimum 25 or more registrations of IP based Video endpoints. The endpoints can be hardware based and/or Software based.
- 5.16.1.11 The Gatekeeper should support on Windows/Linux/Unix platform.

- 5.16.1.12 MCU should have the capability that allows users to easily identify other conference participants by displaying names, locations, active speaker indication, background colors or other identifying information, etc.
- 5.16.1.13 Should have dial-in feature providing one number access for all participants on the call for IP participants using the gatekeeper
- 5.16.1.14 Should provide video participants and audio participants over IP in a single conference.
- 5.16.1.15 The MCU should provide automatic harmonization on the highest common audio and also audio mixing of different audio coding
- 5.16.1.16 There should be no limit on audio trans-coding on the number of ports.
- 5.16.1.17 “Exclusive Speaker” mode so that all other parties in a conference will be muted. “Lecture Mode” so that a site will always appear to all other ports in a conference. It should be configurable to select the participant as a Lecturer.
- 5.16.1.18 There should not be any limit on the number of simultaneous conferences.
- 5.16.1.19 The MCU should support password based entry into the conference
- 5.16.1.20 Should support following conference control modes for different kinds of meetings: -
 - 5.16.1.20.1 Voice Activated Switching allows the current speakers to be the broadcasting endpoint. The broadcasting endpoint should be viewed in full screen layout.
 - 5.16.1.20.2 Presentation Mode: When the current presenter speaks beyond a predefined time, the conference layout automatically changes to full screen, displaying the current speaker as the conference lecturer.
- 5.16.1.21 Administration of conferences: The interface for conference management should be a GUI / Web based Interface.

The MCU administration interface should support viewing to conference level monitoring and management up to participant level and MCU resource management up to DSP level.
- 5.16.1.22 The MCU across chassis and modules should support the same Operating System and software. The upgrade to new software on the MCU should be possible through the GUI/Web based interface.
- 5.16.1.23 The MCU should support both reservation based, on demand and ad-hoc based Video and audio conferences. The MCU should be high definition ready

- 5.16.1.24 The MCU should support integration with Live Communication Server.
- 5.16.1.25 Security
 - 5.16.1.25.1 Should support easily distinguishable entry tone and exit tone to inform conference participants when parties join or drop from the conference.
 - 5.16.1.25.2 Should support an end-of-conference warning tone when the conference approaches its scheduled end time.
 - 5.16.1.25.3 All the modules of the MCU must be hot swappable. Any module should be able to take any card i.e. there should be no constraints on any particular slot being able to take any card.
 - 5.16.1.25.4 The system chassis should have a provision for data portability.
 - 5.16.1.25.5 The system chassis should have at least one serial (COM) port for remote out of band management. In addition, there should be also a provision for redundant serial ports
 - 5.16.1.25.6 The MCU should support API's for any custom integration with 3rd party devices.
- 5.16.1.26 Streaming, Recording and Playback**
 - 5.16.1.26.1 The MCU should support conference recording, playback and streaming of conferences through an additional hardware based devices.
 - 5.16.1.26.2 This should support recording, playback and streaming of multiparty conferences as well as point to point calls
 - 5.16.1.26.3 The device should support streaming of conferences in unicast mode only
 - 5.16.1.26.4 The device should support up to 2 concurrent videoconferencing recording sessions
 - 5.16.1.26.5 The device should have internal disk storage capacity upto 900 hours of recording
 - 5.16.1.26.6 The devices embedded web server enables full control, configuration and monitoring of system and conferences
 - 5.16.1.26.7 The device should be controlled through remote control through H.323 terminal
 - 5.16.1.26.8 The device should support H.323 link to the MCU and end point for recording, streaming and playback of conference

5.16.1.26.9 The recording format supported should be ASF for Windows Media player and Real player

5.16.1.26.10 The device should support windows based Operating System

5.16.1.26.11 The MCU should be ISO certified

5.16.2 Studio based Videoconferencing systems to be deployed at SHQ / DHQ should have the following features:

5.16.2.1 System components:

5.16.2.1.1 Rack mount codec

5.16.2.1.2 Wireless remote control

5.16.2.1.3 Detachable Camera

5.16.2.1.4 Far end camera control: H.281

5.16.2.1.5 Acoustic echo / noise canceller with automatic microphone / matrix mixer

5.16.2.1.6 The system should have separate camera and codec. It should also be possible to connect 2 cameras to the codec.

5.16.2.2 **Bandwidth**

5.16.2.2.1 The system should support the following Network Interfaces with bandwidths:

- a) 3 BRI – Upto 384 Kbps
- b) IP – upto 2Mbps

5.16.2.2.2 The system should cater to the following bandwidth:

- a) IP/H.323 – 2Mbps
- b) ISDN/H.320 – 384 Kbps

5.16.2.3 **Voice tracking:**

5.16.2.3.1 The camera should support tracking to presets.

5.16.2.4 **Video standards:**

5.16.2.4.1 To cater for at least H.261, H.263, H.264 & SIP

5.16.2.4.2 Video standard H.264 should also be supported while sharing content or doing data collaboration.

5.16.2.5 **Multipoint Features:**

5.16.2.5.1 The system should have the capability of a Multipoint system with 1 local+ 3 remote participants + 1 Audio participant.

5.16.2.5.2 The continuous Presence Layout supported is 2x2

5.16.2.6 **Multipoint viewing options:**

5.16.2.6.1 The system should support different modes in a multipoint call. These modes should be supported by default on the Video Endpoint, independent of the external hardware MCU connectivity.

5.16.2.6.2 Auto – Will automatically switch to a single presenter if that presenter speaks for a specific duration

5.16.2.6.3 Discussion mode – Displays up to (4) quadrants on a single screen, seen by both far and near-end participants.

5.16.2.6.4 Presentation mode – Allows the presenter to see up to (4) participants on a single screen, while the participants see only the presenter.

5.16.2.6.5 In Full Screen mode – The speaker is seen full screen by both far and near-end participants.

5.16.2.7 **User interface:**

5.16.2.7.1 It should be possible to customize the user interface.

5.16.2.7.2 Alert Signal on home page

5.16.2.7.3 Do not Disturb ON/OFF

5.16.2.8 It should be possible to see both the near and far site on One Screen, with both far and near site viewable in equal size quadrants. In addition, PIP should also be supported.

5.16.2.9 **Video inputs (4 or more inputs):**

5.16.2.9.1 1xS-Video; (main video camera)

5.16.2.9.2 1 x DB15; PTZ control, IR, mike input

5.16.2.9.3 1 x S-Video; 4-pin mini DIN (second camera with PTZ control)

5.16.2.9.4 1 x S-Video; 4-pin mini DIN (VCR or DVD player)

5.16.2.9.5 Interface for content input from laptop like VGA / DVI.

5.16.2.10 **Serial Data Port: 2 Connectors**

5.16.2.10.1 2 x DB9

5.16.2.10.2 Control port for custom integration with remote devices such as Crestron and AMX control systems

5.16.2.10.3 Auxiliary camera control

5.16.2.11 **Video Outputs: 4 Connectors**

5.16.2.11.1 1 x S-Video; main display

5.16.2.11.2 1 x S-Video; 4-pin mini DIN (second display)

5.16.2.11.3 1 x S-Video; 4-pin mini DIN (VCR or DVD player)

5.16.2.11.4 1 x VGA (Content display or Main Monitor)

5.16.2.12 **People video resolutions:**

5.16.2.12.1 60/50 fields full-screen video for NTSC/PAL – VCR/Doc cam

5.16.2.12.2 4SIF (704 x 480)

5.16.2.12.3 4CIF (704 x 576)

5.16.2.12.4 SIF (352 x 240)

5.16.2.12.5 CIF (352 x 288)

5.16.2.13 **Audio standards:**

5.16.2.13.1 G.711

5.16.2.13.2 G.722

5.16.2.13.3 G.722.1

5.16.2.13.4 G.728

5.16.2.13.5 14 KHz or higher

5.16.2.14 The Video endpoint should integrate with an acoustic echo/noise canceller with automatic microphone/matrix mixer to cancel any background noise, thus ensuring highest quality audio between sites

5.16.2.15 The automatic matrix mixer should have a provision to support 4 cardioids, boundary layer microphones.

5.16.2.16 The microphone should be omni directional, 360 degrees Voice Pickup and it should be possible to mount it to ceiling or walls

5.16.2.17 Frame Rate - 30 frames per second from 128 kbps to 2 Mbps

5.16.2.18 **Audio inputs:**

5.16.2.18.1 1x Conference Link for Microphone connection

5.16.2.18.2 2x RCA /Phono line level input for VCR/DVD

5.16.2.18.3 2x RCA stereo

5.16.2.19 **Audio Outputs**

5.16.2.19.1 2x RCA /phono line level output for VCR

5.16.2.19.2 2 x RCA/Phono line level output for speakers

5.16.2.20 **Embedded Encryption-**

5.16.2.20.1 AES 128bit key encryption

5.16.2.20.2 AES Software Encryption on IP / ISDN and V.35 upto 2 Mbps

5.16.2.20.3 AES encryption should be supported in point to point (IP/ISDN) and Multipoint Calls

5.16.2.20.4 Encryption should be supported during data collaboration

5.16.2.20.5 Standards-based H.235V3 (IP)

5.16.2.20.6 Standards-based H.233/H.234 (ISDN/Serial)

5.16.2.21 It should be possible to get the video as well as the audio input from any external PC/laptop and shown to the remote side.

5.16.2.22 The system should support adjustable bandwidths for content

5.16.2.23 **NETWORK INTERFACES SUPPORT**

5.16.2.23.1 Support for 4 x ISDN BRI (RJ-45), S-interface

5.16.2.23.2 1 x LAN / Ethernet (RJ-45) 10/100 Mbit (LAN / DSL / cable modem)

5.16.2.23.3 Support for 1 x ISDN PRI (RJ-45).

5.16.2.23.4 Support for 1 x V.35

5.16.2.24 **Camera**

- 5.16.2.24.1 Tilt Range: +/- 20° or more (Up/Down)
- 5.16.2.24.2 Pan Range: +/- 90° or more (Left/Right)
- 5.16.2.24.3 Total Field of View: 265°
- 5.16.2.24.4 10x Zoom; f-4.2 to 42mm
- 5.16.2.24.5 F=1.85 to 2.9 mm
- 5.16.2.24.6 Auto focus
- 5.16.2.24.7 Image Sensor: ¼”Super HAD CCD
- 5.16.2.24.8 Illumination: 2 lux or above

- 5.16.2.25 System Management
 - 5.16.2.25.1 Diagnostics and software upgrades via PC, LAN
 - 5.16.2.25.2 Call Detail Record (CDR) – Reports all calls made from the system along with call statistics
 - 5.16.2.25.3 CDR Feature On / Off
- 5.16.2.26 Directory services:
 - 5.16.2.26.1 The Video endpoint should be ISO approved
 - 5.16.2.26.2 The VC endpoint should be equipped with Rack mount codec, Wireless remote control, Detachable Camera , acoustic echo/noise canceller with automatic microphone /matrix mixer, 4 cardioids boundary layer microphones, 1+3 MCU, data collaboration software with 42 “ plasma TV

5.16.3 Desktop based Video Conferencing for SDHQ and BHQs

- 5.16.3.1 Software based Video conferencing solution should work in conjunction with existing PCs / Laptops for providing video conferencing.
- 5.16.3.2 Solution to include necessary software with requisite number of licenses, web camera, multimedia kits and other items required for providing video conferencing.
- 5.16.3.3 Protocol support:

- 5.16.3.3.1 Standard : H.323 / SIP
- 5.16.3.3.2 Video : H.263 / H.264
- 5.16.3.3.3 Audio : G.711
- 5.16.3.4 The software should be able to work on standard operating systems viz. Windows 2000, XP, Linux
- 5.16.3.5 The system should have AES/TLS encryption
- 5.16.3.6 Camera:
 - 5.16.3.6.1 Frame Rate: Upto 30 fps at 640 x 480 (VGA)
 - 5.16.3.6.2 Resolution: Upto 640 x 480
- 5.16.3.7 Audio Features:
 - 5.16.3.7.1 Integrated Microphone
 - 5.16.3.7.2 Noise Suppression
 - 5.16.3.7.3 Echo Cancellation

5.17 REQUIREMENT OF SERVERS

5.17.1 AAA Server

- 5.17.1.1 PEAP supplicant should provide support for one-time-token authentication and powerful extensibility of non-MSCHAP end-user databases such as Lightweight Directory Access Protocol (LDAP), Novell Directory Service (NDS), and ODBC.
- 5.17.1.2 Should be capable of processing multiple LDAP authentication requests in parallel
- 5.17.1.3 EAP-TLS authentication against ODBC user databases and EAP-TLS silent-session-resume support should be there as the AAA SERVER capability. Similar to the PEAP silent session resume, EAP-TLS silent session resume should prevent users from re-authenticating during a RADIUS session timeout.
- 5.17.1.4 AAA should add the 802.1X machine authentication option using either PEAP with MS-CHAPv2 implementation (PEAP-EAP-MSCHAPv2) or EAP- TLS. Machine authentication will be used at boot time to authenticate and communicate with Directory Services when

connecting to 802.1X secure ports. Machine authentication should allow pulling down machine group policies from the Directory Services independent of a subsequent interactive user authentication session.

- 5.17.1.5 AAA Server should support the following EAP types: PEAP-EAP-GTC (PEAP), PEAP-EAP-MSCHAPv2 (Microsoft PEAP), EAP-TLS, EAP message digest algorithm 5 (MD5), and EAP Wireless (LEAP). AAA Server should allow flexible EAP settings (one or several EAP types can be selected concurrently), allowing AAA Server to intelligently process EAP authentications, depending on the nature of the 802.1X supplicant presented by the end users.
- 5.17.1.6 A Web-based user interface should simplify and distribute configuration for user profiles, group profiles, and AAA Server configuration.
- 5.17.1.7 AAA Server should provide support to large networked environments with support for redundant servers, remote databases, and user database backup services.
- 5.17.1.8 Standard LDAP authentication forwarding supports the authentication of user profiles stored in directories from leading directory vendors, including Sun, Novell, and Microsoft.
- 5.17.1.9 Support for Different access levels for each AAA Server administrator—and the ability to group network devices—enable easier control and maximum flexibility to facilitate enforcement and changes of security policy administration over all the devices in a network.
- 5.17.1.10 AAA Server should be able to be used across virtually any network access server that sells.
- 5.17.1.11 AAA Server should includes simultaneous TACACS +/RADIUS support for a flexible solution with VPN or dial support at the origin and termination of IP Security (IPSec) and Point-to-Point Tunneling Protocol (PPTP) tunnels.
- 5.17.1.12 Should support tight coupling with routers and VPN solutions provide features such as Multi-chassis Multilink Point-to-Point Protocol and command authorization.
- 5.17.1.13 AAA Server should offer token server support for any OTP vendor that provides an RFC-compliant RADIUS interface (such as RSA, Pass-Go, Secure Computing, Active-Card, Vasco, and Crypto-Card).
- 5.17.1.14 AAA Server should provide dynamic quotas for time-of-day, network usage, number of logged sessions, and day-of-week access.

