

Tele: 23385536
Reply should be addressed to
Director (IT)

TATRAKSHAK MUKHYALAYA
Coast Guard Headquarters
National Stadium Complex
New Delhi – 110001

Quoting: IT/3014/LAN-SEC62

14 Jan 19

**INVITATION OF ONLINE BIDS FOR OPEN TENDER ENQUIRY NO.
CGHQ/IT/LAN-SEC62/2018-19 DESIGN, IMPLEMENTATION AND
MAINTENANCE OF CAMPUS LOCAL AREA NETWORKING AT CG COMPLEX,
NOIDA, SECTOR-62 - INDIAN COAST GUARD**

Dear Sir/Madam

1. **"Online bids" (Under two bid system)** are invited by the **Directorate of IT, Coast Guard Headquarters** for supply of items listed in **Part II** of this RFP. **Manual bids shall not be accepted. Tenders from black listed/ banned firms shall not be accepted. Tender document** can be viewed and downloaded from **Indian Coast Guard web site www.indiancoastguard.gov.in (for reference only)** and **CPPP site <https://eprocure.gov.in/eprocure/app>** as per the schedule given in **CRITICAL DATE SHEET** mentioned below:-

CRITICAL DATE SHEET

SL.	DESCRIPTION	DATE & TIME
(a)	Published Date	14 Jan 2019 (1700 HRS)
(b)	Bid Document Download / Sale Start Date	14 Jan 2019 (1700 HRS)
(c)	Clarification Start Date	14 Jan 2019 (1700 hrs)
(d)	Clarification end date	21 Jan 2019 (1200 hrs)
(e)	Pre-bid meeting	21 Jan 2019 (1200 hrs)
(f)	Bid submission start date	15 Jan 2019 (1200 hrs)
(g)	Bid Document Download / Sale End Date	05 Feb 2019 (1200 hrs)
(h)	Bid Submission End Date	05 Feb 2019 (1300 hrs)
(j)	Technical Bid Opening Date	06 Feb 2019 (1430 hrs)
(k)	Opening of Commercial Bids	Will be intimated in due course after technical evaluation by TEC

2. The address and contact numbers seeking clarifications regarding this RFP are given below:-

The Director General
{for Director (IT)}
Coast Guard Headquarters
National Stadium Complex, New Delhi-110001
Tele: 011-23385536, Fax: 011-23388090
Email: vprotect@indiancoastguard.nic.in

3. This RFP is divided into five Parts as follows:

- (a) Part I - Contains General Information and Instructions for the Bidders about the RFP such as the time, place of submission and opening of tenders, Validity period of tenders, etc.
- (b) Part II - Contains essential details of the items/services required, such as the Schedule of Requirements (SOR), Technical Specifications, Delivery Period, Mode of Delivery and Consignee details.
- (c) Part III - Contains Standard Conditions of RFP, which will form part of the Contract with the successful Bidder.
- (d) Part IV - Contains Special Conditions applicable to this RFP and which will also form part of the contract with the successful Bidder.
- (e) Part V - Contains Evaluation Criteria and Format for Price Bids.

4. This RFP is being issued with no financial commitment and the Buyer reserves the right to change or vary any part thereof at any stage. Buyer also reserves the right to withdraw the RFP, should it become necessary at any stage.

5. You are requested to comply with all the terms and condition mentioned in the RFP and certificate in this regard is to be endorsed on the quote submitted by your firm. Relaxation/deviation of terms/conditions if any, should be clearly brought out for consideration, however acceptance of same will solely be at discretion of Coast Guard. Part I, II, III, IV & V of the RFP are enclosed herewith. Abbreviations & Terminologies to be read as per **Appendix-'P'** and general instructions for online bid-submission as per **Appendix-'N'**.

6. Para marked with "Blank" will not be considered as part of RFP. Bid documents may be scanned with **100 dpi with black and white option, in PDF format** which helps in reducing size of the scanned document. **Bids shall be submitted online only at CPPP website: <https://eprocure.gov.in/eprocure/app>.**

7. Tenderer/Contractor are advised to follow the instructions provided in the 'Instructions to the Contractors/Tenderer for the e-submission of the bids online through the Central Public Procurement Portal for e-Procurement at **<https://eprocure.gov.in/eprocure/app>**'.

Yours sincerely,

(D Dinakaran)
Commandant
Joint Director (IT)
for Director General

Enclosures: -

- (a) **Enclosure-I** : Part I - General Information
- (b) **Enclosure-II** : Part II - Essential Details of Items/ Services Required
- (c) **Enclosure-III** : Part-III - Standard Conditions of RFP
- (d) **Enclosure-IV** : Part-IV - Special Conditions of RFP
- (e) **Appendix-'A'** : Scope of Work
- (f) **Appendix-'B'** : Technical Specifications
- (g) **Appendix-'C'** : Covering Letter to Bid Submission & Bid Check-off List
- (h) **Appendix-'D'** : Covering Letter to Technical Bid
- (j) **Appendix-'E'** : Technical Bid Compliance Sheet
- (k) **Appendix-'F'** : Covering Letter to Commercial Bid
- (l) **Appendix-'G'** : PQ POC Tests
- (m) **Appendix-'H'** : QCBS Evaluation Framework
- (n) **Appendix- 'J'** : QCBS POC for ROBO Data rack, NMS and NAC Software
- (q) **Appendix- 'K'** : Commercial Bid Format
- (r) **Appendix- 'L'** : Technical Solution Format
- (s) **Appendix- 'M'** : Details of Prime Bidder and Consortium of Vendors
- (t) **Appendix- 'N'** : Instructions and Bidders
- (u) **Appendix- 'P'** : Abbreviation and Terminology

PART I – GENERAL INFORMATION

1. Last date and time for depositing the Bids: As per critical date sheet.

The online Bids (both technical and Commercial, in case two bids are called for) should be uploaded as per this RFP by the due date and time. The responsibility to ensure this lies with the Bidder.

2. Manner of depositing the Bids: Online Bids should be scanned and uploaded before due date and time. Late tenders will not be considered. No responsibility will be taken for technical delay or not uploading of bids or Bid documents. Bids sent by FAX or e-mail will not be considered. Samples and EMD to be deposited manually at address mentioned in para 2 ibid before opening of Technical bid.

3. Time and date for opening of Bids: As per critical date sheet.

(If due to any exigency, the due date for opening of the Bids is declared a closed holiday, the bids will be opened on the next working day at the same time or on any other day/time, as intimated by the buyer).

4. Address for submission of EMD: Directorate of IT, CGHQ

5. Place of opening of the Bids: CGHQ (Directorate of IT).

6. Two-Bid system:

(a) The case is being processed on two-bid system and, the technical bids shall be opened as per critical date sheet mentioned in this tender document. The evaluation of technical Bid based on requisite documents received online by the tenderers will be carried out by a board of officers. The details of firms found compliant after TEC evaluation will be uploaded on the Central Public Procurement Portal (<https://eprocure.gov.in/eprocure/app>).

(b) The Commercial Bids of only those Bidders whose technical bids meet all the stipulated (Technical) requirements shall be opened. The date of opening will be intimated to the Bidders through Central Public Procurement Portal(<https://eprocure.gov.in/eprocure/app>).

7. Forwarding of Bids – Bids should be prepared, signed, scanned and uploaded by the Bidders on their original memo / letter pad. The copies of PAN No, TIN No, CST & VAT, bank details and other enclosures as per part II of RFP and are to be signed/self-attested and scanned with 100 dpi in black and white option in PDF format.

8. Details of Pre-bid Meeting: -As per critical date sheet.

A pre-bid meeting will be held to answer any queries or clarify doubts on RFP and submission of proposals. The authorized representatives are requested to attend. Particulars of personnel (only Indian nationals) attending the pre bid meeting is to be communicated for necessary arrangements at least two days in advance.

9. Clarification regarding contents of the RFP: A prospective bidder who requires clarification regarding the contents of the bidding documents shall notify to the Buyer in writing by the clarifications as per critical date sheet at address at mentioned above.

10. Modification and Withdrawal of Bids: The Bidder may modify (resubmit) his bid online after submission, as per the provisions available on the portal. No bid shall be modified after the deadline for submission of bids.

(a) If bidder desires to withdraw before bid submission closing date/time, he may do so **online** in the portal. EMD (in case) submitted in physical form shall be returned offline. However, the cost of the tender will not be refunded to the firm.

(b) No bid may be withdrawn in the interval between the deadline for submission of bids and expiry of the period of the specified bid validity.

11. Clarification regarding contents of the Bids: During evaluation and comparison of bids, the Buyer may, at its discretion, ask the bidder for clarification of his bid. The request for clarification will be given in writing and no change in prices or substance of the bid will be sought, offered or permitted. No post-bid clarification on the initiative of the bidder will be entertained.

12. Rejection of Bids: Canvassing by the Bidder in any form, unsolicited letter and post-tender correction may invoke summary rejection with forfeiture of EMD. Conditional tenders will be rejected.

13. Unwillingness to quote: Bidders unwilling to quote should ensure that intimation to this effect reaches by fax/e-mail before the due date and time of opening of the Bid, failing which the defaulting Bidder may be delisted for the given range of items as mentioned in this RFP.

14. Validity of Bids: The Bids should remain valid for **90 days** from the date of opening of tenders from the last date of submission of the Bids.

15. Earnest Money Deposit: -Bidders are required to submit Earnest Money Deposit (EMD) for amount of **Rs 18,00,000.00 (Rupees Eighteen lakh only)** in favour of "PCDA(N), Mumbai". The EMD may be submitted "**manually**" on or before opening of technical bid in the form of an Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the public sector banks or a private sector bank authorized to conduct government business as per Form DPM-16 (Available in MoD website and can be provided on request). EMD is to remain valid for a period of forty-five days beyond the final bid validity period. EMD of the unsuccessful bidders will be returned to them at the earliest after expiry of the final bid validity and latest on or before the 30th day after the award of the contract. The Bid Security of the successful bidder would be returned, without any interest whatsoever, after the receipt of Performance Security from them as called for in the contract. EMD is not required to be submitted by those Bidders who are registered with the Central Purchase Organization

(e.g. DGS&D), National Small Industries Corporation (NSIC) or any Department of MoD or MoD itself. The EMD will be forfeited if the bidder withdraws or amends impairs or derogates from the tender in any respect within the validity period of their tender. Hard Copy of original instruments in respect cost of earnest money be delivered to the Director General, Coast Guard Headquarters, National Stadium, New Delhi- 110 001 on or before bid opening date/time as mentioned in critical date sheet

PART II – ESSENTIAL DETAILS OF ITEMS/SERVICES REQUIRED

1. **Schedule of Requirements** – List of items / services required is as follows:-

(a) Design, implementation and maintenance of Campus Local Area Networking at CG Complex, Noida, Sector-62 based on proven Structured Cabling Standards including supply/ implementation of required IT infrastructure and onsite support manpower as required. Total of **1,500 IP points at Intranet LAN and 700 IP points at Internet LAN** to be provisioned for passive work and about 75% of active components to be provided with scalability upto 100% as part of project delivery. Project to **be implemented on turn-key basis** and vendor to include all required hardware/ software as required.

(b) Campus LAN Warranty for 01 year from final GoLive and 02 year All Inclusive Annual Maintenance Support (AIAMC) including onsite manpower support. Other OEM hardware/ software to be supplied with 03 year warranty with 24x7 support.

(c) Detailed Scope of Work as per **Annexure-'A'** of RFP.

(d) **Preliminary Examination of Bids:** - The Buyer will examine the bids to determine whether they are complete, whether the documents have been properly signed, and whether the bids are generally in order. Any bids found to be non-responsive for any reason or not meeting any criteria specified in the tender, will be rejected by the Buyer and shall not be included for further consideration. Initial Bid scrutiny will be held and bids will be treated as non-responsive, if bids are:

- (i) Not submitted in format as specified in the tender document
- (ii) Received without the Letter of Authorization (Power of Attorney)
- (iii) Found with suppression of details
- (iv) With incomplete information, subjective, conditional offers, and partial offers submitted
- (v) Submitted without the documents requested
- (vi) Non-Compliant to any of the clauses mentioned in the tender
- (vii) With lesser validity period
- (viii) Without EMD

(e) **Prequalification Criteria for Prime Bidder & Consortium Partners:**

Package-A: Supply, design, implementation and support of Active IT infrastructure {Para-1(A), 1(B), 1(D), 1(E), 1(F) of Appendix-A}

Package-B: Supply, design, implementation of Passive Network Infrastructure {Para-1(C) of Appendix-A}.

Sl.	Prequalification Criteria	Supporting Documents	Doc. Provided (Y/N)
General Criteria for all Consortium Partners			

Sl.	Prequalification Criteria	Supporting Documents	Doc. Provide d (Y/N)
(i)	The bidder must be incorporated and registered in India under the Indian Companies Act 1956/ LLP Act 2008 / Partnership Act 1932 and should have been operating for the last five years as on the date of publishing of Tender/ RFP notice (including name change/impact of mergers or acquisitions).	Certificate of Incorporation / Copy of Registration Certificate (s)	
(ii)	The Bidding firm must be a positive net-worth making with average annual turn-over of minimum of 03 Crores company since the last three financial years: (2017 – 2018, 2016 – 2017 & 2015 – 2016)	Certificate from CA firm / P&L statement and Balance sheet approved by the auditor	
(iii)	The Bidder should not be blacklisted by Central/ State Government Ministry/ Department/ PSU/Government Company. Bidder also should not be under any legal action for indulging in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice with any Indian Central/ State Government Ministry/Department/ PSU/ Government Company.	Self-declaration from the bidder in company letter head, signed by authorized signatory as per Annexure-XI	
(iv)	The Bidder should have ISO 9001:2008/CMMi-3	Valid copy of certificate at the time of bidding.	
(v)	Detailed Technical Solution document attached	Technical solution format as per Appendix-'K'	
(vi)	Bidder profile attached with Technical Bid	Bidder profile attached as per Appendix-'L'	
(vii)	POC demo project document requirements are compiled and proforma included	Proforma as per Annexure-1 of Appendix-'J' attached	
Prime Bidder			
(viii)	The Prime Bidder must be a positive net-worth making with average annual turn-over of minimum of Rs.05 Crore with turn-over minimum of Rs.03 Crore per year in the last three financial years: (2017 – 2018, 2016 – 2017 & 2015 – 2016)	Certificate from CA firm / P&L statement and Balance sheet approved by the auditor	

Sl.	Prequalification Criteria	Supporting Documents	Doc. Provided (Y/N)
(ix)	<p>Should provide atleast one of two services of</p> <p>(1) Package-A: Active IT infrastructure work</p> <p>(2) Package-B: Passive networking work</p>	<p>Should provide work order details of successfully completed projects</p>	
(x)	<p>1. Must have successfully completed / progress following in India during last 05 years ending last day of month previous to the one in which applications are invited:-</p> <p>(a) IT infrastructure implementation including Server/ storage of minimum 03 projects each work order cost more than Rs.50 Lakhs. Atleast 01 of the project should be successful live and currently supported in Central Govt./PSU with Completion certificate within last 05 years.</p> <p>(b) Should have implemented Cloud/ Enterprise grade systems other than hardware of minimum 03 projects each work order more than Rs.25 Lakhs. Atleast 01 of the project should have gone live and currently supported in Central Govt./PSU with Completion certificate within last 05 years.</p> <p>2. Reference clients should authenticate & recommend the Bidder through official email within 05 days/as required by ICG, of request email sent by ICG.</p>	<p>Completion certificate (GO-Live / Implementation) with date and</p> <p>1. Work order with order value detailing the scope.</p> <p>(OR)</p> <p>2. Agreement copy defining the scope & value.</p> <p>Also provide client reference detailing Name, Designation, Phone and Email ids.</p>	
(xi)	<p>The Bidder to host and maintain web based detailed project plan in MS Project Server/equivalent including WBS, Resources assigned, Baselines, Critical Path, Stakeholders, Agile sprints, Project Milestones, Activity associated with SDLC till Go-Live and stabilization. The web based project plan should be maintained by on-site project manager/ functional expert on Payroll duly concurred by off-site project technical. A dedicated login for the Buyer should be provided from the date of signing of contract.</p>	<p>Undertaking by Bidder</p>	
(xii)	<p>Should have office at Delhi NCR with required support technical manpower</p>	<p>Certificate of office registration at Delhi NCR and HR certificate for</p>	

Sl.	Prequalification Criteria	Supporting Documents	Doc. Provided (Y/N)
		availability of required manpower at Delhi NCR	
(xiii)	Undertaking from Nagios NMS integration by authorised OEM partner/ vendor implemented atleast 02 projects each having 1,500 IP devices including Servers, Desktops, Network components, Applications	Undertaking from Nagios NMS integrator	
(xiv)	Valid consortium agreement with consortium partner is included	Valid consortium agreement complying to terms & conditions of RFP is attached	
	Consortium Partner-Package-A, Active IT Infrastructure		
(xv)	Should have implemented Cloud/ Enterprise grade systems other than hardware of minimum 03 projects each work order more than Rs.50 Lakhs. Atleast 01 of the project should have gone live and currently supported in Central Govt./PSU with Completion certificate within last 05 years.	Copy of Supply Order and Work Completion Certificates	
(xvi)	MAF certificate for ICG project by Authorised implementation partner from OEM related to current project. MAF certificates for ROBO Data rack, Server, Switch/ Routers, Rack Server & Enterprise NMS	MAF certificates from OEM	
(xvii)	Should have office at Delhi NCR with required support technical manpower	Certificate of office registration at Delhi NCR and HR certificate for availability of required manpower at Delhi NCR	
(xviii)	POC demo project document requirements are complied and proforma included	Proforma as per Annexure-1 of Appendix-'G' attached	
(xiv)	POC of Zero-touch ROBO	Appendix-'G'	
	Consortium Partner-Package-B, Passive IT Networking Infrastructure		
(xv)	Bidder should have atleast 03 deployment of passive network cabling work for minimum of 1,000 IP points in past 03 years.	Copy of Supply Order and Work	

Sl.	Prequalification Criteria	Supporting Documents	Doc. Provided (Y/N)
		Completion Certificates	
(xvi)	MAF certificate for ICG project by Authorised implementation partner from leading passive network OEM related to current project	MAF Certificate from OEM	
	Should have office at Delhi NCR with required support technical manpower	Certificate of office registration at Delhi NCR and HR certificate for availability of required manpower at Delhi NCR	

Note : **Consortium of Bidders.** The project is to be implemented on Trun-Key basis. Prime Bidder should be as nominated by Consortium of Bidders Prime Bidder should obtain valid legal contract document to engage for implementation from consortium member and should provide as part of technical bid. Prime Bidder is solely responsible for project delivery and work order shall be released to Prime Bidder by the Buyer.

2. **Technical Details:**

(a) Technical Specifications: - Design, implementation and maintenance of Campus Local Area Networking at CG Complex, Noida, Sector-62. Detailed scope of work as per **Appendix-A of RFP.**

(b) Penalty clause for Service Level Agreement (SLA) violation: -

- (i) Vendor to make available online portal on 24x7 basis to raise service tickets by Buyer
- (ii) Penalty clauses as per **Annexure-1 of Appendix-'A'**.

3. **Two-Bid System:** - The Prime Bidder authorised to engage consortium partner as per Bidder qualification criteria mentioned under Para-1(e) above. The case is being processed on two-bid system and, only the Technical Bid would be opened online at the time and date mentioned in Critical Date Sheet. Bidders are required to furnish clause by clause compliance of specifications bringing out clearly the deviations from specification, if any. **No price should be indicated in the Technical Bid.** Date of opening of the Commercial Bid will be intimated after Technical evaluation. Commercial Online bids of only those firms will be opened; whose Technical bids are found compliant/suitable after Technical evaluation is done by the Buyer. The following documents form part of online technical bid which should be scanned and uploaded in PDF format:-

(a) In respect of Two-bid system, Bidders are required to furnish clause by clause compliance of specifications bringing out clearly the deviations from specification, if any. The Bidders are advised to upload technical compliance statement as per Technical Bid format in **Appendix-'E'** alongwith Check-list as per **Appendix - 'C'** as applicable.

(b) Signed and scanned copy of Demand draft/PO in favour of the PCDA(N), Mumbai for EMD amount or Copy of valid registration certificate regarding the firm's registration with DGS & D / NSIC /Defence Organisation (MOD) if held, for exemption of EMD. EMD to be submitted **manually** on or before bid submission end date.

(c) Self attested & scanned Copy of (i) bank details (ii) Tin No. Certificate (iii) CST Certificate (iv) VAT Certificate (v) PAN No and (vi) Certificate of acceptance of terms and conditions of RFP.

(d) Detailed breakdown of each item need to be provided as per **Annexure-1 of Appendix-'K'** format. Individual taxes need to be added as separate columns. **L1 shall be decided on overall cost of complete package consists of all bill of material and at base cost.**

(e) Bid should be uploading with covering letters as per **Appendix-'C', 'D' & 'F'** along with checklist in **Appendix-'C'**.

Note :

(i) Signed & scanned copy of Technical Bids should be uploaded by Bidder under their original memo / letter pad.

(ii) Failure to submit any of above documents will render the bid invalid

(iii) Buyers reserve the right to cancel any bid without assigning any reason.

(iv) EMD to be submitted manually on or before bid submission end date.

4. **Delivery Period** –The job is to be completed within **06 months** from the date of issue of job/ work order. Please note that contract can be cancelled unilaterally by the buyer in case the job is not completed within the contracted period. Extension of contracted period will be at the sole discretion of the buyer, with applicability of LD clause.

5. **INCOTERMS for Delivery and Transportation:** - CGHQ, New Delhi.

6. **Consignee details** -

Sl.	Item/ Services	Consignee
(a)	Supply of software/ hardware and delivery of associated services	The Director General {for D(IT)} National Stadium Complex, New Delhi

PART III – STANDARD CONDITIONS OF RFP

The Bidder is required to give confirmation of their acceptance of the Standard Conditions of the Request for Proposal mentioned below which will automatically be considered as part of the Contract concluded with the successful Bidder (i.e. Seller in the Contract) as selected by the Buyer. Failure to do so may result in rejection of the Bid submitted by the Bidder.

1. **Law:** The Contract shall be considered and made in accordance with the laws of the Republic of India. The contract shall be governed by and interpreted in accordance with the laws of the Republic of India.
2. **Effective Date of the Contract:** The contract shall come into effect on the date of signatures of both the parties on the contract (Effective Date) and shall remain valid until the completion of the obligations of the parties under the contract. The deliveries and supplies and performance of the services shall commence from the effective date of the contract.
3. **Arbitration:** All disputes or differences arising out of or in connection with the contract shall be settled by bilateral discussions. Any dispute, disagreement or question arising out of or relating to the contract or relating to construction or performance, which cannot be settled amicably, may be resolved through arbitration. The standard clause of arbitration is as per Forms DPM-7, DPM-8 and DPM-9.
4. **Penalty for use of Undue influence:** The seller undertakes that he has not given, offered or promised to give, directly or indirectly, any gift, consideration, reward, commission, fees, brokerage or inducement to any person in service of the buyer or otherwise in procuring the contracts or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of the present contract or any other contract with the Government of India for showing or forbearing to show favour or disfavour to any person in relation to the present contract or any other contract with the Government of India. Any breach of the aforesaid undertaking by the seller or any one employed by him or acting on his behalf (whether with or without the knowledge of the seller) or the commission of any offence by the seller or anyone employed by him or acting on his behalf, as defined in chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act, 1986 or any other Act enacted for the prevention of corruption shall entitle the buyer to cancel the contract and all or any other contracts with the seller and recover from the seller the amount of any loss arising from such cancellation. A decision of the buyer or his nominee to the effect that a breach of the undertaking had been committed shall be final and binding on the seller. Giving or offering of any gift, bribe or inducement or any attempt at any such act on behalf of the seller towards any officer/employee of the buyer or to any other person in a position to influence any officer/employee of the buyer for showing any favour in relation to this or any other contract, shall render the seller to such liability/ penalty as the buyer may deem proper, including but not limited to termination of the contract, imposition of penal damages, forfeiture of the Bank Guarantee and refund of the amounts paid by the buyer.
5. **Agents / Agency Commission:** -The Seller confirms and declares to the Buyer that the Seller is the original manufacturer of the stores/provider of the services referred to in this Contract and has not engaged any individual or firm, whether Indian or foreign whatsoever, to intercede, facilitate or in any way to recommend to the Government of India or any of its functionaries, whether officially or unofficially, to the award of the

contract to the Seller; nor has any amount been paid, promised or intended to be paid to any such individual or firm in respect of any such intercession, facilitation or recommendation. The Seller agrees that if it is established at any time to the satisfaction of the Buyer that the present declaration is in any way incorrect or if at a later stage it is discovered by the Buyer that the Seller has engaged any such individual/firm, and paid or intended to pay any amount, gift, reward, fees, commission or consideration to such person, party, firm or institution, whether before or after the signing of this contract, the Seller will be liable to refund that amount to the Buyer. The Seller will also be debarred from entering into any supply Contract with the Government of India for a minimum period of five years. The Buyer will also have a right to consider cancellation of the Contract either wholly or in part, without any entitlement to compensation to the Seller who shall in such an event be liable to refund all payments made by the Buyer in terms of the Contract along with interest at the rate of 2% per annum above LIBOR rate. The Buyer will also have the right to recover any such amount from any contracts concluded earlier with the Government of India.

6. **Access to Books of Accounts:** - In case it is found to the satisfaction of the Buyer that the Seller has engaged an Agent or paid commission or influenced any person to obtain the contract as described in clauses relating to Agents/Agency Commission and penalty for use of undue influence, the Seller, on a specific request of the Buyer, shall provide necessary information/ inspection of the relevant financial documents/information.

7. **Non-disclosure of Contract documents:** - Except with the written consent of the Buyer/ Seller, other party shall not disclose the contract or any provision, specification, plan, design, pattern, sample or information thereof to any third party.