5.17.2 PROXY SERVER

- 5.17.2.1 Should support high-performance Web caching
- 5.17.2.2 Having fast random access memory (RAM) caching and an optimized disk cache to accelerate Web performance
- 5.17.2.3 Having fast random access memory (RAM) caching and an optimized disk cache to accelerate Web performance, both for clients accessing Internet Web servers and for Internet users accessing content on a corporate Web server
- 5.17.2.4 Shall preload the cache with entire Web sites on a defined schedule
- 5.17.2.5 Should support the Cache Array Routing Protocol (CARP)
- 5.17.2.6 Having Centralized firewall management to manage all Server computers from a single, centralized management console.
- 5.17.2.7 Can leverage the user database stored in Directory Services to authenticate both inbound and outbound access through the firewall.
- 5.17.2.8 Should have Policy-based access control to control inbound and outbound access according to user, group, application, source, destination, content, and schedule
- 5.17.2.9 Centralized monitoring to monitor servers in all arrays from a single location
- 5.17.2.10 Should provide detailed security and access logs in standard data formats
- 5.17.2.11 Hardware Requirements (Minimum)
The operator shall provide at least 5 servers (Hardware) to be used at SHQ for Proxy, AAA and other future applications like DNS, NMS & E-mail.

Features	Desired Specification (minimum)
Processor	Intel Dual Core Xeon 3.0 GHZ Processor. Equivalent or better
Architecture	Hyper threading technology and net-burst architecture
Cache	2*2 MB L2 On-die processor Cache
Max Processor Support	4 (Four)
Chipset	Server Class Chipset 7520. Equivalent or better
RAM Std/Max	4 GB, upgradeable to 16GB, PC2100 (333 MHz) Advanced ECC DDR SDRAM
Drive controller	Integrated dual Channel U3 SCSI / SAS
RAID	64 MB, Dual channel card, pre-installed

Controller	
NIC	10/100/1000 NIC
Hard Drive	Should support minimum six nos. of hot-plug bays; Should support 15k rpm hot plug drives; three nos. of 36 GB 15K RPM or better Hot Plug Drives, pre-installed
Backup Device	40 GB or better DDS 4 DAT Drive or any other device supporting upto 40 GB
I/P devices	Standard Windows Keyboard, PS/2 Mouse
Optical drive	48x CDR/W & 16x DVD R/W minimum
I/O ports	Serial Port, USB Ports, Mouse port, Graphic Port, Keyboard, LAN and External SCSI / SAS Knockout Ports
Graphics	8 MB SD RAM
Chassis	Minitower with Tower to Rack conversion optional
Server Management	Should be a tool from the manufacture of the Server themselves, to have better control and functionalities. Should also support SNMP enabled devices and backup devices. Management software should be Browser based interface. Capability fro doing asset track
Redundant Power Supply	Should be pre-installed
Redundant Fan	Should be pre-installed
Redundant NIC	Should be pre-installed
Remote Boot Support	Support for PXE boot & WOL
OS Certification	Required
Monitor	21" TFT OEM Monitor
Warranty	5 Years Comprehensive , Pre-failure Warranty on CPU, HDD and RAM
Operating System	Latest Version of Windows Server OS / Enterprise Linux

5.18 Desktop PC Requirement

The operator shall provide one PC with following specifications at each of the centers (total 55 PCs):

Processor	Intel Dual Core processor 1.86 GHz (minimum) Integrated 2 MB L2 cache or higher with 1066MHz FSB (minimum)
System	1 GB 400 MHz DDR-2 SDRAM; expandable up to 4 GB

Memory	
Chipset	Intel 915G Chipset or higher on OEM motherboard
Main board External Interface	Main board based on above chipset; Serial port- 1 No., Parallel port- 1 No. , USB ports- 6 Nos., Audio Jacks (Mic/ Line-In/ Line- Out), RJ 45 port (10/100/1000, WOL)- 1 No., Keyboard port PS/2- 1, Mouse port PS/2- 1 No., Integrated Graphics Controller, Audio Controller and Network Controller, support for (10/100/1000 Mbps) to be integrated on mother board; 2 PCI slots, 1 PCI Express x1 & 1 PCI Express x16
Storage Device	80 GB SATA HDD 7200 rpm or higher
Primary Display	Intel integrated graphics media Accelerator 900 through DVMT
Removable Storage	Standard 1.44 MB 3.5" Floppy drive
Combo Drive	16x/10x/48x CDR/W & 16x DVD minimum
Sound Card	Integrated sound controller
Cabinet	Standard with Min. 4 bays
Keyboard	OEM Keyboard
Mouse	OEM Optical Scroll Mouse
Operating System and Software with license	MS-Windows XP Professional with SP2 (or latest) with recovery (CD/backup on HDD), Latest Anti Virus Software (McAfee / Norton / Trend Micro / eTrust) and MS Office Suite- Professional OLP latest edition with five year free patches & updates
Security	Set up, Boot password; Removable media write/ boot control, I/O port control, diagnostics tools for fast & accurate PC trouble shooting
Compatibility	System should be certified and designed for respective O/S with which it is being quoted.
PC	Business Desktop with Energy star/ ACPI compliant, DMI ver 2.0 compliant,
Compliances	Windows XP certified, ISO 9001:2000, ISO 14001/ Blue Angel certification
PC Desktop Management	S/W management tools for detailed PC information, Restore Software
Monitor	17" TFT OEM color monitor
Warranty	5 Years Comprehensive , Pre-failure Warranty on CPU, HDD and RAM

5.19 Requirement of Antivirus Software features

- 5.19.1 Shall be network utility software
- 5.19.2 Shall be provisioned for the network elements in the entire network
- 5.19.3 Shall scan at least HTTP, SMTP, POP3, FTP traffic (sending & receiving) in real time and protect against viruses, worms & Trojan horse attacks and other malicious code. Shall have facility to clean, delete and quarantine the virus affected files
- 5.19.4 Shall scan all major type of compressions in compressed file attachments
- 5.19.5 Shall have protection against denial of service; shall block spam mails and junk mails. Shall have anti relay and content filtering feature
- 5.19.6 Shall automatically update the virus definitions from Internet on daily basis. In case of failure to update from Internet, it shall be configured so as to update these definitions manually. Once the virus definitions are updated, it shall have the feature to push/ pull these definitions to various Nodes on the Network automatically.
- 5.19.7 Shall have the feature to define a centralized anti-virus policy for virus management
- 5.19.8 Shall provide comprehensive logs and reports

5.20 Wireless Base Station for SHQ / DHQ / SDHQs

The wireless connectivity is planned to be based on standards based technology. The wireless connectivity is required for integrating horizontal offices in MSWAN. It is also intended to extend same wireless infrastructure (if desired so by the GoM) for connecting CSC (Common Service centres) in the state as and when required.

- 5.20.1 IEEE 802.11b/g standard (WiFi)
- 5.20.2 Unlicensed spectrum frequency. Bidders are required to obtain license for the same in case of revision of norms by TRAI/DoT.
- 5.20.3 Interfaces – 1 x 10/100 Mbps FE
- 5.20.4 Radio – 360 Degree coverage (using sectoral configuration). Should support minimum 20 CPEs with 360 degree coverage (multiple sector / radio) at a distance of 10Kms, at a per link bandwidth of 384Kbps minimum, with concurrent 15 CPE sessions.
- 5.20.5 Mode of operation – Point to multi point mode

- 5.20.6 Distance support - Should support an aerial coverage for minimum of 10 Kms.
- 5.20.7 Should support minimum 3 non-overlapping channels
- 5.20.8 Wireless Medium
 - 5.20.8.1 OFDM
 - 5.20.8.2 DSSS
- 5.20.9 Management
 - 5.20.9.1 SNMP
 - 5.20.9.2 Telnet
 - 5.20.9.3 Web based
 - 5.20.9.4 Secure Shell
- 5.20.10 Requisite Utilities
 - 5.20.10.1 Link test
 - 5.20.10.2 Device Discovery tool
 - 5.20.10.3 Radio and Ethernet Traffic Statistics
 - 5.20.10.4 Configurable Sys-log reports and SNMP traps
 - 5.20.10.5 Remote and central wireless firmware upgrade
 - 5.20.10.6 HW and SW remote reset capability
- 5.20.11 Data Transfer rate – 11 / 54 Mbps
- 5.20.12 Protocols supported
 - 5.20.12.1 RIPv2
 - 5.20.12.2 Static routes
 - 5.20.12.3 STP
 - 5.20.12.4 UDP
 - 5.20.12.5 TCP

- 5.20.12.6 ICMP
- 5.20.12.7 Telnet
- 5.20.12.8 HTTP
- 5.20.12.9 FTP
- 5.20.12.10 SNMP
- 5.20.12.11 OSPF
- 5.20.13 Security
 - 5.20.13.1 64 / 128 / 152 – bit WEP or equivalent
 - 5.20.13.2 WPA – Wi-Fi protected access
 - 5.20.13.3 MAC Address Access Control List
 - 5.20.13.4 3DES/AES
 - 5.20.13.5 WPA / WPA-2
 - 5.20.13.6 AES
 - 5.20.13.7 IPSec data security
 - 5.20.13.8 RADIUS support
 - 5.20.13.9 MAC Authentication
 - 5.20.13.10 QOS viz., 802.11i and 802.11e or equivalent
 - 5.20.13.11 Should support QoS and VLAN
 - 5.20.13.12 Firewall
 - 5.20.13.13 IPS.
- 5.20.14 Latency - Maximum 15 millisecond per Hop
- 5.20.15 Transmit Power Control
- 5.20.16 Dynamic Frequency Selection
- 5.20.17 Interpretability - Should interoperate any standard Wi-Fi compliant solution
- 5.20.18 Environment - Temperature -10° to 60° C

5.21 Antenna for SHQ / DHQ / SDHQ

- 5.21.1 Distance Support – 360 Degree coverage (using omni / sectoral configuration)
- 5.21.2 Physical Setup – Self support mast, Average height of 30 meters, the foundation for mounting the mast should be properly cemented. Foundation should have a base plate and mast should be erected straight. The Mast should be made of GI pipes. All the bolts and nuts should be properly secured and should have anti rusting coating. Aviation light should be provided at the top of the mast.
- 5.21.3 Earthing – The value of earth resistance should be less than 5 ohms. Earth lead should be in direct connection to LA using insulated Copper strip of 20mm x 3 mm or GI conductors (2 Nos. of 4 mm dia). Earth pit should be at a distance of 1meter minimum from building foundation and at least 5 meters away from the existing building-earth
- 5.21.4 Surge Protector - Should be installed on the RF and the power/ Ethernet inputs.
- 5.21.5 Radio for SHQ / DHQ / SDHQ

5.22 Horizontal Specifications

5.22.1 Wireless Endpoint CPE for Horizontal offices

- 5.22.1.1 Standards – 802.11b/g (Wi-Fi)
- 5.22.1.2 Supported Data Rate – 11/54 Mbps
- 5.22.1.3 Interfaces Supported – 1 x 10/100 Mbps Ethernet ports
- 5.22.1.4 Security – WEP / WPA / AES
- 5.22.1.5 Services
 - 5.22.1.5.1 Internet Traffic
 - 5.22.1.5.2 Accessing MSWAN
 - 5.22.1.5.3 VPN
 - 5.22.1.5.4 VoIP
 - 5.22.1.5.5 Video conferencing

- 5.22.1.6 Routing / NAT
- 5.22.1.7 Interoperability - Should be standard based and should seamlessly work with proposed wireless base station. Should be able to interoperate with any Wi-Fi compliant base station.
- 5.22.1.8 Management
 - 5.22.1.8.1 SNMP
 - 5.22.1.8.2 MIBII compliant
 - 5.22.1.8.3 Auto reboot/remote reboot

5.22.2 Wi-Fi Mast for Horizontal Offices

- 5.22.2.1 Physical Setup – Self support mast, Average height of 18 meters, the foundation for mounting the mast should be properly cemented. Foundation should have a base plate and mast should be erected straight. The Mast should be made of GI pipes. All the bolts and nuts should be properly secured and should have anti rusting coating. Aviation light should be provided at the top of the mast.
- 5.22.2.2 Earthing – The value of earth resistance should be less than 5 ohms. Earth lead should be in direct connection to LA using insulated Copper strip of 20mm x 3 mm or GI conductors (2 Nos. of 4 mm dia). Earth pit should be at a distance of 1meter minimum from building foundation and at least 5 meters away from the existing building-earth.
- 5.22.2.3 Surge Protector - Should be installed on the RF and the power/ Ethernet inputs.

5.22.3 Access Switch

- 5.22.3.1 Switching Capacity: 8 Gbps
- 5.22.3.2 Forwarding Rate: 6 Mpps
- 5.22.3.3 The switch should provide 24 10/100Mbps ports and 2 No of 1000 base LX ports if the connectivity is directly from the core switch or 2 No of uplink in case the connectivity is through access router or Wi Fi
- 5.22.3.4 IEEE 802.1d Spanning Tree Protocol
- 5.22.3.5 IEEE 802.1p Class of service (CoS) classification

- 5.22.3.6 IEEE 802.1q VLAN
- 5.22.3.7 IEEE 802.1w Rapid Convergence Spanning Tree Protocol
- 5.22.3.8 IEEE 802.1x Port Access Authentication
- 5.22.3.9 IGMP (v1, v2 and v3) snooping
- 5.22.3.10 The switch must be configurable using GUI.
- 5.22.3.11 It should be possible to monitor:
 - 5.22.3.11.1 Connectivity
 - 5.22.3.11.2 Daily traffic
 - 5.22.3.11.3 Suspected problems
 - 5.22.3.11.4 Specific ports that could be causing problems

- 5.22.4 Access Router**
 - 5.22.4.1 It should have 2 No of 10/100 Mbps Ethernet ports and 2 No of E1 interfaces
 - 5.22.4.2 The router should have a minimum throughput of 150 Kpps
 - 5.22.4.3 Shall have Protocol support for Routing protocols like RIPv1, RIPv2, OSPF, BGP4, IS-IS
 - 5.22.4.4 IPSEC with 3DES / AES encryption
 - 5.22.4.5 Shall have following Security Features:
 - 5.22.4.6 IP Tunneling supporting multicasting features
 - 5.22.4.7 NAT
 - 5.22.4.8 SNMPv3 authentication
 - 5.22.4.9 AAA support using Radius / TACACS
 - 5.22.4.10 Multiple privilege level authentication for console and telnet access
 - 5.22.4.11 Shall have Quality of Services (QoS) with following features:
 - 5.22.4.12 ToS, CoS, Queuing.

- 5.22.4.13 IP precedence, policy based routing.
- 5.22.4.14 Shall provide debug alarms & Diagnostics
- 5.22.4.15 Display of input and output error stats on all interfaces
- 5.22.4.16 Monitoring of traffic flows
- 5.22.4.17 SLA monitoring for metrics like delay, latency, jitter, packet loss
- 5.22.4.18 Shall provide following management Features
 - 5.22.4.17.1 SNMP
 - 5.22.4.17.2 RMON
- 5.22.4.19 Software upgrades through network, using FTP, TFTP, etc.
- 5.22.4.20 Policy Based Management

5.23 HDSL Modems

Technical Specification of G.SHDSL-2 Mbps Modem

All modems should be SHDSL modems operating in full duplex mode over 2/4 wire leased lines at N*64 Kbps upto 2 Mbps speed.

Central and Remote Modem must be configured through Front panel Menu driven Configurations and not through jumper settings.