8. **Liquidated Damages:** In the event of the seller's failure to submit the Bonds, Guarantees and Documents, supply the stores/goods and conduct trials, installation of equipment, training, etc. as specified in this contract, the buyer may, at his discretion, withhold any payment until the completion of the contract. The buyer may also deduct from the seller as agreed, liquidated damages to the sum of **0.5%** of the contract price of the delayed/undelivered stores/services mentioned above for every **week** of delay or part of a week, subject to the maximum value of the Liquidated Damages being not higher than **10%** of the value of delayed stores.

9. **Termination of Contract:** The buyer shall have the right to terminate this contract in part or in full in any of the following cases: -

(a) The job is not completed for causes not attributable to Force Majeure for more than (one month) after the scheduled date of completion.

(b) The seller is declared bankrupt or becomes insolvent.

(c) The job is not completed due to causes of Force Majeure by more than (two months) provided Force Majeure clause is included in contract.

(d) The buyer has noticed that the seller has utilised the services of any Indian/Foreign agent in getting this contract and paid any commission to such individual/company etc.

(e) As per decision of the Arbitration Tribunal.

10. **Notices:** Any notice required or permitted by the contract shall be written in the English language and may be delivered personally or may be sent by FAX or registered pre-paid mail/airmail, addressed to the last known address of the party to whom it is sent.

11. **Transfer and Sub-letting:** NA

12. **Patents and other Industrial Property Rights:** NA

13. **Amendments:** No provision of present contract shall be changed or modified in any way (including this provision) either in whole or in part except by an instrument in writing made after the date of this contract and signed on behalf of both the parties and which expressly states to amend the present contract.

14. **Taxes and Duties:**

(a) **In respect of Foreign Bidders:** - N/A

(b) **In respect of Indigenous bidders**

(i) General

1. If bidder desires to ask for GST or any other taxes, the same must be specifically stated. In the absence of any such stipulation, it will be presumed that the prices include all such charges and no claim for the same will be entertained.

2. If reimbursement of any Duty/Tax is intended as extra over the quoted prices, the bidder must specifically say so. In the absence of any such stipulation it will be presumed that the prices quoted are firm and final and no claim on account of such duty/tax will be entertained after the opening of tenders.

3. If a bidder chooses to quote a price inclusive of any duty/tax and does not confirm inclusive of such duty/tax so included is firm and final, he should clearly indicate the rate of such duty/tax and quantum of such duty/tax included in the price. Failure to do so may result in ignoring of such offers summarily.

4. If a bidder is exempted from payment of any duty/tax upto any value of supplies from them, he should clearly state that no such duty/tax will be charged by him up to the limit of exemption which he may have. If any concession is available in regard to rate/quantum of any Duty/tax, it should be brought out clearly. Stipulations like, the said duty/tax was presently not applicable but the same will be charged if it becomes leviable later on, will not be accepted unless in such cases it is clearly stated by a bidder that such duty/tax will not be charged by him even if the same becomes applicable later on. In respect of the Bidders, who fail to comply with this requirement, their quoted prices shall be loaded with the quantum of such duty/tax which is normally applicable on the item in question for the purpose of comparing their prices with other Bidders.

5. Any change in any duty/tax upward/downward as a result of any statutory variation in excise taking place within contract terms shall be allowed to the extent of actual quantum of such duty/tax paid by the supplier. Similarly, in case of downward revision in any duty/tax, the actual quantum of reduction of such duty/tax shall be reimbursed to the buyer by the seller. All such adjustments shall

include all reliefs, exemptions, rebates, concession etc. if any obtained by the seller.

(ii) Customs Duty: - As applicable

(iii) Excise Duty: -

1. Where the excise duty is payable on advalorem basis, the Bidder should submit along with the tender, the relevant form and the Manufacturer's price list showing the actual assessable value of the stores as approved by the Excise authorities.

2. Bidders should note that in case any refund of excise duty is granted to them by Excise authorities in respect of Stores supplied under the contract, they will pass on the credit to the Buyer immediately along with a certificate that the credit so passed on relates to the Excise Duty, originally paid for the stores supplied under the contract. In case of their failure to do so, within 10 days of the issue of the excise duty refund orders to them by the Excise Authorities the Buyer would be empowered to deduct a sum equivalent to the amount refunded by the Excise Authorities without any further reference to them from any of their outstanding bills against the contract or any other pending Government Contract and that no disputes on this account would be raised by them.

(iv) GST

If it is desired by the bidder to ask for GST to be paid as extra, the same must be specifically stated. In the absence of any such stipulation in the bid, it will be presumed that the prices quoted by the bidder are inclusive of sales tax and no liability of sales tax will be developed upon the buyer.

(v) Local Taxes/Charges : -

In case where the Municipality or other local body insists upon payment of these duties or taxes the same should be paid by the Seller to avoid delay in supplies and possible demurrage charges. The receipt obtained for such payment should be forwarded to the Buyer without delay together with a copy of the relevant act or bylaws/ notifications of the Municipality of the local body concerned to enable him to take up the question of refund with the concerned bodies if admissible under the said acts or rules.

15. **Pre-Integrity Pact Clause:** - N/A

PART IV – SPECIAL CONDITIONS OF RFP

The Bidder is required to give confirmation of their acceptance of Special Conditions of the RFP mentioned below which will automatically be considered as part of the Contract concluded with the successful Bidder (i.e. Seller in the Contract) as selected by the Buyer. Failure to do so may result in rejection of Bid submitted by the Bidder.

1. **Performance Guarantee:**

(a) **Indigenous cases:** The bidder will be required to furnish a Performance Guarantee by way of Bank Guarantee through a public sector bank or a private sector bank authorized to conduct government business (ICICI Bank Ltd., Axis Bank Ltd or HDFC Bank Ltd.) for a sum equal to **10%** of the contract value within 30 days of receipt of the confirmed order. Performance Bank Guarantee should be valid up to 60 days beyond the date of warranty. The specimen of PBG is given in Form DPM-15 (Available in MoD website).

2. **Option Clause:** - The contract will have an Option Clause, wherein the Buyer can exercise an option to procure an additional 50% of the original contracted quantity in accordance with the same terms & conditions of the present contract. This will be applicable within the currency of contract. The Bidder is to confirm the acceptance of the same for inclusion in the contract. It will be entirely the discretion of the Buyer to exercise this option or not.

3. **Repeat Order Clause** – The contract will have a Repeat Order Clause, wherein the Buyer can order upto 50% quantity of the items under the present contract within six months from the date of supply/successful completion of this contract, the cost, terms & conditions remaining the same. The Bidder is to confirm acceptance of this clause. It will be entirely the discretion of the Buyer to place the Repeat order or not.

4. **Tolerance Clause** – To take care of any change in the requirement during the period starting from issue of RFP till placement of the contract, Buyer reserves the right to 100% plus/minus increase or decrease the quantity of the required goods upto that limit without any change in the terms & conditions and prices quoted by the Seller. While awarding the contract, the quantity ordered can be increased or decreased by the Buyer within this tolerance limit.

5. **Payment Terms** - It will be mandatory for the Bidders to indicate their bank account numbers and other relevant e-payment details so that payments could be made through ECS/EFT mechanism instead of payment through cheques, wherever feasible. A copy of the model mandate form prescribed by RBI to be submitted by Bidders for receiving payments through ECS is at Form DPM-11 (Available in MoD website). The stage wise payment will be made as per the following terms and production of the requisite documents:

(a) **One-time payments** towards Design, development and implementation of Secure campus LAN (**Para-1(A) to (E) of Appendix-'H' of RFP**)

SL	% of payment (Para-1(A) to (E) of Appendix-'H' of RFP)	Duration
(i) T1	10% cost of Para-1(A) to (E) of Appendix-'H'	(a) Site survey report as per sample (Para- 5(C-10)/Appendix-'A' of RFP)

SL	% of payment (Para-1(A) to (E) of Appendix-'H' of RFP)	Duration
	of RFP (Delivery time: T0*+01 Month)	(b) Passive BOM/ Services derived from Site survey report as per Para-5(C)/Appendix-'A' of RFP) (c) Onsite Project supervisor (d) Project online plan (e) Pre-validation certificate for Structured Cabling (f) On submission of PBG of 10%
(ii) T2	80% cost Para-1(A)(B)&(D)/ Appendix-'H' of RFP (Delivery time: T1+03 Months)	On supply of items as per Para-5(A)(B)&(D)/Appendix-'A' of RFP
(iii) T3	80% cost Para-1(C) & (E)/ Appendix-'H' of RFP (Delivery time: T2+04 Months)	(a) On delivery of services as per Para-5(c) & 5(E)/Appendix-'A' of RFP (b) On final GoLive of project (c) Delivery documentation, updated AutoCAD survey report, Positioning of onsite manpower and commencement of warranty of 01 year
(vi) T4	Remaining 10% Para-1(A) to (E) / Appendix-'H' of RFP on (Delivery time: T3+03 Months)	After 03 months of successful handholding & implementation including availability of ITSM/ALM/Project Management portal, completion of training, submission of updated, manuals, documents

Note. * - Date of work order is considered as 'T0'

(b) **Recurring payments for AMC of 01 Year:** - For commercial bid line items (**Para-1(F) of Appendix-'K' of RFP**). On completion of every 03 months after commencement of AMC. AMC to commence on completion of 01-year warranty support.

6. **Payment terms for Foreign Sellers:** - NA
7. **Advance Payments:** No advance payment(s) will be made. Stage wise payment as per para 5 above.
8. **Paying Authority:** CDA(CG), New Delhi.

(a) Indigenous Sellers: (Name and address, contact details). The payment of bills will be made on submission of the following documents by the Seller to the Paying Authority along with the bill:

- (i) Ink-signed copy of contingent bill / Seller's bill.
- (ii) Ink-signed copy of Commercial invoice / Seller's bill.
- (iii) Copy of Supply Order/Contract with U.O. number and date of IFA's concurrence, where required under delegation of powers.
- (iv) CRVs in duplicate.
- (v) Inspection note.
- (vi) Claim for statutory and other levies to be supported with requisite documents / proof of payment such as Excise duty challan, Customs duty clearance certificate, Octroi receipt, proof of payment for EPF/ESIC contribution with nominal roll of beneficiaries, etc. as applicable.
- (vii) Exemption certificate for Excise duty / Customs duty, if applicable.
- (viii) Bank guarantee for advance, if any.
- (ix) Guarantee / Warranty certificate.
- (x) Performance Bank guarantee / Indemnity bond where applicable.
- (xi) DP extension letter with CFA's sanction, U.O. number and date of IFA's concurrence, where required under delegation of powers, indicating whether extension is with or without LD.
- (xii) Details for electronic payment viz Account holder's name, Bank name, Branch name and address, Account type, Account number, IFSC code, MICR code (if these details are not incorporated in supply order/contract).
- (xiii) Any other document / certificate that may be provided for in the Supply Order / Contract.
- (xiv) User Acceptance.
- (xv) Photo copy of PBG.

9. **Fall clause** - The following fall clause will form part of the contract placed on successful bidder -

(a) The price charged for the services provided under the contract by the seller shall in no event exceed the lowest prices at which the seller provides service or offer to services of identical description to any persons/Organisation including the purchaser or any department of the Central government or any Department of state government or any statutory undertaking the central or state government as the case may be during the period till jobs as per the orders placed during the currency of the rate contract is completed.

(b) If at any time, during the said period the service provider, provides service to any person/organisation including the buyer or any Department of central Govt. or any Department of the State Government or any Statutory undertaking of the Central or state Government as the case may be at a price lower than the price chargeable under the contract, the shall forthwith notify such reduction in service

provided to the Director general of Supplies & Disposals and the price payable under the contract for the services of such reduction of service shall stand correspondingly reduced.

(c) The seller shall furnish the following certificate to the Paying Authority along with each bill for payment for supplies made against the Rate contract – “We certify that there has been no reduction in services charged to the Government under the contract herein and such services have not been offered/sold by me/us to any person/organisation including the purchaser or any department of Central Government or any Department of a state Government or any Statutory Undertaking of the Central or state Government as the case may be upto the date of bill/the date of completion of job against all orders placed during the currency of the Rate Contract at price lower than the price charged to the government under the contract.

10. **Exchange Rate Variation Clause:** - NA

11. **Risk & Expense clause:** -

(a) Should the software / media stores or any installment thereof not be delivered within the time or times specified in the contract documents, or if defective delivery is made in respect of the stores or any installment thereof, the Buyer shall after granting the Seller 45 days to cure the breach, be at liberty, without prejudice to the right to recover liquidated damages as a remedy for breach of contract, to declare the contract as cancelled either wholly or to the extent of such default.

(b) Should the software/media or any installment thereof not perform in accordance with the specifications / parameters provided by the SELLER during the check proof tests to be done in the BUYER's country, the BUYER shall be at liberty, without prejudice to any other remedies for breach of contract, to cancel the contract wholly or to the extent of such default.

(c) In case of a material breach that was not remedied within 45 days, the BUYER shall, having given the right of first refusal to the SELLER be at liberty to purchase, manufacture, or procure from any other source as he thinks fit, other stores of the same or similar description to make good: -

(i) Such default.

(ii) In the event of the contract being wholly determined the balance of the stores remaining to be delivered thereunder.

(d) Any excess of the purchase price, cost of manufacturer, or value of any stores procured from any other supplier as the case may be, over the contract price appropriate to such default or balance shall be recoverable from the SELLER. Such recoveries shall not exceed 2% of the value of the contract.”.

12. **Force Majeure clause:**

(a) Neither party shall bear responsibility for the complete or partial nonperformance of any of its obligations (except for failure to pay any sum which

has become due on account of receipt of goods under the provisions of the present contract), if the non-performance results from such Force Majeure circumstances as Flood, Fire, Earth Quake and other acts of God as well as War, Military operation, blockade, Acts or Actions of State Authorities or any other circumstances beyond the parties control that have arisen after the conclusion of the present contract.

(b) In such circumstances the time stipulated for the performance of an obligation under the present contract is extended correspondingly for the period of time of action of these circumstances and their consequences.

(c) The party for which it becomes impossible to meet obligations under this contract due to Force Majeure conditions, is to notify in written form the other party of the beginning and cessation of the above circumstances immediately, but in any case not later than 10 (Ten) days from the moment of their beginning.

(d) Certificate of a Chamber of Commerce (Commerce and Industry) or other competent authority or organization of the respective country shall be a sufficient proof of commencement and cessation of the above circumstances.

(e) If the impossibility of complete or partial performance of an obligation lasts for more than 6 (six) months, either party hereto reserves the right to terminate the contract totally or partially upon giving prior written notice of 30 (thirty) days to the other party of the intention to terminate without any liability other than reimbursement on the terms provided in the agreement for the goods received.

13. **Buy-Back offer:** - NA

14. **Specification:** - The following specification clause will form part of the contract placed on successful Bidder –

(a) The Seller guarantees to meet the specifications as per Part-II of RFP and to incorporate the modifications to the existing design configuration to meet the specific requirement of the Buyer Services as per modifications/requirements recommended after the Maintenance Evaluation Trials. All technical literature and user manuals shall be amended as the modifications by the Seller before supply to the Buyer. The Seller, in consultation with the Buyer, may carry out technical upgradation/alterations in the design, technical literature/user manuals and specifications due to change in manufacturing procedures, indigenization or obsolescence. This will, however, not in any way, adversely affect the end specifications of the equipment. Changes in technical details, repair and maintenance techniques alongwith necessary tools as a result of upgradation/alterations will be provided to the Buyer free of cost within (30) days of affecting such upgradation/alterations.

15. **OEM Certificate:** - Coast Guard specific MAF certificate to be obtained from OEM and submitted as part of technical bid. In case of MAF not applicable for a particular OEM, the Bidder should obtain equivalent certificate from OEM.

16. **Export License:** - NA

17. **Earliest Acceptable Year of Manufacture:** - NA

18. **Buyer Furnished Equipment:** - NA
19. **Transportation:** NA
20. **Air lift:** - NA
21. **Packing and Marking:** - NA

22. **Quality:** The quality of the software with media provided according to the present Contract shall correspond to the technical conditions and standards valid for the deliveries of the same services for in seller's country or specifications enumerated as per RFP and shall also include therein modification to the services suggested by the buyer. Such modifications will be mutually agreed to. The seller confirms that the services to be provided under this Contract shall be latest and shall incorporate all the latest improvements and modifications thereto.

23. **Quality Assurance:** - N/A.

24. **Inspection Authority:** The inspection will be carried out by Directorate of Information Technology on completion of the job. The mode of inspection will be departmental inspection

25. **Pre-Dispatch Inspection:** - NA
26. **Joint Receipt Inspection:** - NA
27. **Franking clause:** - NA
28. **Claims:** - NA

29. **Warranty:-** The following Warranty will form part of the contract placed on the successful bidder:-
 - (a) Except as otherwise provided in the invitation tender, the seller hereby declares that the goods, stores articles sold/supplied / services provided to the Buyer under this contract shall be of the best quality and workmanship and new in all respects and shall be strictly in accordance with the specification and particulars contained/mentioned in contract. The seller hereby guarantees that the said services (including fixing of bugs) would continue to conform to the description and quality aforesaid for a period of **36 months** / as mentioned against individual line items from the date of provisioning of the said services to the buyer and notwithstanding the fact that the buyer may have inspected and/or approved the said services, if during the aforesaid period of 36/15 months / as mentioned against individual line items of the goods, stores articles sold/supplied are discovered not to conform to the description and quality aforesaid not giving satisfactory performance or have deteriorated, and the decision of the buyer in that behalf shall be final and binding on the seller and the buyer shall be entitled to call upon the seller to provide the entire services or such portion thereof as is found to be defective by the buyer within a reasonable period, or such specified period as may be allowed by the buyer in his discretion on application made thereof by the seller, and in such an event, the above period shall apply to the services provided from the date of rectification mentioned in warranty thereof, otherwise the seller shall pay to the buyer such compensation as may arise by reason of the breach of the warranty therein contained.

 - (b) The seller warrants that the goods/software supplied/installed under the contract conform to technical specifications prescribed and shall perform according to the said technical specifications.

(c) The seller warrants for a period of 36 months from the date of installation and commissioning, that the goods/stores/ software developed and installed/ supplied under the contract and each component used in the manufacture thereof shall be free from all types of defects/failures.

(d) If within the period of warranty, the goods are reported by the buyer to have failed to perform as per the specifications, the seller shall either replace or rectify the same free of charge, within a maximum period of 45 days of notification of such defect received by the seller, provided that the goods are used and maintained by the buyer as per instructions contained in the Operating Manual.

(e) The seller shall associate technical personnel of the Maintenance agency and Quality Assurance Agency of the buyer during warranty repair and shall also provide the details of complete defects, reasons and remedial actions for defects.

30. **Product Support:** - The following product support clause will form part of the contract placed on successful Bidder –

(a) The Seller agrees to provide Product Support for the software, subcontracted from other agencies/ manufacturer by the Seller for a period of **03 year** after the delivery and commissioning of software application as part of software supply.

(b) In the event of any obsolescence during the above mentioned period of product support in respect of any component/ sub-system/ software, it is the liability of the seller to provide the alternate in free of cost.

(c) Any improvement/modification/ up gradation being undertaken by the Seller or their sub suppliers on the software being purchased under the Contract will be communicated by the Seller to the Buyer and, if required by the Buyer, these will be carried out by the Seller at Buyer's cost.

31. **Annual Maintenance Contract (AMC) Clause:** - The following AMC clause will form part of the contract placed on successful Bidder -

(a) The Prime Bidder through respective Consortium Vendor would provide All-Inclusive AMC (AIAMC) for a period of 2 years from the date of completion of 01 year Warranty period. AIAMC services should cover the repair and maintenance of all the equipment and systems purchased under the present Contract. The Buyer Furnished Equipment which is not covered under the purview of the AMC should be separately listed by the Seller. The seller would provide All Inclusive Annual Maintenance Contract, ITIL based service desk, ATS and renewal of licenses, required upgradation/renewal for 02 years w.e.f date of completion of 01 year warranty. Only Prime member is authorized to provide Annual Technical Support (ATS) of licenses and Web based ITIL Compliant Service Desk support. Only authorized consortium members should provide services as directed by Centralized Service Desk and responsibilities of support area by each consortium member during installation and subsequent support period should be provided as part of Technical Offer.

32. **Engineering Support Package (ESP) clause:** - NA

33. **Price Variation (PV) Clause:** - NA

34. **Service Desk Support:** Complete technical support shall be provided by the Seller for Three Years from the date of acceptance or from date of installation and commissioning, whichever is later. The service includes spares for hardware and updates for Software would be required to maintain the equipment during its exploitation for a period of three years. The details of technical support must be submitted separately by firm with technical aspects being included in the technical offer and commercial aspects being included in the commercial offer.

35. **In Service/ Shelf Life.** The In-Service Life of the equipment shall be minimum 5 years from the date of acceptance of the offer.

36. **Prime Bidder criteria.** The invitation for bids is open to all entities registered in India who fulfill prequalification criteria as specified below:-

(a) Indian Coast Guard (Ministry of Defence, Government of India) reserves its right to subject the bidders to security clearances as it deems necessary

(b) The participation is restricted to companies registered in India

(c) The Prime Bidder of vendor consortium should provide atleast 01 Package out of total 02 Packages as mentioned in para-b of Note in (B) & 1(C) of Appendix-K of RFP on commercial bid format)

(d) Prime bidder of consortium has Office/Branch at Delhi NCR.

37. **Consortium.** It is permissible for more than one company which joins with other companies of complementing skills to undertake the scope of work defined in this RFP. It is mandatory for all consortium members to have atleast ISO 9001 certification, mandatory to have authorized for this project by respective OEM, should fulfil all particular requirements specified in the RFP in respective descriptions and having required strength of OEM certified skilled technicians at their disposal. Memorandum of Understanding (MoU)/agreement among the members signed by the Authorized Signatories of the companies to be submitted by successful vendor. The MoU /agreement shall clearly specify the Prime Bidder, stake of each member and outline the roles and responsibilities of each member. The consortium members for a particular skill area should be authorized by respective OEM, and certificate shall be submitted as part of Technical Proposal. A consortium of companies duly backed up by an Agreement/ Letter of Undertaking (to be submitted along with Technical bid) is also eligible to participate subject to the following two conditions and satisfaction of the Tender Evaluation Committee during the evaluation of the tender. In the event of consortium being unacceptable to Coast Guard, the Prime Bidder may be given an option of going on its own.

(a) The project is to be implemented on Turn-Key basis. Prime Bidder should obtain valid legal contract document to engage for implementation from consortium member

and should provide as part of technical bid. Prime Bidder is solely responsible for project delivery and work order shall be released to Prime Bidder by the Buyer. The bidder (the prime bidder in case of consortium i.e.; one of the member of the consortium that is nominated as the prime bidder by all the other members of the consortium) of this consortium shall be liable for adherence to all provisions of this Agreement.

(b) The consortium will draw upon human, technical and other resources of all the members during implementation and maintenance of the project. The Technical Bid shall include exact details in this regard, so that a consortium is not artificially created only to improve the score in Technical Bid.

(c) ATS/Service Desk- Only Prime member is authorized to provide Annual Technical Support (ATS) and Web based ITIL Compliant Service Desk support. Only authorized consortium members should provide services as directed by Centralized Service Desk and responsibilities of support area by each consortium member during installation and subsequent support period should be provided as part of Technical Offer.

PART V – EVALUATION CRITERIA & PRICE BID ISSUES

1. **Evaluation and Acceptance Process.** The broad guidelines for evaluation of Bids will be as follows:

(a) Only those Bids will be evaluated on QCBS method (**Appendix-'G'**) qualifying pre-qualification criteria as per Part-II of RFP.

(b) The technical Bids forwarded by the Bidders will be evaluated by the Buyer with reference to the technical characteristics of the equipment/item as mentioned in the RFP. The compliance of Technical Bids would be determined on the basis of the parameters specified in the RFP. The Price Bids of only those Bidders will be opened whose Technical Bids would clear the technical evaluation.

(c) The Lowest Bid will be decided upon the QCBS marks evaluated from quote by the particular Bidder as per the Price Format given in the RFP. The consideration of taxes and duties in evaluation process will be as follows:

(i) In cases where only indigenous Bidders are competing, all taxes and duties (including those for which exemption certificates are issued) quoted by the Bidders will be considered. The ultimate cost to the Buyer would be the deciding factor for ranking of Bids.

(ii) In cases where both foreign and indigenous Bidders are competing, following criteria would be followed –

(aa) In case of foreign Bidders, the basic cost (CIF) quoted by them would be the basis for the purpose of comparison of various tenders.

(ab) In case of indigenous Bidders, excise duty on fully formed equipment would be offloaded.

(ac) Sales tax and other local levies, i.e. Octroi, entry tax etc. would be ignored in case of indigenous Bidders.

(d) The Bidders are required to spell out the rates of Customs duty, Excise duty, VAT, Service Tax, etc. in unambiguous terms; otherwise their offers will be loaded with the maximum rates of duties and taxes for the purpose of comparison of prices. If reimbursement of Customs duty / Excise Duty / VAT is intended as extra, over the quoted prices, the Bidder must specifically say so. In the absence of any such stipulation it will be presumed that the prices quoted are firm and final and no claim on account of such duties will be entailed after the opening of tenders. If a Bidder chooses to quote a price inclusive of any duty and does not confirm inclusive of such duty so included is firm and final, he should clearly indicate the rate of such duty and quantum of excise duty included in the price. Failure to do so may result in ignoring of such offers summarily. If a Bidder is exempted from payment of Customs duty / Excise Duty / VAT duty upto any value of supplies from them, they should clearly state that no excise duty will be charged by them up to the limit of exemption which they may have. If any

concession is available in regard to rate/quantum of Customs duty / Excise Duty / VAT, it should be brought out clearly. Stipulations like, excise duty was presently not applicable but the same will be charged if it becomes leviable later on, will not be accepted unless in such cases it is clearly stated by a Bidder that excise duty will not be charged by him even if the same becomes applicable later on. In respect of the Bidders who fail to comply with this requirement, their quoted prices shall be loaded with the quantum of excise duty which is normally applicable on the item in question for the purpose of comparing their prices with other Bidders. The same logic applies to Customs duty and VAT also.

(e) In import cases, all the foreign quotes will be brought to a common denomination in Indian Rupees by adopting the exchange rate as BC Selling rate of the State Bank of India on the date of the opening of Price Bids.