The modem must have TEC approved G.703, V.35 interfaces

Clocking options, as Internal, External and Recovery clock must be provided.

G.SHDSL Line Interface

Line Coding:	TCPAM as per ITU-T G.991.2
Line Type:	2 wire twisted copper wire upgradeable to 4 wire
Line Impedance:	135Ω
Distance:	Minimum 5 K.M @ 2 Mbps in 2 wire
Connector	RJ 45

Interface (V.35) :

Line Rate:	2.048Mbps
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Digital Interface (G.703) :

Line Rate	2.048Mbps
Line Code	HDB3
Interface	E1 interface as per ITU-T G.703, G.704
Impedance	120 Ω (Balanced)
Jitter	Performance according to ITU-T G.823

Frame Format:

- Framed G.704 and Unframed G.703, PCM 31 CCS, PCM 30 CAS, CRC

CONFIGURATION & MONITORING:

- ITU-T G.826 Performance Monitoring
- Using DIP Switches or Menu Driven LCD and Keys on Front Panel.
- LEDs on Front Panel should indicate status like Line Sync, Alarms, Errors, etc.
- The Modem should have a Management (NMS) port for Status Monitoring and perform Diagnostics using SNMP.

DIAGNOSTICS:

- Local Loop back, Digital Loop back and Remote Digital Loop back.
- Test Pattern Generator and Checking (BERT).

Environmental Conditions :

- Operating temperature 1° to 60° Centigrade
- Humidity 5 % to 85% R.H
- Surge Protection as per ITU-T K.20/K.21

POWER: Dual Mode AC/DC; 230V AC +/- 10%, AND -48 V DC +/- 10%.

TEC approval: TEC certificate should clearly specify approval for both single and double pair operation as well as the range of the modem

5.24 SPECIFICATIONS FOR UPS**5.24.1 AT SHQ:**

16 KVA with 1 hour battery backup as per below given specifications.

Sr. No.	Item	Description
1	Power Rating	16 KVA configuration
2	Input Voltage	400 V +/- 20%

Request For Proposal

3	Input Frequency	50 Hz+/-10%
4	Output voltage	220: 230; 240 + / - 1% volts AC single phase
5	Output Frequency	50Hz +/- 1 %
6	Wave form	Pure sine wave
7	Harmonic Distortion. With linear loads	3% (Maximum)
8	Harmonic Distortion With Non – linear loads	5% (Maximum)
9	Robust Frame & by pass	Robust Frame with automatic & manual bypass switch enables the UPS to transfer the load to utility power without interruption, in case of heavy overload or faulty conditions
10	Crest Factor	3 : 1
11	Overload Capacity	110% for 60 sec.
12	Input Power Factor	0.9 or better
13	Output Power Factor	0.7 or better
14	Technology	Double conversion high frequency PWM with IGBT Technology with built in battery charger
15	Redundancy	Redundancy and hot swappable features
16	On – line Transfer Time	Zero (line fails or recovers)
17	UPS fault Transfer Time	< 4 ms (Auto by – pass activation or recovers)
18	Overall Efficiency (AC to AC)	>85%
19	Automatic internal bypass	Automatic internal / static bypass
20	Protection & Filtering	Input AC Over / under voltage & short circuit, Output over voltage, Overload & short circuit, Over temperature, Battery over charge, battery low & short circuit, Spikes & surges EMI / RFI filters
21	Protection	Alarm Over voltage, Battery low, Over Load, short circuit, Provides early

		warning fault analysis insuring pro active component replacement.
22	Visual Indications	Mains on (load on mains), Load on inverter, load on standby, Battery charge / discharge level, Load level, Over load , Low battery indication / overload indication
23	SNMP	SNMP based Monitoring and Management using SNMP based Network Management Systems.
24	Battery	Sealed Maintenance free of Amaraja, Exide, Rocket, Panasonic, Vision, Yuasa make
25	Total Backup time	Sufficient to last for minimum one hour on 16 KVA load
26	Generator Compatibility	The UPS should be generator compatible.
27	Operating Temperature	0 to 40 degree C
28	Relative humidity	Up to 90% non – condensing
29	Certifications	The manufacturer of the equipment must have ISO certification
30	Regulatory approvals	Safety & EMC Certification. CE, EN 50091 – 1, EN 50091 – 2 / ERTL / ETDC / SAMEER certification
31	Management Software	UPS Management Software

5.24.2 AT DHQ

5 KVA with 1 hour battery backup as per below given specifications.

Sr. No.	Item	Description
1	Power Rating	5 KVA
2	Input Voltage	160 – 280 V
3	Input Frequency	50 Hz +/- 10%
4	Output voltage	220: 230; 240 + / - 1% volts AC single phase
5	Output Frequency	50Hz +/- 1 %
6	Wave form	Pure sine wave
7	Harmonic Distortion. With linear loads	3% (Maximum)

Request For Proposal

8	Harmonic Distortion With Non – linear loads	5% (Maximum)
9	Robust Frame & by pass	Robust Frame with automatic & manual bypass switch enables the UPS to transfer the load to utility power without interruption, in case of heavy overload or faulty conditions
10	Crest Factor	3 : 1
11	Overload Capacity	110% for 60 sec.
12	Input Power Factor	0.9 or better
13	Output Power Factor	0.7 or better
14	Technology	Double conversion high frequency PWM with IGBT Technology with built in battery charger
15	Redundancy	Redundancy and hot swappable features
16	On – line Transfer Time	Zero (line fails or recovers)
17	UPS fault Transfer Time	< 4 ms (Auto by – pass activation or recovers)
18	Overall Efficiency (AC to AC)	>85%
19	Automatic internal bypass	Automatic internal / static bypass
20	Protection & Filtering	Input AC Over / under voltage & short circuit, Output over voltage, Overload & short circuit, Over temperature, Battery over charge, battery low & short circuit, Spikes & surges EMI / RFI filters
21	Protection	Alarm Over voltage, Battery low, Over Load, short circuit, Provides early warning fault analysis insuring pro active component replacement.
22	Visual Indications	Mains on (load on mains), Load on inverter, Load on standby, Battery charge / discharge level, Load level, Over load , Low battery indication / overload indication
23	SNMP	SNMP based Monitoring and Management using SNMP based Network Management Systems.
24	Battery	Sealed Maintenance free of Amaraja,

		Exide, Rocket, Panasonic, Vision, Yuasa make
25	Total Backup time	Sufficient to last for minimum one hour on 5 KVA load
26	Generator Compatibility	The UPS should be generator compatible.
27	Operating Temperature	0 to 40 degree C
28	Relative humidity	Up to 90% non – condensing
29	Certifications	The manufacturer of the equipment must have ISO certification
30	Regulatory approvals	Safety & EMC Certification. CE, EN 50091 – 1, EN 50091 – 2 / ERTL / ETDC / SAMEER certification
31	Management Software	UPS Management Software

5.24.3 At SDHQ / BHQ

2 KVA with 1 hour battery backup on full load.

Sr. no.	Item	Description
1	Output Power Factor	0.7 or better
2	Topology	Double conversion on-line IGBT
3	Nominal Output Voltage	230V
4	Protections	Short circuit protection, Overload, Trip protection, DC bus low voltage, Battery deep discharge
5	Noise levels	<55 db
6	UPS Efficiency	>85%
7	Output Voltage Distortion	Less than 2% for linear load and <5% for non-linear load
8	Output Frequency (sync to mains)	50Hz +/- 3 Hz, user adjustable +/- 0.1
9	Crest Factor	3 : 1
10	Waveform Type	Sine wave
11	Bypass	Automatic/manual
12	Output Voltage Regulation Range	230V +/- 1%
13	Input	50Hz +/- 10% (auto sensing)

	Frequency	
14	Backup Time at Full Load	1 hour on full load
15	Overload handling	125% - 1 minute 150% - 30 sec
16	Input voltage range for main operations	160 – 280V
17	Battery	Sealed Maintenance free of Amaraja, Exide, Rocket, Panasonic, Vision, Yuasa make
18	Operating Temperature	0 to 40 degree C
19	Interface Port(s)	DB-9 RS-232
20	LED indicators	Inverter fault, Charger fault, Low battery On mains, On battery, On bypass
21	Audible Alarm	Alarm when on battery, distinctive low battery alarm, overload continuous tone alarm

5.25 SPECIFICATIONS FOR RACKS

5.25.1 42U Floor-mounted Rack 800W *800D for SHQ / DHQ

5.25.1.1 Full Height with castors: 2090 mm

5.25.1.2 Full Height without castors & without base screw: 1990 mm

5.25.1.3 The rack should be with front tinted toughened glass door held with plastic latches & VHP tapes. All the doors should be lockable.

5.25.1.4 The side panels should be on Slam latches & should be open able with bare hands when required & should not have a screw/ bolt arrangement.

5.25.1.5 Each side panel should have a minimum of 4 slam latches for easy access.

5.25.1.6 The Rear MS door should be lockable.

5.25.1.7 The doors, side panels, top panels are to be made from 1.2 mm thick sheets,

5.25.1.8 The cable entry position should be there from the top & bottom panels covered with a Cut out cover/ plate.

- 5.25.1.9 For Proper Thermal Management each rack should be fitted with a Minimum of 4 fans on top - the fans should be of good quality - Size 120x120x38mm.
- 5.25.1.10 Power Accessories
 - 5.25.1.10.1 Horizontal & Vertically mountable universal sockets AC
 - 5.25.1.10.2 Distribution Box with 5/15 amps 5 sockets, with individual on/off switches, every socket should have its indicator lamp to show if it is ON/OFF. The ACDB should be CE approved.
 - 5.25.1.10.3 MOV protection: To minimize the resistance of the extra Voltage in a Flick of time, thus effectively reducing the interface of noise, keeping the fine acoustic fidelity & clear pictures & prolong the life of the electrical equipment
 - 5.25.1.10.4 Recoverable Overpower Protection: To eliminate the risk of overpower, and to recover the power source without changing the Fuse, which can be used repetitively
 - 5.25.1.10.5 Universal Socket design: The 5 - plug - hole socket should be able to receive all kinds of Plugs used in the various countries of both 5 & 15 amps.
 - 5.25.1.10.6 High Grade Plastic shell shall have high Flame retardant & insulating property; the metal fitting pieces shall be of high quality material.
 - 5.25.1.10.7 With in built lightning surge Protector and overload Circuit Breaker
- 5.25.2 **15U Wall-mounted Rack 550W *600D for SDHQ / BHQ**
 - 5.25.2.1 Full Height: 770 mm
 - 5.25.2.2 The rack should be with front tinted toughened glass door held with plastic latches & VHP tapes. The door should have lock.
 - 5.25.2.3 The doors, side panels, top panels are to be made from 1.2 mm thick sheets.
 - 5.25.2.4 The cable entry position should be there from the top & bottom panels covered with a Cut out cover/ plate.
 - 5.25.2.5 Fans:

- 5.25.2.5.1 For Proper Thermal Management each rack should be fitted with a Minimum of 4 fans on top - the fans should be of good quality – Size 120x120x38mm.
- 5.25.2.6 Power Accessories:
- 5.25.2.6.1 Horizontal & Vertically mountable universal sockets AC Distribution Box with 5/15 amps 5 sockets, with individual on/off switches, every socket should have its indicator lamp to show if it is ON/OFF. The ACDB should be CE approved.
- 5.25.2.6.2 MOV protection: To minimize the resistance of the extra Voltage in a Flick of time, thus effectively reducing the interface of noise, keeping the fine acoustic fidelity & clear pictures & prolong the life of the electrical equipment
- 5.25.2.6.3 Recoverable Overpower Protection: To eliminate the risk of overpower, and to recover the power source without changing the Fuse, which can be used repetitively
- 5.25.2.6.4 Universal Socket design: The 5 - plug - hole socket should be able to receive all kinds of Plugs used in the various countries of both 5 & 15 amps.
- 5.25.2.6.5 High Grade Plastic shell shall have high Flame retardant & insulating property; the metal fitting pieces shall be of high quality material.
- 5.25.2.6.6 With in built lightning surge Protector and overload Circuit Breaker
- 5.25.2.6.7 The ACDB should be cascable to at least 3 levels with link wires; the same should be connectable without opening the AC distribution box.
- 5.25.3 **9U Wall-mounted Rack for Horizontal offices**
- 5.25.3.1 All the locks should have separate key.
- 5.25.3.2 The doors, side panels, top panels are to be made from 1.2 mm thick sheets.
- 5.25.3.3 The cable entry position should be there from the top & bottom panels covered with a Cut out cover/ plate.
- 5.25.3.4 Power Accessories: Horizontal & Vertically mountable UNIVERSAL SOCKETS AC Distribution Box with 5/15 amps sockets,

with individual on/off switches, every socket should have its indicator lamp to show if it is ON/OFF. The ACDB should be CE approved.

- 5.25.3.5 High Grade Plastic shell shall have high Flame retardant & insulating property; the metal fitting pieces shall be of high quality material.

5.26 Network Management System (NMS)

- 5.26.1 The components of NMS will be from the same family of interoperable and compatible solutions with a high level of data exchange between the various modules of the NMS. The NMS shall provide reports on availability and performance data of critical infrastructure
- 5.26.2 NMS shall manage heterogeneous infrastructure/system.
- 5.26.3 NMS architecture shall be further scalable to introduce middle tier Hub or Spoke or any such middle management NMS servers to achieve scalability in the Network NMS. The solution should support scalability through unlimited license.
- 5.26.4 NMS shall preferably use a standard RDBMS that can run on different standard operating system as the management database
- 5.26.5 NMS shall integrate its NMS Module with element Device Mgmt software.
- 5.26.6 NMS shall have management console license bundled, as the NMS shall be managed through client console from any where in the network. This shall be apart from the Web HTTP Management.
- 5.26.7 The proposed NMS shall have the capability to integrate with security management solution and storage management solution to achieve overall integrated Network management system monitored and managed with one comprehensive console.
- 5.26.8 NMS shall have the ability to deliver comprehensive, tightly integrated management capabilities, which include Performance and availability of servers, web servers, web applications, network, desktop and storage management and security.
- 5.26.9 NMS Shall have the ability to correlate events across the Network spectrum of infrastructure components that support events from Network Hardware, Multi-platform Servers, database and software – making it ideal solution for managing service levels.
- 5.26.10 NMS architecture shall be object oriented, open, distributed, scalable, Multi-platform supported and open to 3rd party integration
- 5.26.11 NMS shall offer functions such as inventory, software distribution, network discovery and monitoring, server management, mail and database management etc.
- 5.26.12 NMS for its purpose shall be capable of bandwidth throttling for the optimum use of network bandwidth for managing infrastructure.
- 5.26.13 NMS shall support a standard RDBMS

- 5.26.14 NMS Product shall provide management of all system using intelligent agent technology with secured and reliable communication between managed and managing systems irrespective of OS like UNIX, Linux, Windows 2000/2003 Server, Solaris.
- 5.26.15 NMS shall support multiple levels of administrative delegation. The framework shall be able to define multiple levels of administrative domains and regions so that each administrator is assigned certain resources for which they are responsible for managing the application from the business perspective.
- 5.26.16 Communication between the managed server and the target-managed system across the network shall be secured reliable and encrypted protocol.
- 5.26.17 NMS shall be capable of quickly identifying the impact of infrastructure failures, identify the root cause of the problem, and manage IT infrastructure.
- 5.26.18 NMS system shall be able to generate Web based reporting and historical reporting of elements in the infrastructure.
- 5.26.19 Event Management module shall help in capturing of all events that are being generated across the complete IT Infrastructure Correlates them and automates suitable action as defined. It shall be capable of presenting the Event browser over a Role based Access Controlled Web Interface.
- 5.26.20 NMS shall process and correlate events from various systems, application and NMS. It shall have the capability to automatically initiate corrective action.
- 5.26.21 NMS shall provide an event console for the entire distributed environment for event monitoring.
- 5.26.22 NMS shall provide event correlation ability across any resources in any management domain to determine the root cause of problem.
- 5.26.23 NMS shall have an easy-to use graphical builder to help build and adapt rules and automation.
- 5.26.24 NMS Shall act on events using either automatic or operation-initiated response.

5.26.25 Network Management

- 5.26.25.1 The Network Management function must monitor performance across heterogeneous networks from one end of the network to the other: -
 - 5.26.25.1.1 It must proactively analyze problems to improve network performance.
 - 5.26.25.1.2 Identify, isolate, and helps to resolve response time problems on LANs, remote links, and servers.
 - 5.26.25.1.3 The Network Management function should create a graphical display of all discovered resources.
 - 5.26.25.1.4 The system should provide Password protected access to the database.
 - 5.26.25.1.5 Customer definable network reports from web browser access
 - 5.26.25.1.6 The system should provide multiple predefined network reports.
 - 5.26.25.1.7 The system should provide Historical graphs on the network performance and past trends, and automated process restarts when required.
 - 5.26.25.1.8 The system should provide status reports on customer's hardware (static report) when a change in operational state occurs (example: active to out-of-service state)
 - 5.26.25.1.9 The system should provide reports including but not limited to packet drop rates, throughput, general availability, Resource utilization exceeds or below customer-defined limits, Resource utilization exceeds or below predefined threshold limits.
 - 5.26.25.1.10 The system should provide Bandwidth reporting using graphical information to depict traffic volumes between equipment and the network
 - 5.26.25.1.11 The product should provide full-fledged Service Level monitoring and reporting capability using which administrator should be able to define metrics to be measured, measure on such metrics and do comprehensive service monitoring and web-based reporting based on service availability, downtime and response.
 - 5.26.25.1.12 Should provide Service level management capabilities with detailed reports on the availability, uptime, downtime and outage information status of leased line interfaces, and critical servers.
 - 5.26.25.1.13 The Product should be able to monitor and report on availability, delay of target IP nodes – i.e. router interfaces - and also monitor and

provide reports on historical utilization of CPU, memory of monitored servers running SNMP and EMS system agents.

- 5.26.25.1.14 The tool should be able to provide service level reports in different formats which would be required by IT Manager, Executives & Business Unit wise reports.
- 5.26.25.1.15 The tool should be able to provide service level reports on the basis of Latency distribution, Bandwidth utilization distribution, Network volume by group, Bandwidth utilization distribution by group, Network volume, Bandwidth utilization distribution by group, Health exceptions by group, Element summary.
- 5.26.25.1.16 The Network Management function must have extensive reporting facility, providing the ability format and present data in a graphical and tabular display.
- 5.26.25.1.17 This Network-wide data should be easily accessed from a central location and used to help with capacity planning, reporting, and analysis.
- 5.26.25.1.18 The Network Management function must also provide information on performance of Ethernet segments, including capacity utilization and error statistics for the segment and the top-contributing nodes, WAN links and routers.
- 5.26.25.1.19 It should automatically be able to generate a event in the event of a link failure to ensure proper handling of link related issues.
- 5.26.25.1.20 The system must be capable of automatically discovering manageable elements connected to the network and mapping the connectivity between elements, including port-level connectivity.
- 5.26.25.1.21 The solution should have the capability to discover Layer2 & Layer 3 Devices & connectivity.
- 5.26.25.1.22 The system must provide visualization tools to display network topology and device to device connectivity. The system must also be able to document connectivity changes that was discovered since the last update
- 5.26.25.1.23 The system must support scheduled discovery to ensure that the relationship between elements are maintained and up-to-date
- 5.26.25.1.24 The system must provide a user-configurable event processing policies that helps to reduce volume of information at the console by classifying events as alarms only if it meets a set of user-specified criteria such as event occurrence frequency, event sequence and duration of event in active state

- 5.26.25.1.25 The system should provide root cause analysis out of the box & custom definable algorithms such as Modeling Technology, Event Correlation & conditional correlation.
- 5.26.25.1.26 The system must provide an auto-calculated impact analysis of individual element failure to provide the operator and administrator understanding of the impact of the failure onto other elements in the network
- 5.26.25.1.27 The system must support outgoing notification integration to helpdesk or trouble ticketing system
- 5.26.25.1.28 In order to maintain efficient management traffic, the system must support localized polling and minimize management traffic across low-speed links
- 5.26.25.1.29 The solution must be able to providing high-continuity in management visibility of the infrastructure. The resiliency must be supported by a secondary server in standby-mode that is able to take over management functionalities when the primary server becomes unavailable.
- 5.26.25.1.30 The Service Level Agreements (SLAs) definition facility must support defining a set of one or more service Guarantees that specify the Service obligations stipulated in an SLA contract for a particular time period (weekly, monthly, and so on). Guarantees supported must include one that monitors service availability (including Mean Time to Repair (MTTR), Mean Time Between Failure (MTBF), and Maximum Outage Time thresholds) and the other that monitors service transaction response time.
- 5.26.25.1.31 Root cause analysis of infrastructure alarms must be applied to the managed Business Services in determining service outages
- 5.26.25.1.32 The system must provide the capability of Advanced Correlation for determining Service health, performing root cause analysis, and fault isolation.

5.27 Helpdesk System

- 5.27.1 It should provide web-based support interface to end-users and helpdesk staff to open service requests, track problems, search for solutions.
- 5.27.2 It should support automatic problem registration with respect to EMS event management, based on predefined policies.
- 5.27.3 It should be able to log and escalate user interactions and requests.
- 5.27.4 It should provide status of registered calls to end-users over email and through web.
- 5.27.5 It should have an updateable knowledge base for technical analysis and further help end-users to search solutions for previously solved issues.
- 5.27.6 It should have the ability to track work history of calls to facilitate troubleshooting.
- 5.27.7 It should support tracking of SLA (service level agreements) for call requests within the helpdesk through service types.
- 5.27.8 It should support request management and change order management.
- 5.27.9 It should be capable of assigning call requests to technical staff manually as well as automatically based on predefined rules, and should support notification and escalation over email, web etc.
- 5.27.10 It should be able to provide basic reports.
- 5.27.11 The service desk should be from the same product family/suite/OEM as the NMS and should be compliant with ITIL standards.

5.28 REQUIREMENT OF INTRUSION DETECTION & PREVENTION SYSTEM FEATURES

- 5.28.1 Intrusion Detection and Prevention System at SHQ level (one in no.):
 - 5.28.1.1 Shall provide real time Intrusion Detection and Prevention.
 - 5.28.1.2 The ID&PS should provide minimum 1 Gbps aggregate throughput at Layer-7.
 - 5.28.1.3 Shall support minimum 100000 concurrent sessions
 - 5.28.1.4 Shall show and send mails on alarms on Intrusion Detection.
 - 5.28.1.5 Shall have provision for different ACTION per segment and per policy
 - 5.28.1.6 Shall have comprehensive Attack database with minimum 1500 OEM signatures
 - 5.28.1.7 Shall have easy install and configuration capabilities
 - 5.28.1.8 Shall have stateful inspection capabilities
 - 5.28.1.9 Shall provide Anomaly detection and prevention support
 - 5.28.1.10 Shall provide comprehensive Denial-of-service (DoS) mitigation
 - 5.28.1.11 Shall stop Worms or viruses flowing thru network in real time
 - 5.28.1.12 Shall provide protection against buffer overflow
 - 5.28.1.13 Shall provide Remote-procedure call (RPC) attack detection and prevention
 - 5.28.1.14 Shall monitor and block IP fragmentation attacks.
 - 5.28.1.15 Shall monitor and block Internet Control Message Protocol (ICMP) attacks.
 - 5.28.1.16 Shall monitor and block Domain Name System (DNS) attacks, TCP hijacks, Windows or Net Bios attacks, TCP application protection, BackOffice attacks
 - 5.28.1.17 Shall support automated Emails to pre-defined email id with Reports
 - 5.28.1.18 Shall have provision to install IPS system in different architecture (In-line transparent, Sensors etc.)
 - 5.28.1.19 Shall support for 802.1q traffic

- 5.28.1.20 Shall have standard interface: 4 x 10/100/1000 Base T and shall be upgradeable by atleast 4 more 10/100/1000 BaseT ports
- 5.28.1.21 Should send a complete capture of the filtered packet along with the attack event report to management station that can be used as proof of attack
- 5.28.1.22 Shall block only the attack sessions without effecting service to legitimate clients
- 5.28.1.23 Shall have provision for automatic and real time signature / definition update from Internet on minimum of weekly basis
- 5.28.1.24 Shall have the feature to define a centralized management system for all device configuration, management and reporting.
- 5.28.1.25 Shall provide comprehensive logs and security events reports
- 5.28.1.26 Shall support dual power supply with 230 V AC rating

5.29 Firewall

- 5.29.1 The operator shall provide one firewall having following specifications.
- 5.29.2 Shall provide stateful inspection
- 5.29.3 Should support integration with proposed Proxy server
- 5.29.4 Shall have multiple Network Interface Cards for creating up to 4 DMZ's with 10/100/1000 Mbps.
- 5.29.5 Shall perform Prevention of Denial-of-Service Attacks.
- 5.29.6 Shall provide more than 50,000 simultaneous connections
- 5.29.7 Shall have capability to support VPN
- 5.29.8 Shall be IETF IPsec Compliant that would enable VPN interoperability and scalability.
- 5.29.9 Shall filter packets based on protocol, source & destination address, source & destination ports, interface of the firewall that the packet entered.
- 5.29.10 Proxy operations shall, at a minimum, be operable on the content of SMTP, FTP and HTTP protocol traffic.
- 5.29.11 Shall perform stateful inspection of connections.
- 5.29.12 Shall support integration with any standard URL filtering solution

- 5.29.13 Shall be able to filter malicious viz. Java Applets, ActiveX.
- 5.29.14 Shall perform Network Address Translation.
- 5.29.15 Shall log different type of events viz. Traffic allowed, denied etc. in Syslog format. Filters shall allow viewing different events based on IP address, network numbers, connection types, domain names, date & time etc.
- 5.29.16 Shall have facility to query the logs and display the appropriate results.
- 5.29.17 Change in rule file shall not require rebooting of Firewall
- 5.29.18 It should be appliance based and with at least 1 Gbps performance. In case the Firewall and the IPS are provided as a single device the throughput of the IPS and the Firewall module should independently meet the throughput requirements mentioned.

5.30 Requirement of Gensets

Bidder should quote Gensets of OEMs who meet following criteria:

- The Genset manufacturer should have a service track record through dedicated channel in India for a minimum period of last two years
- The engines should have been used for minimum last two years in the market.

Bidder will also attach list of satisfied Government / corporate customers with appropriate certificates to that effect.

These Gensets should be noiseless, smoke free, Auto start and SNP enabled. All these equipments should be complied with latest CPCB standards for noise level & emission.

SHQ –	20 KVA (3 Phase)
DHQ –	8 KVA (1 Phase)
SDHQ/BHQ-	5 KVA (1 Phase)

5.30.1 Technical specifications for 20 KVA D.G. Set (SHQ level) & 8 KVA D.G. Set (DHQ level):

- 5.30.1.1 Diesel Engine:
 - 5.30.1.1.1 1500 RPM
 - 5.30.1.1.2 ISO 8528
 - 5.30.1.1.3 Air cooled/Radiator cooled with coolant based
 - 5.30.1.1.4 Four strokes

- 5.30.1.1.5 Multi cylinder
- 5.30.1.1.6 Electrical starter motor 12 V DC.
- 5.30.1.1.7 Battery charging alternator.
- 5.30.1.1.8 MICO fuel pump with Mechanical governor
- 5.30.1.1.9 Dual Spin –on Fuel filter
- 5.30.1.1.10 Residential silencer
- 5.30.1.1.11 Air cleaner (paper element type)
- 5.30.1.1.12 Shut-Off coil with safeties for LLOP/HWT
- 5.30.1.1.13 Flywheel Housing
- 5.30.1.1.14 First Fill of lube oil
- 5.30.1.2 Alternator:
 - 5.30.1.2.1 Synchronous Alternator of 20 KVA for SHQ (Synchronous Alternator of 8 KVA for DHQ)
 - 5.30.1.2.2 Continuous operation at 1500 RPM
 - 5.30.1.2.3 230 Volts for 8KVA, 415 V for 20KVA
 - 5.30.1.2.4 0.8 pf (lag) suitable for 50 HZ
 - 5.30.1.2.5 Single phase (8KVA), Three phase (20KVA)
 - 5.30.1.2.6 Brush less alternator
 - 5.30.1.2.7 Screen protected
 - 5.30.1.2.8 Revolving field
 - 5.30.1.2.9 Self excited
 - 5.30.1.2.10 Self regulated through an AVR
 - 5.30.1.2.11 The Alternator should have the following features:
 - 5.30.1.2.11.1 ± 1.5 % voltage regulation (max)
 - 5.30.1.2.11.2 IP: 23 Enclosures.
 - 5.30.1.2.11.3 Permissible overload 10% for one hour in 12 hrs. of duration.
- 5.30.1.3 AMF Control Panel:
 - 5.30.1.3.1 14/16 gauge CRCA sheet
 - 5.30.1.3.2 Powder coated for a weather-proof, long last finish.
 - 5.30.1.3.3 Standard Engine Instrumentation
 - 5.30.1.3.4 AMF Logic
 - 5.30.1.3.5 Battery charger

- 5.30.1.3.6 Voltmeter
- 5.30.1.3.7 Ammeter
- 5.30.1.3.8 Frequency meter.
- 5.30.1.3.9 Current transformers
- 5.30.1.3.10 Instrument fuses duly wired and ferruled.
- 5.30.1.4 Fuel Tank should be suitable for 8 hrs. of continuous running provided with drain valve, air vent and outlet connection.
- 5.30.1.5 Batteries: Dry and uncharged with battery leads – 1 in nos.
- 5.30.1.6 Acoustic Enclosure:
 - 5.30.1.6.1 Should be made of 14 gauge CRC sheet.
 - 5.30.1.6.2 The acoustic enclosure should have the following salient features:-
 - 5.30.1.6.2.1 The enclosure should be of modular construction with the provision to assemble and dismantle easily at site.
 - 5.30.1.6.2.2 The sheet metal components should be hot dip nine tank pretreated before powder coating.
 - 5.30.1.6.2.3 The enclosure should be powder coated (inside as well outside) with a special pure polyester based powder. All nut and bolts/external hardware should be made from stainless steel.
 - 5.30.1.6.2.4 The doors should be gasketed with high quality gaskets to prevent leakage of sound.
 - 5.30.1.6.2.5 The door handles should be of lockable type.
 - 5.30.1.6.2.6 Sound proofing of the enclosure should be done with high quality fire retardant foam.
 - 5.30.1.6.2.7 Specially designed attenuators should be provided to control sound at air entry and exit points.
 - 5.30.1.6.2.8 Adequate ventilation should be provided to meet total air requirement. No blower fan is provided and thus there are no parasitic loads on genset.
 - 5.30.1.6.2.9 Temperature of enclosure should not beyond 5°-7°C of ambient temperature.
 - 5.30.1.6.2.10 There should be an arrangement for emergency shutdown of set from outside of the enclosure.