(f) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.

(g) The Buyer reserves the right to evaluate the offers received by using Discounted Cash Flow method. In case cash flow involves more than one currency, the same will be brought to a common denomination in Indian Rupees by adopting exchange rate as BC Selling rate of the State Bank of India on the date of the opening of Price Bids.

(h) The Lowest Acceptable Bid will be considered further for placement of contract / Supply Order after complete clarification and price negotiations as decided by the Buyer. The Buyer will have the right to award contracts to different Bidders for being lowest in particular items. The Buyer also reserves the right to do Apportionment of Quantity, if it is convinced that Lowest Bidder is not in a position to supply full quantity in stipulated time

(j) The technical proposals forwarded by the Bidders will be evaluated by a Technical Evaluation Committee (TEC).

(i) The TEC will examine the extent of variations/differences, if any, in the technical characteristics of the Secure Chat Solution offered by various SIs with reference to the requirements specified in this RFP.

(ii) The SIs will also be asked to carry out the Proof of Concept (PoC) demonstration as per the details provided in the **Appendix-G**. Subsequent to issue of bid clarifications, Indian Coast Guard may issue additional PoC scripts at bid submission stage or later. The PoC will be targeted to address major Indian Coast Guard processes but in no way indicate or limit the scope of the functional requirements specifications of the project. Evaluation of the PoC demonstration will be carried out for compliance of the demonstrated performance of the Secure Chat application and Secure Application solution vis-à-vis a few of the specific requirements of Indian Coast Guard

(iii) The Technical Offer will be evaluated by a Technical Evaluation Committee (TEC) to confirm that the SI and Secure Chat Solution being offered meet the essential parameters as elaborated at Appendix-A & B of this RFP. Thereafter, the SI shall carry out a PoC demonstration at 'No Cost No Commitment' basis of the application as a part of the technical evaluation process, as per the PoC scripts given in Appendix-J or issued later at the stage of bid submission or at any time prior to completion of TEC.

(k) Evaluation of Commercial Proposals. The commercial proposals of the SIs whose offer is short-listed, after technical trials and evaluation have been accepted technically will only be opened and a comparative statement will be prepared. Comparison of offers will also be done on the same basis. The SI quoting lowest price (L1) based on QCBS evaluation as determined by Contracts Negotiation Committee (CNC), would be invited for negotiations by CNC. Details of Technical/ Commercial Evaluation of proposals as per **Appendix-'H'**.

(l) The Bidders are required to spell out the rates of Customs duty, Excise duty, VAT, Service Tax, etc. in unambiguous terms; otherwise their offers will be loaded with the maximum rates of duties and taxes for the purpose of comparison of prices. If reimbursement of Customs duty / Excise Duty /GST is intended as extra, over the quoted prices, the Bidder must specifically say so. In the absence of any such stipulation it will be presumed that the prices quoted are firm and final and no claim on account of such duties will be entailed after the opening of tenders. If a Bidder chooses to quote a price inclusive of any duty and does not confirm inclusive of such duty so included is firm and final, he should clearly indicate the rate of such duty and quantum of excise duty included in the price. Failure to do so may result in ignoring of such offers summarily. If a Bidder is exempted from payment of Customs duty / Excise Duty / GST duty upto any value of supplies from them, they should clearly state that no excise duty will be charged by them up to the limit of exemption which they may have. If any concession is available in regard to rate/quantum of Customs duty / Excise Duty / GST, it should be brought out clearly. Stipulations like, excise duty was presently not applicable but the same will be charged if it becomes leviable later on, will not be accepted unless in such cases it is clearly stated by a Bidder that excise duty will not be charged by him even if the same becomes applicable later on. In respect of the Bidders who fail to comply with this requirement, their quoted prices shall be loaded with the quantum of excise duty which is normally applicable on the item in question for the purpose of comparing their prices with other Bidders. The same logic applies to Customs duty and GST also.

(m) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.

2. **Price bid format**: As per **Appendix-'K'** of RFP.

3. The bidders are required to **UPLOAD** following:

(a) The Commercial bid format is provided as **BoQ.xls** along with this tender document at **<https://eprocure.gov.in>**. Bidders are advised **to download this BoQ.xls** as it is and quote their offer in the permitted column. **Bidders are also to fill the duties & Taxes columns as applicable**

(b) The Price Bid Format as per **Appendix-'H'** as required. Determination of L-1 will be done based on total of basic prices (**not including** levies, taxes and duties levied by Central/State/Local governments such as excise duty, VAT, Service tax, Octroi/entry tax, etc. on final product) of all items/requirements as mentioned above.

Appendix-'A'

*(Refer to Para-2(a)(i),(ii),(iii) of Part-II of RFP
, Para-5(b) of Part-IV of RFP)*

**SCOPE OF WORK - DESIGN, IMPLEMENTATION AND MAINTENANCE OF
CAMPUS LOCAL AREA NETWORKING AT CG COMPLEX, NOIDA, SECTOR-62
- INDIAN COAST GUARD**

Background.

1. Indian Coast Guard (ICG) is the fourth armed force of Indian Union and is mandated to take actions as deemed fit to protect India's maritime and other national interests in the maritime zones of India. ICG carry out surveillance of 7,500 kms long coastline, 2.02 million Sq. Km of Exclusive Economic Zone (EEZ) and over 06 million SqKms of Indian Maritime Search & Rescue Region (ISRR) to enforce Indian and International maritime laws and to provide swift Search and Rescue (SAR) support across ISSR using conventional assets such as ships and aircraft.
2. ICG as part of ongoing digitization efforts intend to design, implementation and maintenance of Campus Local Area Networking at CG Complex, Noida, Sector-62 on turn-key basis.

OBJECTIVE

3. Objective of design, implementation and maintenance of Campus Local Area Networking at CG Complex, Noida, Sector-62 is to provide reliable, scalable, secure IP Intranet LAN to support Computer accessories, Campus Surveillance System and Internet LAN. The Bidder should include required features to achieve objectives during SRS stage of project and discrepancies if any, the decision of the Buyer is final and has binding on the Bidder.

SCOPE OF WORK

4. Vendor should Design, implementation and maintenance of Campus Local Area Networking at CG Complex, Noida, Sector-62 and required networking accessories, hardware and software on **turnkey basis**. Campus LAN to be designed separately for Intranet of about 1,500 IP points and Internet of 700 IP points. Both, Internet and Intranet LAN to be supplied with 75% of active components from day one and 100% for passive components. The Bidder should include required features to achieve following objectives during SRS stage of project and discrepancies if any, the decision of the Buyer is final and has binding on the Bidder. Detailed functional requirements are detailed in succeeding paragraphs.
5. Supply, design, deployment and maintenance of following.

Item ID	Description	Qty.	Unit	Detailed Specification
	(A) SUPPLY - ACTIVE COMPONENTS, INTRANET, ONE-TIME			
A-01	Modular data rack with Hyper-Converged Appliance (HCI) including Software Defined Compute, Storage, Networking, WAN components and provide 'Single-pane-of-glass-monitoring' software including for Datarack/HCI/NGFW. Required rack space to be 70 RU (intranet-40U & internet-30U) Data rack to support usable IT load of 2.2kW for intranet & 2.kw for internet, L3 switches in HA. Onsite warranty for 03 years	1	No.	Appendix-B
A-02	Core Switch in HA, 1Tbps	1	Set	Appendix-B
A-03	Chassis based L3 Switch with universal PoE, passive High-Availability with atleast 01 spare switch for 10 switches, scalability upto 1500 ports with day-one delivery of 75% of ports	1	Set	Appendix-B
A-04	Online UPS for Access Chassis Switches, Rack form factor in HA including controller, initial 1KVA for PoE, scalability upto 4KVA with 10 minutes backup at 70% load of PoE. All other IT loads within network rack to be catered for 10 minutes backup at 70% load. SNMP enabled.	7	Set	Appendix-B
A-05	Network Management Software for 'Single-Pane-of-Glass' monitoring/ management	1	No.	Appendix-B
A-06	Network Access Controller (NAC)	1	No.	Appendix-B
A-07	Rack Server for Backup and Patch server	2	No.	Appendix-B
	(B) SUPPLY - ACTIVE COMPONENTS, INTERNET, ONE-TIME			
B-01	Extension of intranet Modular data rack with Hyper-Converged Appliance (HCI) including Software Defined Compute, Storage, Networking, WAN components and provide 'Single-pane-of-glass-monitoring' software including for Datarack/HCI/NGFW , L3 switches in HA. Onsite warranty for 03 years	1	No.	Appendix-B

Item ID	Description	Qty.	Unit	Detailed Specification
B-02	Rack L3 Switch with universal PoE, passive High-Availability with atleast 01 spare switch for 10 switches, scalability upto 700 ports with day-one delivery of 75% of ports	1	Set	Appendix-B
B-03	Network Management Software for 'Single-Pane-of-Glass' monitoring/ management	1	Set	Appendix-B
B-04	Network Access Controller (NAC)	1	No.	Appendix-B
B-05	Rack Server for Backup and Patch server	2	No.	Appendix-B
B-06	Network Enclosure, IP56, forced ventilated, Outdoor with network and electrical accessories	16	No.	Appendix-B
	(C) SERVICES - PASSIVE WORK, PRO-RATA BASIS, ONE-TIME			
C-01	Installation of CAT-6 LAN cabling for 2,200 IP Points including all accessories, As per Structured Cabling Standards	10000	Mtrs	Annexure-I & Annexure-II of Appendix-A
C-02	Certificate for Pre & Post validation against Structured Cabling Standards from authorised agency	1	No.	Annexure-II of Appendix-A
C-03	Preparation of vertical drop cabling on wall, drop at every 14ft, surface finishing, concealed on wall with atleast 1cm depth	150	Mtrs	Annexure-II of Appendix-A
C-04	Preparation of horizontal cabling with building on ceiling, unitrust GI cable tray on ceiling fitted, enclosed tray	2960	Mtrs	Annexure-II of Appendix-A
C-05	Installation of backbone underground armoured fiber cabling between buildings and along perimeter wall, minimum of 48 Core multimode fiber, hard land surface, trenched for atleast 1 Mtr, cable to run inside HDPE pipe, road crossing with GI pipes	2000	Mtrs	Annexure-I & Annexure-II of Appendix-A
C-06	Installation of backbone armoured fiber cabling intra-building on star topology, minimum of 06 Core multimode fiber, secured with unitrust GI cable tray, cable to run inside HDPE pipe	100	Mtrs	Annexure-II of Appendix-A
C-07	Outdoor network enclosure with minimum of 10 A power availability along with required electrical accessories, underground cabling, for campus	16	No.	Annexure-I & Annexure-II of Appendix-A

Item ID	Description	Qty.	Unit	Detailed Specification
	perimeter armoured cable termination, IP 56 rated,			
C-08	Indoor network racks, 24U, including power coated material, network patch panels, electrical cabling with accessories such as MCBs to provide 4 KVA for each rack, cabling to be concealed on vertical run on wall/ HDPE pipe on horizontal run along with ceiling	7	No.	Annexure-II of Appendix-A
C-09	Casing & Capping on last mile within building rooms along with accessories	1500	Mtrs.	Annexure-I & Annexure-II of Appendix-A
C-10	Site survey by certified Civil Surveyor and provision of AutoCAD design diagram for Civil/ Electrical/ Network/ IT assets diagram	1	No.	Annexure-I & Annexure-II of Appendix-A
	(D) SUPPLY - IP TELEPHONES			
D-01	IP Phones with licenses compatible with existing IP Phone system in Chakra WAN, PoE enabled, Normal Users	100	No.	Appendix-B
D-02	IP Phones with licenses compatible with existing IP Phone system in Chakra WAN, PoE Enabled, Executive Users with Boss-Secretary & Consultative Call Forwarding features	25	No.	Appendix-B
D-03	PRI Gateway in HA	1	Set	Appendix-B
	(E) SERVICES - DESIGN, INSTALLATION & MAINTENANCE WITH ONSITE WARRANTY FOR 01 YEAR FROM GOLIVE, ONE-TIME PAYMENT			
E-01	Design, installation, project management, provisioning of onsite supervisor-01 No. till govlive+03 months, provision of Project tracking software for 02 Users, integration with central Nagios through authorised partner, turn-key basis implementation, with 01 year all-inclusive warranty support, including onsite network support engineer-02 nos. and server/ storage/ network phone support engineer-02 nos.	1	No.	Annexure-I & Annexure-II of Appendix-A

Item ID	Description	Qty.	Unit	Detailed Specification
	(F) SUPPORT - ALL INCLUSIVE AMC FOR ACTIVE & PASSIVE, RECURRING PAYMENT ON QUARTERLY BASIS			
F-01	Maintenance of passive components and cabling, onsite manpower-02 no., All-Inclusive for repair/ replace passive components as required, 01 Year AIAMC on post-completion of 01 year warranty, extendable for 02 years on yearly basis with terms and conditions	1	No.	Appendix-A
F-02	Maintenance of active components including ROBO racks, servers, storage, backup & recovery support, onsite L1 manpower-02 no. for servers/ storage/ network/ IP Phone. SI to provide L2 & L2 support from certified manpower/ consortium of OEM certified vendors, 01 Year AIAMC on post-completion of 01 year warranty, extendable for 02 years on yearly basis with terms and conditions	1	No.	Appendix-A

6. **Civil site survey and preparation of AutoCAD design document.** Vendor to carry-out detailed site survey during SRS stage and provide detailed AutoCAD diagram with following scope.