5.30.1.6.2.11 Noise Level should be 75 dB (A) at 1 mtr distance, thus meeting CPCB norms.

5.30.1.6.2.12 Type approval Certification from National Physical Lab., meeting CPCB Norms.

5.30.2 Technical specifications for 5 KVA D.G. Set (SDHQ / BHQ level):

5.30.2.1 Diesel Engine:

5.30.2.1.1 1500 RPM

5.30.2.1.2 ISO 8528

5.30.2.1.3 Air cooled / Radiator cooled with coolant based

5.30.2.1.4 Four strokes

5.30.2.1.5 Single / Multi cylinder

5.30.2.1.6 Electrical starter motor 12 V DC.

5.30.2.1.7 Battery charging dynamo/ alternator.

5.30.2.1.8 Fuel pump with Mechanical governor

5.30.2.1.9 Fuel filter

5.30.2.1.10 Residential silencer

5.30.2.1.11 Air cleaner

5.30.2.2 Alternator:

5.30.2.2.1 Synchronous Alternator of 5 KVA

5.30.2.2.2 Continuous operation at 1500 RPM

5.30.2.2.3 230 Volts

5.30.2.2.4 0.8 pf (lag) suitable for 50 HZ

5.30.2.2.5 Single phase

5.30.2.2.6 Brush less alternator

5.30.2.2.7 Screen protected

5.30.2.2.8 Revolving field

5.30.2.2.9 Self excited

5.30.2.2.10 Self regulated through an AVR

5.30.2.2.11 The Alternator should have the following features:

5.30.2.2.11.1 ± 1.5 % voltage regulation (max)

5.30.2.2.11.2 IP: 23 Enclosures.

5.30.2.2.11.3 Permissible overload 10% for one hour in 12 hrs. of duration.

- 5.30.2.3 AMF Control Panel:
 - 5.30.2.3.1 14/16 gauge CRCA sheet
 - 5.30.2.3.2 Powder coated for a weather-proof, long last finish.
 - 5.30.2.3.3 Standard Engine Instrumentation
 - 5.30.2.3.4 AMF Logic
 - 5.30.2.3.5 Battery charger
 - 5.30.2.3.6 Voltmeter
 - 5.30.2.3.7 Ammeter
 - 5.30.2.3.8 Frequency meter.
 - 5.30.2.3.9 Current transformers
 - 5.30.2.3.10 Instrument fuses duly wired and ferruled.

- 5.30.2.4 Fuel Tank should be suitable for 8 hrs. of continuous running provided with drain valve, air vent and outlet connection.

- 5.30.2.5 Batteries: Dry and uncharged with battery leads – 1 in nos.

- 5.30.2.6 Acoustic Enclosure:
 - 5.30.2.6.1 Should be made of 14 gauge CRC sheet.
 - 5.30.2.6.2 The acoustic enclosure should have the following salient features:-
 - 5.30.2.6.2.1 The enclosure should be of modular construction with the provision to assemble and dismantle easily at site.
 - 5.30.2.6.2.2 The sheet metal components should be hot dip nine tank pretreated before powder coating.
 - 5.30.2.6.2.3 The enclosure should be powder coated (inside as well outside) with a special pure polyester based powder. All nut and bolts/external hardware should be made from stainless steel.
 - 5.30.2.6.2.4 The doors should be gasketed with high quality gaskets to prevent leakage of sound.
 - 5.30.2.6.2.5 The door handles should be of lockable type.
 - 5.30.2.6.2.6 Sound proofing of the enclosure should be done with high quality fire retardant foam.

- 5.30.2.6.2.7 Specially designed attenuators should be provided to control sound at air entry and exit points.
- 5.30.2.6.2.8 Adequate ventilation should be provided to meet total air requirement. No blower fan is provided and thus there are no parasitic loads on genset.
- 5.30.2.6.2.9 Temperature of enclosure should not beyond 5°-7°C of ambient temperature.
- 5.30.2.6.2.10 There should be an arrangement for emergency shutdown of set from outside of the enclosure.
- 5.30.2.6.2.11 Noise Level should be 75 dB (A) at 1 mtr distance, thus meeting CPCB norms.
- 5.30.2.6.2.12 Type approval Certification from National Physical Lab., meeting CPCB Norms.

5.31 Requirement of Passive Components

- 5.31.1 The entire network shall be based on structured cabling system. All UTP cables shall be connected to the patch panel at one-end and Information Outlets (I/O) on the other. Factory crimped patch cords shall be used for connecting PCs through I/O boxes and between patch panel and switch ports. Generally 1M patch cords shall be used for interconnection between patch panel and switch ports and 2M patch cords shall be used for connection between I/O box and PCs.
- 5.31.2 All fiber cable cores at the end location shall be terminated on fiber optic patch panel through SC/MT-RJ connectors. F/O patch cords (factory crimped) shall be used for connecting F/O ports of the switch to the F/O patch panel. Fiber splicing shall be done wherever it is required to branch off the FOC from one junction point to another. While terminating/splicing FOC, utmost care shall be given to “Fiber Management” like accessibility, bend radius control and compact design. Fusion based splicing technique shall be applied to limit the attenuation within permissible limit as per standard. Splicing with Pigtail termination on F/O patch panel shall be adopted at all branched off locations.

Care shall be taken to limit the losses in various fiber optic components as per following details:

Component Loss

Single Mode Fiber 1310 nm : 0.35 – 0.4 dB/km

1550 nm : <= 0.22 dB/km

Multimode Fiber 850 nm : 3 – 4.1 dB/km

1310 nm : 0.6 – 1.1 dB/km

Optical connectors 0.1 – 0.75 dB

Fusion splices 0.1 dB

5.31.3 All the Switches, Patch panels, and splicing units shall be housed in suitable enclosures.

5.31.4 Fiber Optic Cable

Fiber optic cables shall be of Single mode (9/125 mm) as per ITU-T G.652 standard and shall support optical source wavelength of 1310 & 1550 nm. The F/O cable shall be armoured with low water peak optical fiber and shall be suitable for underground laying. Cables shall be flexible enough to allow safe bend. The F/O cable shall be of 6/12 cores with core identification mark.

5.31.5 Fiber optic patch panel

Fiber optic patch panel shall have powder coated aluminum body with wall/rack mounting arrangement. The panel box shall have enough space to provide storage of the excess cable. Rubber grommets shall be provided at the cable entry points, for tight sealing. The panel shall be complete with required adapters, couplers and connectors etc.

5.31.6 Fiber Patch cords

Fiber patch cord shall be used to connect the fiber patch panel & F/O ports of switches. The patch cord shall be SC-SC or SC-LC or SC-MTRJ type as per requirement. The length of the patch cord shall be 1 meter minimum. The patch cords shall conform to TIA/EIA/ITU specification. The patch cords shall be factory connectorised.

5.31.7 UTP cables

All UTP cables shall be of solid 4 pair, PVC insulated Category-6 type. UTP cables shall conform to TIA/EIA standards.

5.31.8 UTP Information Outlets (I/O)

All UTP cabling shall be terminated at the node end on to a single port I/O box. The I/O box shall be of plastic and shall be suitable for termination of Cat-6 UTP cable. The I/Os shall have spring shuttered front access for the cable to prevent entry of dust. The keystone jack (RJ 45) shall be of high performance type with easy snap-in & removal and high plug insertion life. The I/O Boxes shall conform to relevant TIA/EIA standards.

5.31.9 UTP Patch Cords

All patch cords shall be of Cat-6 UTP cable, with RJ45 connectors at both ends and conforming to TIA/EIA standards. The patch cords shall be of standard length (2M). However for connecting patch panel to switch ports, smaller patch cords of 1M length shall be provided. All patch chords shall be factory crimped.

5.31.10 UTP Patch Panel

The patch panel shall be on steel chassis with rack mounting arrangement and cable management facility. All cables shall be terminated through insulation displacement connectors mounted on the printed circuit board, conforming to Cat- 6 EIA/TIA standards. The patch panel shall be of 24 RJ-45 ports capacity.

5.32 Plasma Screen

Sl. No.	Description
1)	Technology PLASMA
2)	Effective Screen Size 40" (Diagonal) or above.
3)	Video Inputs: DVI / HDMI, Analog RGBHV, RGB inputs for PC, Composite (RCA), S-Video
4)	Audio Inputs: Composite (RCA), Stereo
5)	TV/RF (antenna/cable) input with TV tuner for TV channels
6)	Video Inputs: Composite (RCA), S-Video
7)	Native Resolution 1024 X 768 pixels.
8)	Number of Pixels: 1024 (Horizontal) X 768 (Vertical)
9)	Compressed Mode PC Resolution: 1280 X 768 or more
10)	Color Reproduction: more than 16 Million Colors.
11)	Video System: NTSC, PAL, and its variants
12)	Contrast ratio 10000:1
13)	Simultaneous viewing of any 2 inputs in various modes (Picture-in-Picture, Split screen etc.)
14)	Plasma Screen should support 4:3 picture format, XGA & WXGA, Full & Panoramic Views.
15)	Audio: 10 + 10 W RMS stereo amplifier
16)	Stereophonic speakers with necessary cables
17)	Normal Operating Voltage/Frequency: AC 230V, 50Hz Raw Power.
18)	All Cables required for interfacing (Minimum Length 10 Mtrs.)
19)	Full function Infra-Red Remote control
20)	Should comply to all Safety Regulations & EMI Regulations
21)	Wall Mount (Tilt / Flat)
22)	Ceiling/wall Mounting Kit

Section – 6

ORGANIZATIONAL CAPABILITIES

Form - I**1. Format and Checklist for Organization Details
(Shall be given separately for each member in case of consortium)**

Sl. No.	Clause	Bidder to tick (✓) if details are provided in prescribed manner	Bidders Reply	Page No. of Reference Documents
1	Name of the Enterprise			
2	Registered Office address Telephone Number Fax Number e-mail			
3	Correspondence/ contact address			
4	Details of Contact person (Name, designation, address etc.) Telephone Number Fax Number e-mail			
5	Is the enterprise a registered company? If yes, submit documentary proof. Year and Place of the establishment of the company(each member of consortium).			
6	Former name of the enterprise, if any.			
7	Is the enterprise a Government/ Public Sector Undertaking a proprietary enterprise a partnership enterprise (if yes, give partnership deed) a limited company or limited corporation a member of a group of companies (if yes, give name and address, and description of other companies)			

Request For Proposal

7	<p>a subsidiary of a large corporation (if yes, give the name and address of the parent organization) If the company is subsidiary, state what involvement if any, will the parent company have in the project.</p> <p>a joint venture consortia (if yes, give name and address of each partner)</p>			
8	Is the enterprise registered with sales tax department? If yes, submit valid sales tax registration certificate highlighting date of issuance, issuing authority and validity period(each member of consortium).			
9	Is the enterprise registered for service tax with Central Excise Department (Service Tax Cell)? If yes, submit valid service tax registration certificate highlighting date of issuance, issuing authority and validity period(each member of consortium).			
10	Is the enterprise registered under Labour Laws Contract Act? If yes, submit valid registration certificate highlighting date of issuance, issuing authority and validity period(each member of consortium).			
11	Attach the organizational chart showing the structure of the organization including the names of the directors and the position of the officers.			
	Total number of employees			
12	Number of years of experience: as a prime contractor in a joint venture/ Consortium			
13	Are you registered with any Government/ Department/ Public Sector Undertaking (if yes, give details)			

Request For Proposal

14	How many years has your organization been in business under your present name? What were your fields when you established your organization? When did you add new fields (if any)?			
15	<p>What type best describes your enterprise? (documentary proof to be submitted)</p> <ul style="list-style-type: none"> • Manufacturer • Supplier • System Integrator • Consultant • Service Provider (pl. specify details) • Software Development • Total solution provider (Design, Supply, Integration, O&M) • IT Company 			
16	Number of Offices / Project Locations			
17	Do you have a local representation /office in Shillong? If so, please give the address and the details of staff, infrastructure etc in the office and no. of years of operation of the local office			
18	Do you intend to associate any other organization for the works for which you are bidding? If so, please give full particulars of that organization separately.			
19	Please give details of Key Technical and Administrative staff who will be involved in this project, their role in the project, their Qualifications & experience and the certification attained from network product vendor. (documentary proof to be submitted)			
20	The Enterprise should preferably have quality certification (ISO 9001:2000) from an accredited and Internationally reputed/renowned firm. Please submit the relevant documentation.			

Request For Proposal

21	List the major clients with whom your organization has been/ is currently associated.			
22	Were you ever required to suspend a project for a period of more than three months continuously after you started? If so, give the names of project and reasons for the same.			
23	Have you in any capacity not completed any work awarded to you? (If so, give the name of project and reason for not completing the work)			
24	In how many projects you were imposed penalties for delay? Please give details.			
25	The bidder/ prime member of the consortium shall disclose details pertaining to all contingent liabilities, claims, disputes, matters in appeal & in court and any pending litigation against the bidder or any member of the Consortium. If nil, an undertaking from the bidder/ prime member of the consortium mentioning the same should be submitted.			
26	Whether your organization has Bank's certificate of solvency. If yes, submit documentary proof (each member of consortium).			
27	Have you ever been denied tendering facilities by any Government/ Department/ Public sector Undertaking? (Give details)			
28	Have you submitted valid Income tax Clearance certificate for the years 2006-2007, 2007-2008 and PAN no. (each member of consortium)			
29	In case of a Consortium, Power of Attorney from each member of the consortium, authorizing prime member to bid for this project.			
30	List of works which are intended to be subcontracted by the bidder.			
31	The bidder (each member of consortium) should not be a member of more than one consortium bidding for this project.			

Request For Proposal

32	The bidder (lead member of the consortium) shall be an IT/ Telecom company and shall be either an Original Equipment Manufacturer or its Authorized System Integrator(s) in India duly authorized and supported by OEM to quote for this project.			
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Note: Wherever the reference documents are attached, the bidder should clearly mention the page number(s) of the reference document in the above table.

2. Format for Financial Capability**A. FINANCIAL INFORMATION**

S. No.	Name of the bidder/ Prime member of consortium	Equity Contribution Proposed	Turnover (Rs. Crores)			Net worth (Rs. Crores)
			2005-2006	2006-2007	2007-2008	2007-2008

Note:

1. Submit the audited financial statement/ audited annual report of the last three financial years.
2. Minimum requirement of turnover is 25 crores each year.

B. CAPABILITY TO RAISE DEBT

S. No.	Name of the bidder/ Prime member of consortium	Project Name	Project Description	Finance raised (Rs. Crores)	Source of Finance	Rate of Interest

Note:

1. Documentary proof, in support of the above, from Financial Institutions (FI), Banks etc to be submitted.

C. DEBT EQUITY RATIO

S. No.	Name of the bidder/ Prime member of consortium	Debt equity ratio as on date

Note:

1. Auditor's certificate confirming the above to be submitted.

3. A. Format for Technical Capability*(Please mention only those projects, which meet the Bidder eligibility criteria)*

S. No.	Name of Bidder	Project Name	Start Date	End date/ status	Brief Description of WAN Project & Scope of work (Implementation, Operation and Maintenance)	Type of project	Role of bidder	Number of WAN nodes	Value of the project	Contact details of the Customer	Page no(s). for reference documents

Note:

1. Type of Project shall indicate the implementation of services (Voice, Data, and Video).
2. Scope of work shall indicate whether it is implementation, Operation or maintenance.
3. Submit the copy of purchase order indicating the project value, customer contact details, customer completion certificate, customer satisfaction certificate issued by client etc.
4. For BOOT based project experience, the bidder also has to mention the period for which project is under successful implementation in the Brief description of the project.
5. Please mention only those projects which meet the criteria of eligible bidder.

B. List of works which are intended to be subcontracted by the bidder

S. No.	Name of Work

Section – 7

**PROFORMA FOR
QUERIES,
COMPLIANCE STATEMENT,
DEVIATION STATEMENT,
BILL OF MATERIAL,
BID LETTER FORM,
BID SECURITY FORM
PERFORMANCE BANK GUARANTEE
AND
OEM’S CERTIFICATE**

Queries

Name of the bidder: _____

Sr. No.	Section No.	Clause No.	Page No.	Queries

Compliance Statement**A) Technical (Section – 5)**

S. No.	Tender Clause No.	Page No.	Specifications Asked For	Model Offered	Compliance (Complied/ Not complied)	*Documentary reference	Comments

Note:

1. Bidder shall not use any other words except complied or not complied. The words like noted, seen, partially complied etc. will not be acceptable.
2. Failure to provide documentary evidence in the prescribed format may result in rejection of bid. (As this clause is very important, bidder may clarify this clause, if required, during the pre-bid meeting).

* Bidders to provide documentary proof/reference for each and every clause mentioned in the tender document. All the documentary proof/reference pages should be numbered, and only the relevant statement in the document should be highlighted indicating the compliance to corresponding clause no. In addition, the original tender document countersigned in all pages should be submitted along with the bid.

B) Non-Technical (All other sections)

S. No.	Tender Clause No.	Page No.	Description	Compliance (Complied/ Not complied)	*Documentary proof reference	Comments

Note:

1. Bidder shall not use any other words except complied or not complied. The words like noted, seen, partially complied etc. will not be acceptable.
2. Failure to provide documentary evidence in the prescribed format may result in rejection of bid. (As this clause is very important, bidder may clarify this clause, if required, during the pre-bid meeting).

* Bidders to provide documentary proof/reference for each and every clause mentioned in the tender document. All the documentary proof/reference pages should be numbered, and only the relevant statement in the document should be highlighted indicating the compliance to corresponding clause no.

Deviation Statement

Sr. No.	Section No.	Clause No.	Page No.	Deviation	Remarks

**Bill of Material (location-wise)
For SHQ / DHQ / SDHQ / BHQ**

Sr. No.	Product Description	Model	Make & OEM Details	Line Item wise Qty.	Qty.	Remarks

Note: The Bidder shall specify the Bill of Material separately for all the locations viz. SHQ, DHQ, SDHQ/BHQ.

1. The product should be mentioned with brand & model number specifically.
2. **No equivalent item against any product is acceptable.**

Bid Letter Form

From

Date

(Registered name and address of the Bidder.)

To
The Secretary,
Meghalaya Information Technology Society
NIC Building, Ground Floor,
Secretariat Hill,
Shillong-793001,
Meghalaya.

Sir,

Having examined the bidding documents, we the undersigned, offer to implement the MSWAN project on BOOT Model for provision of the services as detailed in the bidding document in response to your RFP No. **MSWAN/.....** dated

Project title: Meghalaya State Wide Area Network (MSWAN)

If our Bid is accepted, we undertake to;

1. Implement the MSWAN project on BOOT Model and provide services for a period of 5 years in conformity with the bidding documents (and as amended from time to time) for quarterly guaranteed revenue as provided in the Finance bid.
2. Execute all contractual documents and provide all securities & guarantees as required in the bid document (and as amended from time to time)
3. Implement the MSWAN project and provide the requisite services within the time frame as defined in the bid documents (and as amended from time to time)
4. Maintain validity of the Bid for a period of 180 days from the date of Bid opening as specified in the bidding document, which shall remain binding upon us and may be accepted at any time before the expiration of that period.

Dated this _____ day of _____.

Signature

.....
(in the capacity of)

Duly Authorised to sign bid for and on behalf of

Witness:

Address:

Bid Security Form

Whereas
(hereinafter called "the Bidder") has submitted his bid dated..... for the
Implementation of MSWAN project on BOOT Model (hereinafter called "the Bid").

KNOW ALL MEN by these presents that WE.....
(Branch Name) of (Bank Name)
having our registered office at
(hereinafter called "the BANK") are bound unto MITS in the sum of Rs. 25,00,000/-
(Rupees Twenty Five Lakhs Only) for which payment well and truly to be made to the
said MITS, the BANK binds itself, its successors and assigns by these presents.
Sealed with the Common Seal of the said BANK this..... day of
.....2008.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws their Bid during the period of Bid validity specified by them on the Bid letter form
2. If Bidder does not respond to requests for clarification of their Bid
3. If Bidder fails to co-operate in the Bid evaluation process, and
4. In case of a successful Bidder, if the said Bidder fails or refuses:
 - a) to sign the Concession Agreement in time; or
 - b) to furnish Performance Guarantee

We undertake to pay the MITS upto the above amount upon receipt of its first written demand, without the MITS having to substantiate its demand, provided that in its demand the MITS will note that the amount claimed by it is due to it owing to the occurrence of anyone or more of the above conditions specifying the occurred condition or conditions.

This Guarantee will remain in force upto and including 60 days after the period of bid validity, and any demand in respect thereof should reach the BANK not later than the above date.

(Signature of the BANK)

Name of Witness (Signature of the Witness)

Address of Witness Date:

Performance Bank Guarantee

(To be stamped in accordance with Stamp Act)

Ref: Bank Guarantee No. :
Date:

To
The Secretary,
Meghalaya Information Technology Society
NIC Building, Ground Floor,
Secretariat Hill,
Shillong-793001,
Meghalaya.

Dear Sir,

WHEREAS (Name of Operator) hereinafter called "the Operator" has undertaken, in pursuance of Contract dated, 2008 (hereinafter referred to as "the Contract") to implement the Meghalaya State Wide Area Network ("MSWAN"), on BOOT Model for the Meghalaya Information Technology Society ("MITS").

AND WHEREAS it has been stipulated in the said Contract that the Operator shall furnish a Bank Guarantee ("the Guarantee") from a scheduled bank for the sum specified therein as security for the performance of MSWAN as per the agreement.

WHEREAS we _____ ("the Bank", which expression shall be deemed to include its successors and permitted assigns) have agreed to give the Meghalaya Information Technology Society ("MITS") the Guarantee:

THEREFORE the Bank hereby agrees and affirms as follows:

1. The Bank hereby irrevocably and unconditionally guarantees the payment of all sums due and payable by the Operator to MITS under the terms of their Agreement dated _____ on account of full or partial non-implementation and/ or delayed and/ or defective implementation. Provided, however, that the maximum liability of the Bank towards GoM under this Guarantee shall not, under any circumstances, exceed _____ in aggregate.
2. In pursuance of this Guarantee, the Bank shall, immediately upon the receipt of a written notice from MITS stating full or partial non-implementation and/ or delayed and/ or defective implementation, which shall not be called in question, in that behalf and without delay/demur or set off, pay to GoM any and all sums demanded by MITS under the said demand notice, subject to the maximum limits specified in Clause 1 above. A notice from GoM to the Bank shall be sent by Registered Post (Acknowledgement Due) at the following address:

Attention Mr. _____.

3. This Guarantee shall come into effect immediately upon execution and shall remain in force for a period of 72 months from the date of its execution or until 61 months from the date of Final Acceptance certificate for MSWAN as mentioned in the contract, whichever is later.
4. The liability of the Bank under the terms of this Guarantee shall not, in any manner whatsoever, be modified, discharged, or otherwise affected by:
 - i) any change or amendment to the terms and conditions of the Contract or the execution of any further Agreements.
 - ii) any breach or non-compliance by the Operator with any of the terms and conditions of any Agreements/credit arrangement, present or future, between Operator and the Bank.
5. The BANK also agrees that MITS at its option shall be entitled to enforce this Guarantee against the Bank as a Principal Debtor, in the first instance without proceeding against OPERATOR and not withstanding any security or other guarantee that GoM may have in relation to the Operator's liabilities.
6. The BANK shall not be released of its obligations under these presents by reason of any act of omission or commission on the part of MITS or any other indulgence shown by MITS or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the BANK.
7. This Guarantee shall be governed by the laws of India and only the courts of Shillong shall have exclusive jurisdiction in the adjudication of any dispute which may arise hereunder.

Dated this the Day of2008

Witness

(Signature)

(Signature)

(Name)

Bank Rubber Stamp
(Name)

(Official Address)

Designation with Bank Stamp
Plus Attorney as per Power of
Attorney No.
Dated:

Original Equipment Manufacturer's Certificate

From

Date

(Registered name and address of the OEM.)

To
The Secretary,
Meghalaya Information Technology Society
NIC Building, Ground Floor,
Secretariat Hill,
Shillong-793001,
Meghalaya.

Sir,

We, M/s _____ warrant all the equipments to be supplied by us against NIT No. _____ hereunder shall be brand new, free from all encumbrances, defects and faults in material. Workmanship and manufacturing shall be of the highest grade and quality and consistent with the established and generally accepted standards. Materials of the type ordered shall be in full conformity with the specifications, drawings or samples, if any, and shall operate properly.

We, M/s _____ also undertake that the spares of every equipment to be supplied by us hereunder shall be made available to GoM/MITS for the next 5 years from the date of Final Acceptance Test.

I am fully authorized to give this certificate on behalf of M/s _____ and the power of attorney has been executed in my favour (Attested copy enclosed).

(Signature of OEM)

.....
(Authorized Signatory)

(Signature of the Bidder)

.....
(Authorized Signatory)

Name of Witness (Signature of the Witness)

Address of Witness Date:

**Techno-commercial Evaluation Form
(Organization Strength, FMS Experience and Presence in Northeast)**

Sr. No.	Criteria	Bidder's Response	Page Number of Reference Documents
A	Organizational Strength		
1	Networking experience in number of years* (Number of Years* of providing networking solutions in India. To be verified as per the date of first completed assignment)		
2	WAN deployment and implementation (All "Successfully Completed" / "Ongoing Projects in case of BOOT" with each having at least 20 WAN nodes for the last 4 years* – supported by satisfactory completion/operation certificate from client- would be considered.)		
3	WAN with converged network (All "Successfully Completed" / "Ongoing Projects in case of BOOT" with each having at least 20 WAN nodes for the last 4 years* – supported by satisfactory completion/operation certificate from client- would be considered.) (Projects satisfying criteria for both point no. 2 & 3 will be counted in both the points)		
4	Network Operating Centre management (Number of projects to be considered)		
5	BOOT Model experience (All Successfully Completed / Ongoing Projects - supported by satisfactory completion/operation certificate from client- would be considered)		
6	Resource Base Capabilities (Numbers and qualifications)		
7	Quality Certifications (Number of internationally accepted and renowned quality certifications with the lead organization)		
8	Turnover in System Integration and Facility Management work – The lead bidder should have a minimum average annual turnover in System Integration and Facility Management work of Rs. 15 crores in last three financial years and must have a positive net worth		
B.	Experience in FMS		
1	Number of FM projects (Number of facility Management assignments undertaken by the organization)		

Request For Proposal

Sr. No.	Criteria	Bidder's Response	Page Number of Reference Documents
2	Nature of FM projects (Size, scale and exact scope of work for the facility management assignments undertaken by the organization)		
3	SLA Management Experience in the cited FM projects		
C. Presence and Experience in Meghalaya & other North East states			
1	Presence of bidder in Meghalaya (Total number of the organization's offices in the State of Meghalaya)		
2	Number of Manpower Resources deployed in the state of Meghalaya (on the Organization's Payroll)		
3	Project Experience in Meghalaya – IT / Networking Projects – Number of completed or under implementation projects		
4	Project Experience in Other North Eastern states – IT / Networking projects – Number of completed or under implementation projects		

* - Ending last day of the month previous to the one in which bids submission process is closed.

Note: The bidder has to separately attach supporting documents in the Techno-commercial bid for all the points mentioned in the above form.

Section – 8

FINANCIAL BID

Request For Proposal

Format A(1): Vertical Connectivity

S. No.	Description	No. of Units (A)	Unit value for a Quarter period (Rs.)		Quarterly Guaranteed Revenue (Rs.) (D) = A x (B + C)	Total QGR for 5 years (Rs.)	
			CAPEX (B)	OPEX (C)		E = D x 20	
					In Figure	In Words	
1.	Supply, Installation, Operation*, maintenance and provision of services at SHQ with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	1					
2.	Supply, installation, operation*, maintenance and provision of services for 7 DHQs with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	7					
3.	Supply, installation, operation*, maintenance and provision of services for 8 SDHQs with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	8					
4.	Supply, installation, operation*, maintenance and provision of services for 25 non-remote BHQs with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	25					
5.	Supply, installation, operation*, maintenance and provision of services for 14 remote BHQs connected via VSATs with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	14					
6.	Supply, Installation, operation and maintenance of IP Phone Type-1 (This figure should match with the figure given in Format B)	55					
Sub-total A(1)							

* Operation includes: Supply, installation & commissioning of all the desired & other relevant equipments which are required for readiness of network for delivery of asked services.

Format A(2): Horizontal Connectivity

Sr. No.	Description	No. of Units			Unit Value for a Quarter Period (Rs.)						Quarterly Guaranteed Revenue (Rs.)			Total QGR for 5 years (Rs.)		
					CAPEX			OPEX								
		SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)= (D+G) x A	(K)= (E+H) x B	(L)= (F+I) x C	(M)= J x 20	(N)= K x 20	(O)= L x 20
1	Supply, installation, operation*, maintenance and provision of services for horizontal office at SHQ/DHQ/SDHQ connected through 2 Mbps Lease Line or appropriate bandwidth with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	10	(7x5) = 35	(8x1) = 8												
2	Supply, installation, operation*, maintenance and provision of services for horizontal office at SHQ/DHQ/SDHQ connected through OFC (within 3 Kms of the SHQ/DHQ/SDHQ) with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	5	(7x2) = 14	-												
3	Supply, installation, operation*, maintenance and provision of services for horizontal office at SHQ/DHQ/SDHQ connected through RF (within 10 Kms of the SHQ/DHQ/SDHQ) with data, voice and video services as per the technical and operational requirements as specified in the RFP document.	5	(7x3) = 21	(8x1) = 8												

Request For Proposal

Sr. No.	Description	No. of Units			Unit Value for a Quarter Period (Rs.)						Quarterly Guaranteed Revenue (Rs.)			Total QGR for 5 years (Rs.)		
					CAPEX			OPEX								
		SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ	SHQ	DHQ	SDHQ / BHQ
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)= (D+G) x A	(K)= (E+H) x B	(L)= (F+I) x C	(M)= J x 20	(N)= K x 20	(O)= L x 20
4.	Supply, Installation, operation and maintenance of IP Phone Type-1 (This figure should match with the figure given in Format B)	19	21	-												
5.	Supply, Installation, operation and maintenance of IP Phone Type-2 (This figure should match with the figure given in Format B)	10	7	-												
6.	Supply, Installation, operation and maintenance of VC Endpoint (This figure should match with the figure given in Format B)	3	7	-												
Sub-Total A(2) = Sum of total QGRs of SHQ [1(M)+2(M)+3(M)+4(M)+5(M)+6(M)], DHQ [1(N)+2(N)+3(N)+4(N)+5(N)+6(N)] and SDHQ/BHQ [1(O)+2(O)+3(O)+4(O)+5(O)+6(O)] (in figure):																
Sub-Total A(2) in words:																

*** Operation includes:** Supply, installation & commissioning of all the desired & other relevant equipments which are required for readiness of network for delivery of asked services.