- (a) Preparation of as built drawing plan showing doors, windows, wall thickness, partition walls and outer area of building within campus including one side elevation of buildings
- (b) Topographical survey of campus layout (**Annexure-I of Appendix-A**) of approx. Grounds of area using electronic instruments for following.
 - (i) location of all major features such as roads, buildings, lawn, major trees, lamp post etc.
 - (ii) ground elevations.

7. **Central Nagios NMS Integration.** Vendor should integrate into centrally deployed Nagios NMS for central monitoring of all IP devices/applications including Servers (03 Servers), Virtual Machines (30 Nos.), Desktops (200 Nos.), Network devices (150 Nos.), IP phones (150 Nos.), applications (05 Nos. of Cisco CUCM, Active Directory, Virtualisation, Backup, NGFW) on the network. Features to be configured are network topology, rotating display, dashboard, SLA, bandwidth usage, time-stacked monitoring of CPU/ WAN bandwidth utilisation, multi-tenancy, AD integration and network analyser using map/ charts. Additional licenses as required be provided for 03 years.

8. **Support and penalty.** Vendor should provide required onsite support engineers as required during warranty & AMC period and provide onsite project manager during implementation of project from date of work order to till 03 months post-go-live. Vendor

should provide satisfactory support as required, failure to do, shall attract penalty clauses as enumerated in Annexure-I of Appendix-A, which is on and above other penalty clauses applicable.

9. Functional requirements are indicative in nature. Final scope of work requirements shall be identified as part of SRS phase by vendor.

Note: Bidders are requested to refrain from attaching additional unwanted documents.

Annexure-1

(Refers to Appendix 'A')

DETAILS OF PENALTY CLAUSES

1. Application not made fully operational within 02 working days – Rs. 2000 per day will be levied for each day of non-availability of system. In case situation exceeds 05 working days, enhanced penalty of Rs.5000 per day is applicable.
2. Late reporting to work by onsite support engineer/ manpower Rs. 500/- Per day (Support engineer/ manpower need to report for work at 0830 hrs. In a month maximum ten late reporting is permissible for entire resident engineer subject to maximum 03 late reporting).
3. In the event of support engineer/manpower remaining absent/on leave without substitute there of - Rs 1500/ for each day of absence.
4. Failure to maintain/renew/extend performance bank guarantee – Rs 1000/- per day (PBG should be restored to 100% if it is dip below 70% within 10 days. PBG should not fall below 60%. In case of AIAMC extension, PBG should be renewed for the same value irrespective viz-a-viz of period of such extension, i.e pro-rata not applicable. Coast Guard not mandated to return PBG before the expiry of initial validity period, and it is the responsibility of vendor to arrange PBG accordingly without any break in PBG availability).
5. ITSM software should be updated on daily basis and each service ticket should be assigned with unique ticket ID by onsite support engineer. Failure to update – Rs.500 per day. ITSM software shall be made available by Vendor on 24x7 basis at their premises with dedicated login for ICG to create/manage support tickets.
6. ITSM Service Desk portal and ALM portals should be available on 365x24x7 during the entire contract period with minimum availability of 99%. Non-availability of ITSM Portal for more than 24 hours – Rs.1000 per day. Mutually agreed maintenance periods and other justifiable circumstances as accepted by Coast Guard are exempted.
7. Oracle Primavera/MS Project portal to be hosted, updated and should be available on 365x24x7 during the till final GoLive + 06 months with minimum availability of 99%. Non-availability of Oracle Primavera/MS Project Portal for more than 24 hours – Rs.1000 per day. Mutually agreed maintenance periods and other justifiable circumstances as accepted by Coast Guard are exempted.
8. In case the vendor is not in a position to provide alternate/standby facility, Buyer shall have the right to get the issues rectified by a third party without effecting the contractors' obligations for maintenance of the systems under the contract. The payment towards maintenance/ repair charges will be made to the third party and a sum equal to maintenance/ repair charges would be deducted from any outstanding bills/ PBG for the time actually lost.
9. All penalty amounts may be deducted from outstanding bills/Performance Bank Guarantee as applicable.

10. It may also be noted that in case of vender backing out in mid-stream without any explicit consent of Coast Guard, the vender will be liable to recovery at higher rates vis-a-vis those contracted with, which may have to be incurred by Coast Guard on maintenance of IT system for the balance period of contract by alternative means.
11. Under no circumstances, on each occasion the cumulative continuous penalty total shall not exceed 10% of the contract value.
12. Coast Guard at its discretion may entirely/partly waive-off penalty under justifiable circumstances.

Annexure-I of Appendix-'A'

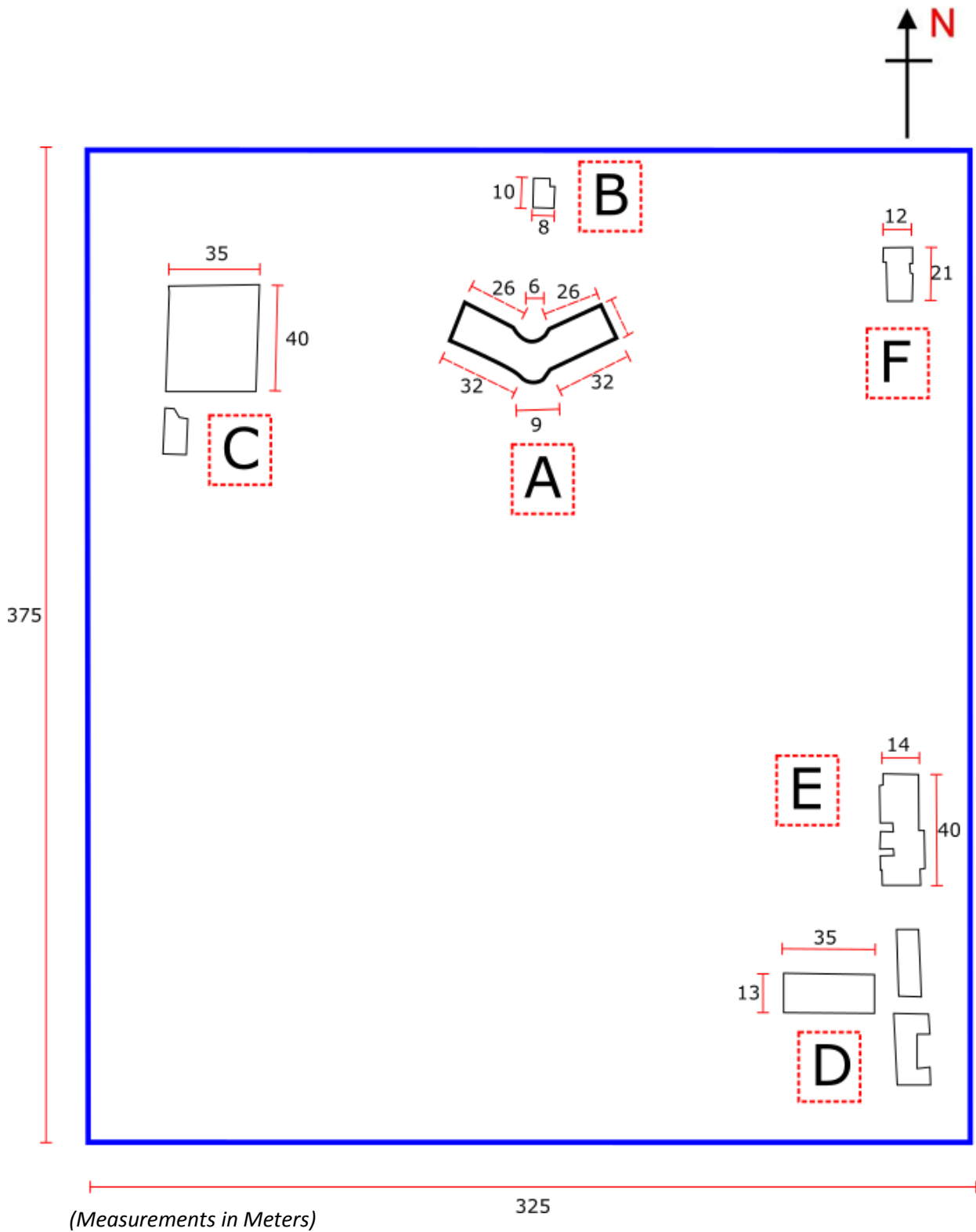


Fig-1 Campus layout diagram



STANDARD FOR STRUCTURED CABLING

INDIAN COAST GUARD

**DETAILED FUNCTIONAL, OPERATIONAL, TECHNICAL
CHARACTERISTICS AND FEATURES**

Version 1.0 - 19 Nov 2018

Directorate of Information Technology
Coast Guard Headquarters
New Delhi-100 001

All information contained in this document is the property of Directorate of Information Technology, Coast Guard Headquarters, New Delhi-110 001 and approval is required prior to reproduction or distribution.

Table of Contents

1. Introduction
2. General
3. Network Architecture-System Overview
 - 3.1 Hierarchical Topology
4. Definitions
5. Quality Assurance
 - 5.1 Qualification of System Integrator (SI)
 - 5.2 Standards Compliance
 - 5.3 Networking Passive Components Specifications
 - 5.4 Application Support
 - 5.5 Structured Copper Cabling Channel Performance
 - 5.6 Third-Party Verification of Category 6 UTP Channel
 - 5.7 Testing
 - 5.8 Project Closeout
6. Design Criteria
 - 6.1 Distribution Frames (BDF/IDF)
 - 6.2 Cabling
 - 6.3 Work Station Area(s)
7. High Level Bill of Materials

List of Annexures

Annexure-1: Important Specifications of Hierarchical Topology Network Equipments

Annexure-2: Important Specifications of Flat Topology Network Equipments

Annexure-3: Important Specifications of Networking Passive Components

Annexure-4: Network Rack Elevation Diagram

Annexure-5: Server Rack Elevation Diagram

List of Figures

Figure 3a - Campus Layout

Figure 3.1a - General Hierarchical Network Architecture

Figure 3.1b - Building layout with Hierarchical Networking

LOCAL AREA NETWORKING (LAN)

Introduction

1. The LAN is a critical corporate asset, connecting servers, applications, end user computing devices and storage services in the enterprise. This strategic tool supports vital day-to-day operations and is crucial for meeting organization's objectives. The LAN faces a number of challenges as enterprises are centralizing applications and consolidating servers to simplify operations and reduce costs while Headquarter's ability to respond to operational objectives increasingly depends on operations carried out at distributed units under Headquarter's command. As role of Coast Guard continue to expand across the oceans, downtime is not an option—a LAN must efficiently operate 24x7.

General

2. To effectively manage and utilize availability of various network resources such as ICG Chakra WAN, CG Primary Data Centers and other mission critical information networks requires well-designed network architecture is mandatory. It is in this context the Local Area Networking was envisaged as a captive, exclusive and highly secured communication network. The following is envisaged through a secure and reliable network:-

- (a) Provide common net enabled services to End User.
- (b) Ability to run and get connected to all strategic and operation applications which require robust infrastructure.
- (c) Converged infrastructure to provide Voice, Video and Data services with End User and also provide provisions for integration with existing legacy services.
- (d) The Network will be highly scalable to cater for expansion by addition of more communication nodes and entities. The Network will be engineered to provide voice and video networking (point-to-point, point-to-multipoint) support for the users along with data and video routing/transportation services.
- (e) Provide Quality of Service (QoS) from end to end.
- (f) Ability to integrate with Online Monitoring and management of infrastructure.
- (g) The proposed Network would provide flexibility with subsequent enhancement to traffic engineering, resource reservation, dynamic provisioning and network resiliency.
- (h) Distribution of strategic and operational content at all locations of End Users.
- (j) Strengthen the existing information system and communication backbone.
- (k) Provide effective and real time information to the End User.
- (l) Transparency and efficiency in the delivery of services and information.

3. **Network Architecture-System Overview**

Hierarchical topology or Flat topology can be selected depends on the campus layout.

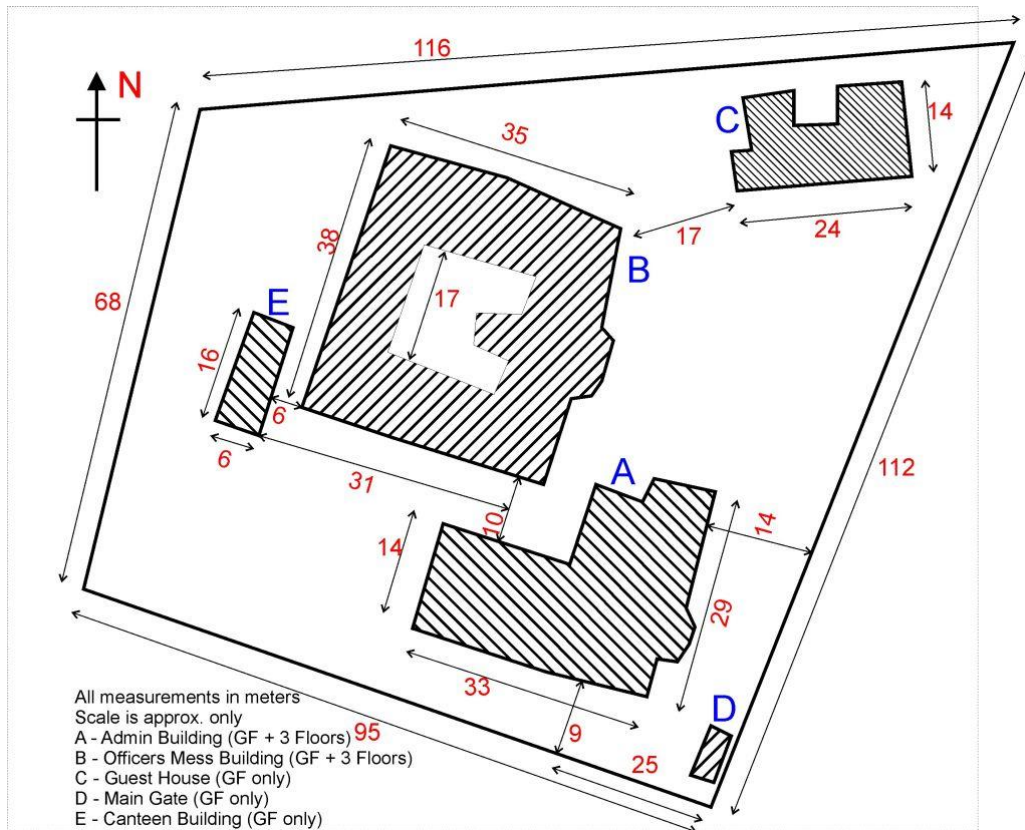


Figure 3a: Campus Layout (Sample only, not actual layout)

3.1 Hierarchical Topology.

(a) LAN should provide/extendable to provide integrated voice, data and multimedia services to all users. The Network would feature the highest grade of secrecy, guaranteed quality of service and fail safe end to end operation. Under such technology background, the LAN architecture mode should be of enterprise grade network basically includes core switches and edge switches. The core devices are two or more high end Layer 3 switches which connect to the middle and low end Layer 2 switches at the network edge with the at least 1Gbps fiber as the backbone. The edge switches connect to the desktop system through 100/1000M link. The SI should design solution based on two layer core-distribution-edge architecture as below:

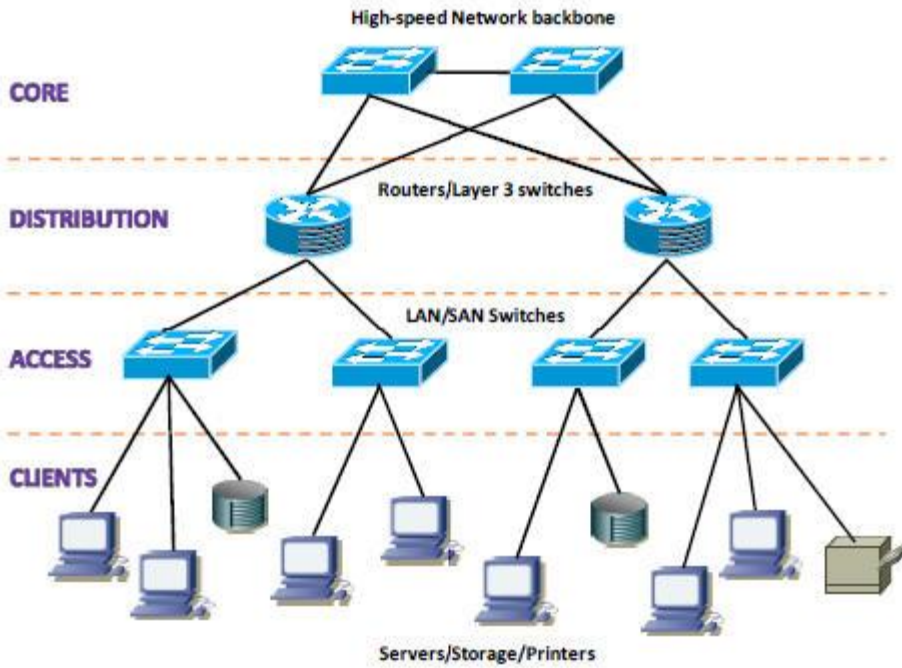


Figure 3.1a: General

Network Architecture

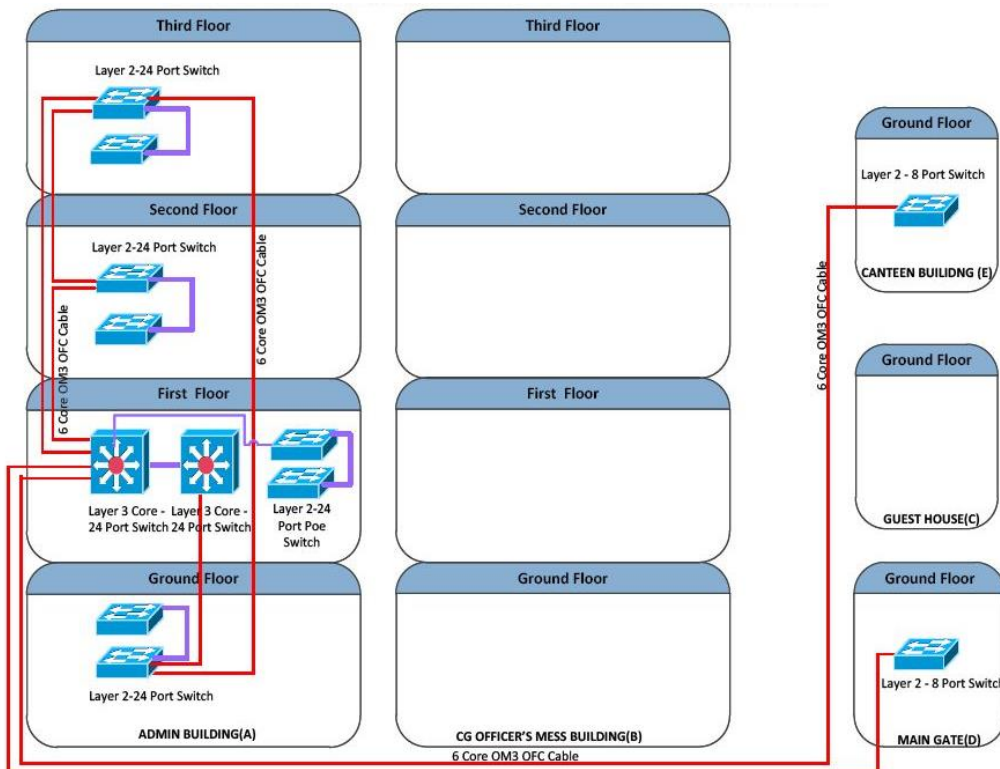


Figure 3.1b: Building Layout with Networking (Sample layout only)

(b) Furnish and install, complete with all accessories, a Category 6 Unshielded Twisted Pair (UTP) Structured Cabling System (SCS). The SCS shall serve as the transport infrastructure for data, video and voice telephony signals throughout the network from designated demarcation points to outlets located at various Desktop, Workstation, Data Centre, Intelligent Building facilities or other locations as indicated on the contract drawings and described herein.

- (c) Internet LAN Intranet LAN to keep airgap and to run independent LAN cabling
- (d) Important general and technical specifications of Hierarchical topology networking is placed at Annexure-1.

3.2 Flat Topology *(Not applicable for current project)*

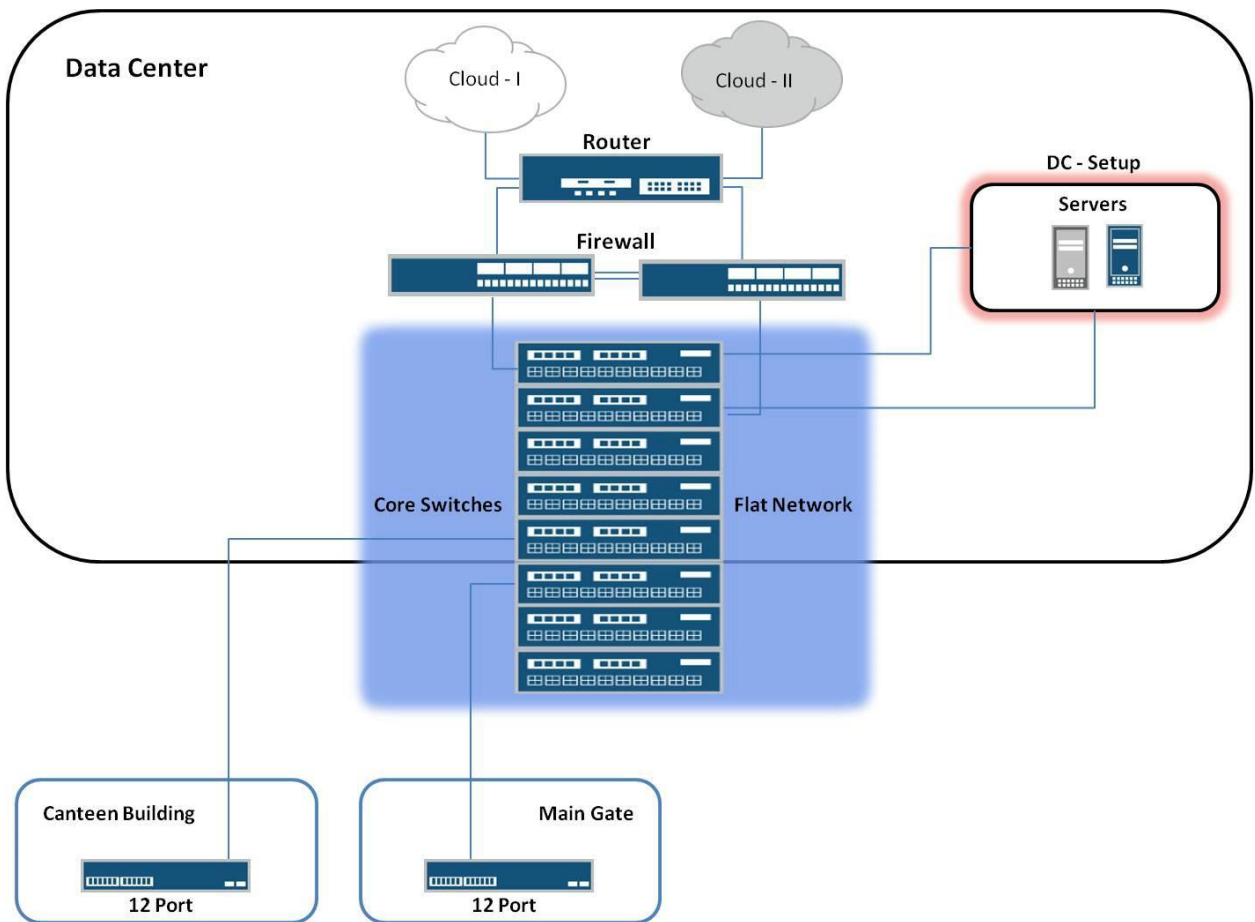


Figure 3.2a: Building Layout with Flat Topology Networking

- (a) Important general and technical specifications of Hierarchical topology networking is placed at Annexure-2.

4. Definitions

(a) **Building Main Distribution Frame (BDF)**

Primary telecommunications room for a building. This is the common point of appearance for the Inter and Intra building copper and fiber backbone cabling.

(b) **Intra-building Distribution Frame (IDF)**

Sub-telecommunications rooms within a building connecting to the BDF or another IDF. More than one IDF may exist on a floor in order to keep the distance between any telecommunications outlet and a telecommunications room from exceeding 290ft.

(c) **Backbone Cabling**

(i) Intra-building. Extending from BDF's between buildings and BDF/IDF's within buildings. These include Copper UTP cable and Fiber, 6/12/24 core OM3 multimode 50/125micrometer. Intra-building backbone cabling to concealed for vertical drop or run through building shaft. Horizontal cabling be routed through ceiling and laid on unitrust GI cable tray on ceiling fitted with enclosed tray

(ii) Perimeter Backbone Cabling. All BDF to be extended from perimeter 24/48 core OM3 multimode 50/125 micro-meter. Campus backbone cabling to be routed underground along with campus perimeter wall. Provide IP56 network enclosure at every 100 meters along the campus perimeter to support campus CCTV, scalability to connect BDF. Perimeter network enclosure to cater minimum of 12-Port L2 PoE+ switch and electrical power, duly connected to NMS for central monitoring.

(d) **Horizontal/Home Run Cabling**

(i) Cables, which terminate on one end in a BDF/IDF patch panel and the other end at a station location. These copper cables consist of eight (8) insulated, solid conductors formed into four individual twisted pairs and are rated for no less than Cat6

(ii) Horizontal cabling be routed through ceiling and laid on unitrust GI cable tray on ceiling fitted with enclosed tray

(e) **Vertical drop cabling**

(i) Any vertical drop of network intra-building cabling to be routed through concealed wall. Vendor should ensure finishing of wall to keep aesthetic look intact

(ii) Inter-floor backbone copper/ fiber cabling should be routed through HDPE pipe on building shaft

(f) **Work Station Location**

Telecommunications outlet/connector ready to receive work area equipment such as telephones, fax machines, data terminals and computers. More than one location may exist in an office to ensure work area equipment cable does not exceed 16ft.