Format A (3): Site Preparation Cost

Sr. No.	Description	Size of Room (sq. feet)/No. of Units	No. of Rooms	Total Qty required	Per Sq. Feet Cost or Unit Price (Rs.)	Site Preparation Cost (Rs.)	
						Per QGR	Total QGR in 5 years
						A	B
1	Site preparation of WAN Control Room, VC Room, Generator Room at SHQ as per the technical and operational requirements given in the RFP. (Please specify cost, make, quantity and quality certification of each sub point separately as given below)						
1A	a. WAN Control Room Size (400 sq. feet) Site Preparation Items (Give per square feet cost) False flooring (Anti Static) False Ceiling POP Plastic Paint Doors Signage Lights Partitioning (glass) Light/Power points (5/15 Amps) Blinds Any other item	400 sq. feet	1	400 sq. feet			
	b. Furniture (Give per unit cost)	Table(s)	2	1	2		
		Chair(s)	10	1	10		
	c. Split AC – 2 ton (Give per unit cost)		4	1	4		

Request For Proposal

Sr. No.	Description	Size of Room (sq. feet)/No. of Units	No. of Rooms	Total Qty required	Per Sq. Feet Cost or Unit Price (Rs.)	Site Preparation Cost (Rs.)		
						Per QGR	Total QGR in 5 years	
						A	B	C=A x B
1B	a. VC Room (900 sq. feet)							
	Site Preparation Items (Give per square feet cost)		900 sq. feet	1	900 sq. feet			
	Floor Carpeting False Ceiling POP Plastic Paint Door(s) Signage Lights Partitioning (glass) Light/Power points (5/15 Amps) Blinds Any other item							
	b. Furniture (Give per unit cost)							
		VC Table for 25 persons	1	1	1			
		Chairs for 25 persons	25	1	25			
	c. Split AC - 2 ton (Give per unit cost)		4	1	4			
1C	Generator room (150 sq. feet)		150 sq. feet	1	150 sq. feet			
	1.1.1 Site Preparation Items							
	Bidder to mention the items							
Sub-total (W) = Total Site Preparation Cost of WAN Control Room, VC Room, and Generator Room at SHQ								

Request For Proposal

Sr. No.	Description	Size of Room (sq. feet)/No. of Units	No. of Rooms	Total Qty required	Per Sq. Feet Cost or Unit Price (Rs.)	Site Preparation Cost (Rs.)	
						Per QGR	Total QGR in 5 years
		A	B	C=A x B	D	E= C x D	E= D x 20
2	Site preparation of WAN Control Room, VC Room, Generator Room at DHQ as per the technical and operational requirements given in the RFP. (Please specify cost, make, quantity and quality certification of each sub point separately as given below)						
2A	a. WAN Control Room Size (300 sq. feet) Site Preparation Items (Give per square feet cost) False flooring (Anti Static) False Ceiling POP Plastic Paint Doors Signage Lights Partitioning (glass) Light/Power points (5/15 Amps) Blinds Any other item	300 sq. feet	7	2100 sq. feet			
	b. Furniture (Give per unit cost)	Table(s)	1	7	7		
		Chair(s)	6	7	42		
	c. Split AC – 1.5 ton (Give per unit cost)		2	7	14		

Request For Proposal

Sr. No.	Description	Size of Room (sq. feet)/No. of Units	No. of Rooms	Total Qty required	Per Sq. Feet Cost or Unit Price (Rs.)	Site Preparation Cost (Rs.)	
						Per QGR	Total QGR in 5 years
						A	B
2B	a. VC Room (900 sq. feet) Site Preparation Items (Give per square feet cost) Floor Carpeting False Ceiling POP Plastic Paint Door(s) Signage Lights Partitioning (glass) Light/Power points (5/15 Amps) Blinds Any other item	900 sq. feet	7	6300 sq. feet			
	b. Furniture (Give per unit cost)	VC Table for 25 persons	1	7	7		
		Chairs for 25 persons	25	7	175		
	c. Split AC – 2 ton (Give per unit cost)		4	7	28		
2C	Generator room (150 sq. feet) 1.1.2 Site Preparation Items Bidder to mention the items	150 sq. feet	7	150 sq. feet			
Sub-total (X) = Total Site Preparation Cost of WAN Control Room, VC Room, and Generator Room at DHQ							

Request For Proposal

Sr. No.	Description	Size of Room (sq. feet)/No. of Units	No. of Rooms	Total Qty required	Per Sq. Feet Cost or Unit Price (Rs.)	Site Preparation Cost (Rs.)	
						Per QGR	Total QGR in 5 years
		A	B	C=A x B	D	E= C x D	E= D x 20
3	Site preparation of WAN Control Room, Generator Room at SDHQ/BHQ as per the technical and operational requirements given in the RFP. (Please specify cost, make, quantity and quality certification of each sub point separately as given below)						
3A	a. WAN Control Room Size (150 sq. feet) Site Preparation Items (Give per square feet cost) False flooring (Anti Static) False Ceiling POP Plastic Paint Doors Signage Lights Partitioning (glass) Light/Power points (5/15 Amps) Blinds Any other item	150 sq. feet	47	7050 sq. feet			
	b. Furniture (Give per unit cost)	Table(s)	1	47	47		
		Chair(s)	4	47	188		
	c. Window AC – 1.5 ton (Give per unit cost)		1	47	47		
3B	Generator room (36 sq. feet) Site Preparation Items Bidder to mention the items	36 sq. feet	47	1692 sq. feet			
Sub-total (Y) = Total Site Preparation Cost of WAN Control Room and Generator Room at SDHQ/BHQ							

Request For Proposal

Sr. No.	Description	Size of Room (sq. feet)/No. of Units	No. of Rooms	Total Qty required	Per Sq. Feet Cost or Unit Price (Rs.)	Site Preparation Cost (Rs.)	
						Per QGR	Total QGR in 5 years
		A	B	C=A x B	D	E= C x D	E= D x 20
4	Site preparation for horizontal locations (Please specify cost, make, quantity and quality certification of each sub point separately as given below)						
	Bidder to mention the items						
Sub-total (Z) = Total Site Preparation Cost for horizontal locations							

Total Site Preparation Cost

Sr. No.	Description	Total Site Preparation Cost for 5 years	
		In figure	In words
1	Total Site Preparation Cost of WAN Control Room, VC Room, and Generator Room at SHQ [Sub-total (W)]		
2	Total Site Preparation Cost of WAN Control Room, VC Room, and Generator Room at DHQ [Sub-total (X)]		
3	Total Site Preparation Cost of WAN Control Room and Generator Room at SDHQ/BHQ [Sub-total (Y)]		
4	Total Site Preparation Cost for Horizontal locations [Sub-total (Z)]		
Total QGR for SHQ , DHQs, SDHQ/BHQs and Horizontal Locations = Sub-Total (A3) = Sub-total (W)+Sub-total (X)+Sub-total (Y)+ Sub-total (Z)			

Format A(4): Summary of Financial Bid

Sr. No.	Description	Total QGR for 5 years (20 QGRs)	
		(in Figures)	(in Words)
1	Total QGR for Vertical Connectivity - Format A(1) Sub-total A (1)		
2	Total QGR for Horizontal Connectivity - Format A(2) Sub-total A (2)		
3	Total QGR for Site Preparation cost - Format A(3) Sub-total A(3)		
Bid Price = Sub-total A(1) + Sub-total A(2) + Sub-total A(3)			

Request For Proposal

Format B(1)

BOM – Vertical components														
Sr. No.	Item		Quantities			Unit Value for a Quarter Period (Rs.)						Unit QGR (Rs.)		
			SHQ (a)	DHQ (b)	SDHQ/BHQ (c)	Capex			Opex			SHQ (j)= (d)+ (g)	DHQ (k)= (e)+ (h)	SDHQ/ BHQ (l)= (f) + (i)
						SHQ (d)	DHQ (e)	SDHQ/ BHQ (f)	SHQ (g)	DHQ (h)	SDHQ/ BHQ (i)			
1	Core Router		1	7	47									
2	Switch	Core Switch	1	7	47									
		Switch II	1	-	-									
3	Voice	IPEPBX	1	-	-									
		IP Phone Type – 1	1	7	47									
		IP Phone Type – 2	-	-	-									
4	NMS	Network Management	1	-	-									
		Helpdesk	1	-	-									
5	IPS		1	-	-									
6	Firewall		1	-	-									
7	Server (Hardware)	Proxy	1	-	-									
		AAA	1	-	-									
		NMS	1											
		DNS	1											
		Email	1	-	-									
8	Desktop PC		1	7	47									
9	Video Conference Equipment	MCU	1	-	-									
		Video Conferencing End point with 42 inch plasma screen (studio based)	-	-	-									
10	Power backup	UPS	1	7	47									
		Genset	1	7	47									

Request For Proposal

11	Passive Components	Fiber	Cable	LS	LS	LS												
			Patch Panel	LS	LS	LS												
			Patch Cord	LS	LS	LS												
		UTP	Cable	LS	LS	LS												
			Patch Panel	LS	LS	LS												
			Patch Cord	LS	LS	LS												
I/O			LS	LS	LS													
12	Infrastructure	AC in PoPs (as per Clause 1.3 of Section-4)		4	14	47												
		Lighting	CFL	POP	40	112	470											
				Genset Room	2	14	94											
		Any other item	POP															
			Genset Room															
		Furniture	Chairs	POP	10	42	188											
			Tables	POP	2	7	47											
		Equipment Grounding/ Earthing provision			1	7	47											
Any other item																		
13	VSAT Equipment for connectivity of remote blocks			-	-	14												
14	Modem			-	AS PER SOLUTION	33												
15	Access Router			-	-	-												
16	Access Switch			-	-	-												
17	Internet Router			1														
18	OFC with laying per meter			LS	LS	LS												
19	Any Leftover Item																	
Note:	The above BOM is indicative only. The complete BOM is the responsibility of the bidder and he will specify the details of the same in his priced/unpriced bid.																	

Request For Proposal

Format B(2)

BOM – Horizontal connectivity and additional items															
Sr. No.	Item		Quantities			Unit Value for a Quarter Period (Rs.)						Unit QGR (Rs.)			
						Unit Rate(Capex)			Unit Rate(Opex)						
			SHQ (a)	DHQ (b)	SDHQ/BHQ (c)	SHQ (d)	DHQ (e)	SDHQ/BHQ (f)	SHQ (g)	DHQ (h)	SDHQ/BHQ (i)	SHQ (j)= (d)+ (g)	DHQ (k)= (e)+ (h)	SDHQ/BHQ (l)= (f) + (i)	
1	Access Router		10	35	8										
2	Access Switch		20	70	16										
3	Wireless Base Station		1	7	8										
4	Wireless Access point		5	21	8										
5	IP Phone	Type 1	19	21	-										
		Type 2	10	7	-										
6	Video Conferencing End point with 42 inch plasma screen (Studio Based)		3	7	-										
7	Video Conferencing system – Desktop software based		-	-	47										
8	Passive Components	Fiber	Cable	LS	LS	LS									
			Patch Panel	LS	LS	LS									
			Patch Cord	LS	LS	LS									
		UTP	Cable	LS	LS	LS									
			Patch Panel	LS	LS	LS									
			Patch Cord	LS	LS	LS									
		I/O	LS	LS	LS										
9	Modem		10	35	8										
10	Antivirus		1	-	-										
11	OFC with laying per meter		LS	LS	LS										
12	Any Leftover Item														
Note:	1.The above BOM is indicative only. The complete BOM is the responsibility of the bidder and he will specify the details of the same in his priced/unpriced bid.														

Section – 9

INFORMATION BY BIDDERS

It is mandatory to provide details for the following points. Fill the tables and submit along with the Techno-commercial bid:

1. Funding arrangement & Debt Equity Ratio for this project.
2. Network Design & Solution with Protocols & Interfaces proposed for different services and QoS.
3. Details of connectivity for offices within 500 meters from WAN centres viz. cable, interface equipment, digging, trenching etc
4. End to end transmission delay for voice i.e. from SDHQ/BHQ, DHQ, and SHQ, to other SDHQ/BHQ and DHQ.
5. Scalability (Centers, Interfaces & Bandwidth supported).
6. Methodology of Bandwidth Optimization.
7. Level of Redundancy provided at SHQ, DHQ, SDHQ / BHQ.
8. Provide details of NMS and standards used.
9. Provide details of network performance monitoring and reports generated.
10. Methodologies for providing Internet access to users at different levels/ centers.
11. Details of proposed Firewall, IPS/ IDS & Antivirus.
12. Diagnostics facilities available.
13. Details of numbering scheme proposed for data.
14. Details of numbering scheme proposed for voice.
15. Mean Opinion Score (MOS) at 8 Kbps for voice.
16. Details of Security including physical access.
17. Provision of Spares details at each centre.
18. Details of documentation at each centre.
19. Details of Training Plan.
20. Project Implementation Plan with Time Schedule.
21. Compatibility with other products.
22. Organization Setup & Man power deployment for this project.
23. Methodology for Operation & Maintenance.
24. Proposed Help Desk Facility.
25. Details of human resources proposed to be deployed at all levels eg NOC, SHQ, DHQ,SDHQ/ BHQ and Helpdesk services

FORMAT 1 – Overview of Transport Details**A - SHQ to DHQ Links (including horizontal connectivity)**

	Parameter	Bidder's Response	Remarks
1	Gross Overhead:		
A	For Management		For Network Management information to flow
B	Other Overhead		Such as packet overhead etc.
	For Data For Voice For Video		Provide details for each
2	Bandwidth allocation breakup of 2 Mbps:		
A	For Voice		
B	For Data		
C	For Video		
3	Quality of Service:		
A	QoS for Voice		Indicate how QoS is guaranteed
B	QoS for Data		Indicate how QoS is guaranteed
C	QoS for Video		Indicate how QoS is guaranteed
4	Transmission Delay:		
A	For Voice		Specify the Transmission Delay – Minimum, Maximum etc.
B	For Data		Specify the Transmission Delay – Minimum, Maximum etc.
D	For Video		Specify the Transmission Delay – Minimum, Maximum etc.

B - DHQ to SDHQ/BHQ Links (including horizontal connectivity)

	Parameter	Bidder's Response	Remarks
1	Gross Overhead:		
A	For Management		For Network Management information to flow
B	Other Overhead		Such as packet overhead etc.
	For Data For Voice		Provide details for each
2	Bandwidth allocation breakup of 2 Mbps:		
A	For Voice		
B	For Data		
3	Quality of Service:		
A	QoS for Voice		Indicate how QoS is guaranteed
B	QoS for Data		Indicate how QoS is guaranteed
4	Transmission Delay:		
A	For Voice		Specify the Transmission Delay – Minimum, Maximum etc.
B	For Data		Specify the Transmission Delay – Minimum, Maximum etc.

FORMAT 2 – Site Preparation Details

	Item	Centre			Remarks
		SHQ	DHQ	SDHQ/BHQ	
I	Air-Conditioning				
1	Air-Conditioning provided				Indicate the provisioning of A/C in various locations by “√” mark & absence by “x” mark.
2	Area under Air-Conditioning				Specify the area in various locations in sq. ft.
3	Air-Conditioner capacity				Indicate capacity in various locations in Tonnes.
II	Equipment Racks				
1	Quantity & Type				Indicate Type (rack size, Open or Closed etc.) and Quantity
III	Protection				
1	Line protection for external wiring				Give details of GD tubes used etc.
IV	Power Input				Indicate Power Input in Amperage

Note - The space requirement at centres is envisaged by GoM as follows:

- SHQ –20 x 20 feet WAN Control Room; 30 x 30 Video Conference Room & 15 x 10 feet for Genset room
- DHQ –20 x 15 feet WAN Control Room; 30 x 30 Video Conference Room & 15 x 10 feet for Genset room
- SDHQ/BHQ–15 x 10 feet WAN Control Room & 6 x 6 feet for Genset room

However bidder shall specify the space requirements for his equipment at each location at each level.

FORMAT 3 – Power Backup

	Item	Center		
		SHQ	DHQ	SDHQ/BHQ
I	Power Backup System *			
1	UPS			
2	Generator			
II	Rating			
1	UPS Rating (in KVA)			
2	Generator Rating (in KVA)			
III	Power Calculation			
1	Nominal load (KVA) **			
2	Hours of backup provided during AC mains failure			

- * - Indicate the presence of the Power Backup System (UPS, Generator) in various locations (SHQ, DHQs, SDHQs/BHQs) by “✓” mark & absence by “✗” mark.
- ** - Give the Total Electrical Load i.e. the Equipment Load plus the Other Load. Attach a detailed sheet showing the list of equipment and the load calculation.

FORMAT 4 – Operations

FORMAT 4A - Operator's Offices & Working Hours

	Item	Level*			Total
		State	District	Sub-division/ Blocks	
1	Total no. of offices				
2	Working days per week				
3	Working Hours per day & Timings				
4	No. of Holidays & List				

* Including horizontal offices

FORMAT 4B - Manpower

	Name of the post	SHQ*		
		Qualification	Experience	Remarks
I	Project Manager			
1Name			
II	Network Engineer			
1Name			
2Name			
3Name			

* Including horizontal offices

	Name of the post	DHQ & SDHQ/BHQ*		
		Qualification	Experience	Remarks
I	Network Engineer			
1Name			
2Name			

* Including horizontal offices

Appendix -1

LIST OF DISTRICTS, SUB-DIVISIONS AND BLOCKS

LIST OF DISTRICTS, SUB-DIVISIONS AND BLOCKS

The SHQ, DHQ, SDHQ & BHQ PoP's will be located at the State Secretariat, District Commissioner / District Collector's Office, Sub Divisional Officer's (SDO) office & Block Development Officer's (BDO) office respectively. List of Districts, Subdivisions and Blocks is given below:

S.No	District	Subdivision	Block
1	East Khasi Hills	Sohra	Shella*
			Mawsynram
			Khadar Shnong
			Mawphlang
			Mylliem
			Mawkynrew*
			Pynursla*
		Mawryngkneng	
2	West Khasi Hills	Mairang	Mawshynrut
		Mawkyrwat	Nongstoin
			Ranikor*
			Mawkyrwat
			Mawthadraishan
		Mairang	
3	Jaintia Hills	Amlarem	Thadlaskein
		Khliehriat	Laskein*
			Saipung*
			Khliehriat
			Amlarem
4	Ri Bhoi		Jirang
			Umling
			Umsning
5	East Garo Hills	Resubelpara	Resubelpara
			Kharkutta
			Rongjeng
			Samanda*
			Songsak
6	WestGaro Hills	Dadenggiri	Tikrikilla
		Ampati	Dadenggiri
			Selsella
			Rongram*
			Betasing*
			Dalu

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			Gambegre*
			Zikzak*
7	South Garo Hills		Chokpot
			Gasupara*
			Baghmara*
			Rongra*

* - Blocks where leased line link is currently not available.

Appendix -2

RESPONSIBILITY MATRIX

RESPONSIBILITY MATRIX

Sl. No	Activity	GoM/ MITS	Consultant	Network Operator	Third Party Monitoring Agency
1	Preparation of RFP for the Selection of SWAN Operator		√		
2	Tender Process for the Selection of SWAN Operator	√	√		
3	Approval for Appointment of SWAN Operator	√			
4	Review and suggestion on the Network Architecture			√	
5	Site Identification	√	√	√	
6	Site Handover	√	√	√	
7	Site Survey and Preparation		√	√	
8	Installation and Commissioning of the SWAN	√	√	√	
9	Monitoring the Installation and Commissioning of the SWAN	√	√	√	
10	Acceptance Tests (Partial & Final Acceptance)		√	√	
11	Onsite Inspection and Verification of Acceptance Tests	√	√	√	√
12	Trial Run	√	√	√	√
13	Witness of Trial Run	√	√	√	√
14	Issue of Final Acceptance Test Certificate	√	√	√	√

Appendix -3

TECHNOCOMMERCIAL EVALUATION CRITERIA

Techno-Commercial Evaluation Criteria

Sr. No.	Criteria	Point System	Points
A	Organizational Strength		30
1	Networking experience in number of years* (Number of Years* of providing networking solutions in India. To be verified as per the date of first completed assignment)	>10 = 4 points; 7-10 = 3 points; 5-6 = 2 points; 3-4 = 1.5 point; 2-1 = 1 point; else 0	4
2	WAN deployment and implementation (All "Successfully Completed" / "Ongoing Projects in case of BOOT" with each having at least 20 WAN nodes for the last 4 years* – supported by satisfactory completion/operation certificate from client- would be considered.)	Total Nodes taking into account all projects : > 250 = 4 points ; 250-200 = 3 points; 199 - 150 = 2.5 points; 149 - 100 = 1.5 point; 99 - 50 = 0.5 point ; else 0	4
3	WAN with converged network (All "Successfully Completed" / "Ongoing Projects in case of BOOT" with each having at least 20 WAN nodes for the last 4 years* – supported by satisfactory completion/operation certificate from client- would be considered.) (Projects satisfying criteria for both point no. 2 & 3 will be counted in both the points)	Total Nodes taking into account all projects : > 250 = 4 points ; 250-200 = 3.5 points; 199 - 150 = 3 points; 149 - 100 = 2 points; 99 - 50 = 1 point ; else 0	4
4	Network Operating Centre management (Number of projects to be considered)	5 or more Projects = 3 points; 3-4 projects = 2 points; 1-2 projects = 1 point; else 0	3
5	BOOT Model experience (All Successfully Completed / Ongoing Projects - supported by satisfactory completion/operation certificate from client- would be considered)	4 or more projects = 3 points; 3 projects = 2.5 points; 2 projects = 2 points; 1 project = 1 point; else 0	3
6	Resource Base Capabilities (Numbers and qualifications)	1) Project Manager: [> 25 = 1.5 points; 10 - 25 = 1 point; else 0] 2) OEM Certified Network Engineers [> 50 = 1.5 points; 20 - 50 = 1 point; else 0] 3) Security Product certified Professionals [> 25 = 1 point; 10 - 25 = 0.5 point; else 0]	4
7	Quality Certifications (Number of internationally accepted and renowned quality certifications with the lead organization)	BS7799/ISO 27001 + ISO 9000 = 3 points; BS7799/ISO 27001 = 2 points; ISO 9000 = 1 point; else = 0	3

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8	Turnover in System Integration and Facility Management work – The lead bidder should have a minimum average annual turnover in System Integration and Facility Management work of Rs. 15 crores in last three financial years and must have a positive net worth	>Rs. 100 crores = 5 points; Rs. 100 – 75 crores = 4 points; Rs. 75 - 50 crores = 3 points; Rs 50 – 30 crores = 2 points; Rs. 30 -15 crores = 1 point; else 0	5
B. TECHNICAL SOLUTION OFFERED			50
1	Solution Description	Marks to be awarded by Technical committee on the basis of solution offered:	25
1a	Wide Area Network	<p>If both performance (Backplane, Forwarding Throughput) and port requirement of Core routers and switches at all levels are being met as per minimum asked in RFP - 4.5 points;</p> <p>If the performance (Backplane, Forwarding Throughput) or port requirement of Core routers and switches at all levels is better than minimum asked in RFP - 5 points;</p> <p>If both performance (Backplane, Forwarding Throughput) and port requirement of Core routers and switches at all levels are better than the minimum asked in RFP - 6 points</p>	6
1b	Wireless solution	<p>If both distance support and port requirement in wireless solution are being met as per minimum asked in RFP - 1.5 points;</p> <p>If both distance support and port requirement in wireless solution are better than the minimum asked in RFP - 2 points;</p>	2
1c	VSAT Solution	<p>If minimum requirements as asked in RFP for VSAT solution are being met - 2 points;</p> <p>Based on Improvements / Innovations / suggestions proposed by the bidder for giving a better VSAT solution, the Evaluation Committee may give maximum 1 point extra</p>	3
1d	NMS + Helpdesk facilities	<p>If minimum requirements as asked in RFP for NMS and Helpdesk facilities are being met - 1.5 points;</p> <p>If the bidder comes out with high availability solution and additional tools for monitoring and auditing, the Evaluation Committee may consider to</p>	2

Request For Proposal

		give 0.5 extra point	
1e	Horizontal connectivity + LAN	<p>If minimum requirements as asked in RFP for Horizontal connectivity and LAN performance are being met - 2 points;</p> <p>Based on additional ports, performance (backplane, throughput) and connectivity options with respect to minimum asked in RFP, the Evaluation Committee may give maximum 1 point extra</p>	3
1f	Security Services	<p>If minimum performance (Backplane, Throughput, concurrent sessions / simultaneous connections, OEM signatures) as asked in RFP for security components (IPS, Firewall, AAA, Antivirus) are being met - 3 points;</p> <p>If performance (Backplane, Throughput, concurrent sessions / simultaneous connections, OEM signatures as applicable) as asked in RFP for all security components (IPS, Firewall, AAA, Antivirus) is better than the minimum asked in RFP</p> <p>and</p> <p>Based on Improvements proposed by the bidder the Evaluation Committee may give maximum 1 point extra</p>	4
1g	Power Solution - UPS + Genset	<p>If both performance of the UPS (Power rating, Battery backup) and technical specifications of Gensets at all levels are as per minimum asked in RFP - 2 points;</p> <p>If the performance of the UPS (Power rating, Battery backup) or technical specifications of Gensets at all levels is better than minimum asked in RFP - 2.5 points;</p> <p>If the performance of the UPS (Power rating, Battery backup) and technical specifications of Gensets at all levels are better than minimum asked in RFP - 3 points</p>	3

Request For Proposal

1h	Server Hardware + Desktop PCs	<p>If minimum requirements as asked in RFP for Server Hardware and Desktop PCs are being met - 1.5 points;</p> <p>If the specifications of Server Hardware and Desktop PC are both superior to minimum asked specifications in RFP, the Evaluation Committee may consider to give 0.5 extra point</p>	2
2	Description and Scalability of the solution offered	<p>Marks to be awarded by Technical committee on the basis of following points:</p> <p>a. Solution meeting the requirements - 3 points</p> <p>b. For scalability and high availability - 0.5 point</p> <p>c. Any improvement / innovation / suggestion in the proposed solution - 0.5 point</p>	4
3	Project Plan and Time Schedule	<p>Marks to be awarded by Technical committee on the basis of following points:</p> <p>a. Project Plan and Time Schedule meeting the requirements - 3 points</p> <p>b. Any significant improvement in project plan (excluding the time saving) - 1 point (maximum)</p> <p>c. Any improvement / innovation / suggestion in the project plan leading to the significant time saving - 1 point (maximum)</p>	5
4	Operations including SLA Implementation and Management Methodology Proposed	<p>Marks to be awarded by Technical committee on the basis of following points:</p> <p>a. All the SLA parameters can be measured and how reports will be generated for measuring SLA parameters (Attach a sample report) - 1.5 points (maximum)</p> <p>b. Helpdesk and chain management procedures to be followed - 1.5 points (maximum)</p> <p>c. Manpower plan for meeting the operational requirements - 1.5 points (maximum)</p> <p>d. Roadmap and support for deployment of future tools for auditing</p>	8

Request For Proposal

		purpose - 1.5 points (maximum) e. Any other improvement / innovation / suggestion - 2 points (maximum)	
5	Training	Marks to be awarded by Technical committee on the basis of following points: a. Training plans, modules proposed - 2 points (maximum) b. Faculty proposed for giving training - 1 point (maximum)	3
6	Core Project team including Number and Quality of People proposed for operations	If the manpower proposed for this project is as per the minimum manpower requirement given in RFP - 3.5 Additional points to be considered for awarding based on normalization of additional manpower proposed by bidders for this project - 1.5 points (maximum)	5
C.	EXPERIENCE IN FMS		10
1	Number of FM projects (Number of facility Management assignments undertaken by the organization)	Total Nodes taking into account all projects : > 200 = 3 points ; 150 - 200 = 2.5 points; 100-149 = 2 points; 50-99 = 1 point ; 25 - 49 = 0.5 ; else 0	3
2	Nature of FM projects (Size, scale and exact scope of work for the facility management assignments undertaken by the organization)	The scope of the Projects cited would be studied in detail and appropriate points would be awarded by the Committee. Bidders would score higher points if they display ability to perform FMS similar to that required in MSWAN - 3 points (maximum)	3
3	SLA Management Experience in the cited FM projects	The scope of the Projects cited would be studied in detail and appropriate points would be awarded by the Committee. Bidders would score higher points if they demonstrate SLA management similar to that required in MSWAN - 4 points (maximum)	4
D.	Presence and Experience in Meghalaya & other North East states		10
1	Presence of bidder in Meghalaya (Total number of the organization's offices in the State of Meghalaya)	>2 = 2 points; 2 = 1.5 points; 1 = 1 point; else 0	2
2	Number of Manpower Resources deployed in the state of Meghalaya (on the Organization's Payroll)	>50 = 2 points; 50 - 25 = 1.5 points; 25 - 10 = 1 point; else 0	2

Request For Proposal

3	Project Experience in Meghalaya – IT / Networking Projects – Number of completed or under implementation projects	>5 = 3 points; 5-4 = 2 points ; 3-2 = 1.5; 1 = 1 point; else 0	3
4	Project Experience in Other North Eastern states – IT / Networking projects – Number of completed or under implementation projects	>5 = 3 points; 5-4 = 2 points; 3-2 = 1.5 points; 1 = 1 point; else 0	3
Total Points			100

* - Ending last day of the month previous to the one in which bids submission process is closed.