5. Quality Assurance

5.1 Qualification of System Integrator (SI)

(a) The contractor will accept complete responsibility for the design, installation, certification, and support of the cabling system. The contractor must show proof that contractor has the certifying manufactures support on all these issues.

(b) In the event that subcontractors are used for any portion of the work or technical support, the customer will look to the contractor for all corrective action.

(c) All Work shall be performed and supervised by Telecommunications Technicians and Project Managers who are qualified to install voice, data and image cabling systems and to perform related tests as required by Coast Guard in accordance with the manufacture's methods.

(d) Telecommunications Technicians employed shall be fully trained and qualified on the installation and testing of the equipment to be installed. Evidence that the contractor is a current certified installer must be provided in writing prior to work commencing on the structured cabling for the building.

(e) The SI (including subcontractor(s) if any) shall have a proven track record in cabling projects. This must be shown by the inclusion of details of at least three projects involving Category6 cabling and optical fiber, which have been completed by the contractor in the last two years. Names addresses and phone numbers of references for the three projects shall be included.

(f) The SI shall use only an approved tel/data subcontractor for all work associated with this section. If the bidder wishes to seek approval of a contractor not on the approved list, it must be done prior to Bid Date and shall not be assumed they are approved or will be approved until the college provides written confirmation of their approval of the tel/data contractor being submitted for approval. If the bidder utilizes the pricing of a yet unapproved tel/data contractor it is entirely at the risk of the Bidder. The current list of approved contractors can be requested from Coast Guard.

(g) The SI shall be responsible for the following items:

(i) All cross connect rings or spools

(ii) All connecting blocks and/or patch panels

(iii) All mounting brackets and/or relay racks.

(iv) All Blue station cable (data required).

(v) All communication work station outlets (default colour grey, and other colours if requested) and terminating hardware as required.

(vi) All conduit/inner duct (as required).

(vii) All hangers and mounting hardware.

(viii) All wraps, bushings and miscellaneous parts.

(ix) All installation tools and equipment necessary to complete project.

(x) All coring, as required.

(xi) All modular jack hardware as required.

(xii) All construction (labour & materials) as stated.

(xiii) Co-ordinate inspections with the on campus departments who will be maintaining the system at completion.

(h) The SI is responsible for assembly of all components including, but not limited to:

- (i) Communication workstation boxes.
- (ii) Faceplates.
- (iii) Connectors.
- (iv) Racks.
- (v) Patch Panels.
- (vi) Fiber enclosures.

(j) Contractor will be required to attend a pre-wiring meeting with Regional IT Center and all other interested parties. Cabling will be subject to inspections throughout the cabling process to insure the correct understanding and implementation of the cable standards. It is the responsibility of the SI to contact Directorate of IT/ concerned IT Office to arrange inspections per the following times:

- (i) Before beginning.
- (ii) After first station location wires are pulled.
- (iii) Before terminations at both ends of cable have started.
- (iv) Final inspection after testing is complete. Test results will be required at this time.

5.2 **Standards Compliance.** The Category 6 UTP SCS shall comply with the following standards.

- (a) ISO/IEC 11801
- (b) EN 50173 Part 1 through Part 5: 2010 and 2011
- (c) ANSI/TIA-568-C
- (d) IEC 60603-7-4
- (e) IEEE 802.3 applications as outlined in section 2
- (f) Local/National Codes and Regulations

5.3 **Networking Passive Components Specifications.** All networking passive components should be in compliance with specifications mentioned in Appendix-A, Section-A, Annexure-3 or better.

5.4 **Application Support.** The Category 6 UTP SCS shall be capable of supporting, at minimum, the following IEEE Ethernet applications:

802.3e	1BASE5
802.3i	10BASE-T 10 Mbit/s over twisted pair
802.3u	100BASE-TX, 100BASE-T4, Fast Ethernet at 100 Mbit/s w/auto negotiation
802.3y	100BASE-T2 100 Mbit/s (12.5 MB/s) over low quality twisted pair

802.3z	1000BASE-X Gbit/s Ethernet over Fiber-Optic at 1 Gbit/s
802.3ab	1000BASE-T Gbit/s Ethernet over twisted pair at 1 Gbit/s
802.3af	Power over Ethernet (12.95 W)
802.3at	Power over Ethernet enhancements (25.5 W)
802.3az	Energy Efficient Ethernet

Additionally the Category 6 UTP SCS shall be capable of supporting 1GFC-BASE-T as defined in the Fibre Channel Applications Standards Technical Committee 11 of INCITS.

5.5 Structured Copper Cabling Channel Performance The Guaranteed Values in Worst-Case 100 Metre, 4 Connector Channel requirements are as following.

- (a) It is critical that guaranteed worst-case values are provided to ensure the SCS can support 1G transmission without risk. “Average value” or “Typical Value” is not acceptable as they do not account for lower performance channels.
- (b) The proposed Category 6 UTP SCS, when configured as a worst-case 100 metre, 4 connection channel shall meet the following specifications per the equations listed below.
- (c) Note that these specifications meet or exceed the ISO/IEC IS 11801:2010, Class E channel requirements when configured as a worst-case 100 metre, 4 connection channel. The table below provides reference values only.

Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100	200	250
Insertion Loss (dB)	2.0	3.8	5.4	6.0	7.6	8.6	9.6	10.8	15.6	20.2	30.0	34.1
NEXT (dB)	71.0	69.0	64.2	62.6	59.2	57.6	56.0	54.4	49.4	45.9	40.8	39.1
ACR (dB)	69.0	65.2	58.8	56.6	51.6	49.1	46.4	43.6	33.7	25.7	10.8	5.0
PSNEXT (dB)	69.5	68.0	63.1	61.5	58.1	56.5	54.8	53.2	48.1	44.6	39.4	37.7
PSACR (dB)	67.5	64.2	57.7	55.5	50.4	47.9	45.2	42.4	32.4	24.3	9.4	3.5
ELFEXT (dB)	69.3	57.2	51.2	49.3	45.2	43.2	41.3	39.4	33.3	29.3	23.2	21.3
PSELFEXT (dB)	68.3	56.2	50.2	48.3	44.2	42.2	40.3	38.4	32.3	28.3	22.2	20.3
Return Loss (dB)	23.0	23.0	23.0	23.0	22.0	21.5	21.0	20.5	18.0	16.0	13.0	12.0
Delay (ns)	580	562	557	555	553	552	551	550	549	548	547	546
Delay Skew (ns)	30	30	30	30	30	30	30	30	30	30	30	30

Note: The table provides reference values only. All parameters comply with the governing equations given below over the entire frequency range.

- (d) All values and equations apply to worst-case channels utilizing four-pair **High Performance** series cables with full cross-connects, consolidation points and work area outlets (4 connectors in a channel) for any channel lengths up to 100 meters.

Electrical Parameter (1 - 250MHz)	Guaranteed Margins to draft Category 6 channel Specifications
Insertion Loss	5 %
NEXT	6 dB
PSNEXT	7.5 dB
ELFEXT	6 dB
PSELFEXT	8 dB
Return Loss	4 dB

5.6 **Third-Party Verification and Certification of Category 6 UTP Channel and Fiber Cabling.** The SCS must be tested by an ISO 17025 accredited 3rd Party test facility to the following standards and offer certification for the life expectancy of a cabling system which meets the defined requirements should exceed 25 years:

- (a) EIA/TIA 568C: Category 6 Channel
- (b) ISO/IEC 11801 : Class E Channel
- (c) EN50173
- (d) ISO/IEC 11801
- (e) 3rd Party verification for channel testing must be provided as part of the bid response.

5.7 **Testing**

(a) Permanent links testing for UTP copper shall be conducted for 100% of pairs and shall identify pair reversal, opens, shorts, resistance and length. Testing shall be per ANSI/TIA/EIA-568-B.1 section 11.

(b) Basic or Tier 1 fiber network certification is required in all fiber optic cabling links; tests attenuation / insertion loss, length and polarity. This test ensures that the fiber link exhibits less loss than the maximum allowable loss.

(c) Fiber test measurements shall be taken from both ends, to ensure proper connector termination.

(d) All tests must be documented. Date, time, test set identifier, the technician and the witness are to be logged. The test log file is one of the deliverables required for system acceptance and job completion certification.

(e) Results of testing will be provided to the Owner's on-site representative on paper and electronically.

(f) A paper copy of test results must be signed and dated by the Contractor's foreman or project manager to certify that testing was conducted according to the specified procedures and the results are as stated.

(g) Test and Acceptance document will list the building, BDF/IDF, outlet number, and location of the outlet.

(h) Test document will list summary & detailed results.

(j) All Cable will be tested using equipment capable of testing the level of cable installed.

(k) The SI will provide a detailed and complete list of the test equipment used identifying manufacturer model number, serial number, calibration date, and calibration period of all units used for testing.

(l) SI should obtain LAN cabling certification for 25 years from 3rd party agencies.

5.8 **Project Closeout**

(a) Records will, at a minimum, correlate station location number and horizontal/riser distribution cable number. A clean, legible copy of these records must be submitted upon project completion. An electronic record using Microsoft Office format will also be submitted upon project completion.

(b) Three (3) complete sets of as-built drawings following project completion will at a minimum, show the location and type of all telecommunications rooms, distributing cable runs, and communication station outlets.

(c) Each IDF and BDF will contain a copy of "as-built" drawings provided by the SI. These copies will be placed in plastic sleeves prior to posting.

(d) The SI will update all changes to drawings until the project is accepted.

(e) The original will be provided to Regional IT Center.

(f) All rooms and terminal facilities must be free of cable clippings, empty reels, cartons or other refuse resulting from the installation.

(g) The SI shall provide documentation describing the essential system elements and the requirements for maintaining the integrity of the cabling system over time. Documentation shall include, as a minimum, guidelines for system expansion and modification (moves, additions, changes of service) as well as labelling and record keeping.

(h) The SI should provide OEM Certification for the structured networking valid for 25 years. This shall certify both the product and workmanship.

(j). All the data points shall be tested and certified for Standards including standards as mentioned in para 3 above, such as Signal/Noise Ratio, Far & Near Cross talk with industry standard tools such as Fluke meter. Similar industry standard reports shall also be provided for Optical Cabling.

- (k) Actual material used to be supported by detailed networking diagram on Auto CAD software/Professional networking design software.

6. Design Criteria

6.1 **Distribution Frames (BDF/IDF)**

- (a) The Building Main Distribution Frame (BDF), and/or the Intermediate Distribution Frame (IDF), may be shared with both Access Control and Fire Alarm.
- (b) There shall be a minimum of one Telecommunications room/ closet per floor. The rooms shall be vertically aligned where possible. If not possible, the provision to house non-plenum backbone cable shall be required.
- (c) BDF/IDF's shall not share with electrical distribution; transformers pose the threat of damage or EMF interference. Janitorial services, pose water/electrical threats. Storage area's present fire hazards as well as hindering access to equipment.
- (d) The designer is required to refer to and comply with the EIA/TIA-569 section, "Telecommunications Room", for room design parameters including architectural elements, mechanical, & electrical requirements. DC-Network Services shall review the space during the design development phase. Consultants may make arrangements to review the EIA/TIA-569 document with DC-Network Service's office.
- (e) Existing BDF/IDF's that need expansion in order to comply with the new standard must meet the TIA/EIA specifications for a communications room. When dealing with an existing BDF/IDF, the design choice will be made and specified by RITO on a case by case basis.
- (f) The horizontal cable length to the farthest workstation shall be limited to 82meters, (269feet).
- (g) Cable tray or Unistrut is required to support all horizontal sections of cable.
- (h) When renovating, existing work station locations will be upgraded to comply with the standard being implemented.
- (j) Each room/telecom enclosure must have a minimum of two (2), 2-gang duplex- power receptacle. Each duplex receptacle to be on a dedicated, 230-volt, 15 amp, circuit. Location of this circuit breaker must be noted at the outlet.
- (k) 19-inch, 7 ft. rack space shall be available for fiber enclosure(s), copper 48port patch panel(s), cable management, Uninterruptable Power Supply(s) and 25% future growth.
- (l) Floor space for a rack(s) shall include 3' front and rear access.
- (m) Card Access and backup key shall be provided seven days per week to each room.
- (n) Where possible, the BDF/IDF shall be on emergency generator power as provided by ICG.

6.2. Cabling

6.2.1. **Inter and Intra-Building**

- (a) All Optical fiber and copper cables shall be handled, installed and supported as per manufacturer's guidelines. During the laying of the cable, installer shall take care not to over stress

the cable. After the cable is installed, installer shall make sure that all parts of the cable are supported properly and shall be stress free at both ends and throughout their length.

(b) The Telecommunications grounding system shall comply with the requirements listed in ANSI-J-STD-607-A-2002. Backbone systems must comply with all applicable National, Regional, or Local building and electrical codes.

(c) Cabling shall be placed through shafts, conduit, raceways or floor penetrations and supported according to the manufactures recommendations.

(d) All horizontal sections of cable will be supported by Cable tray or Unistrut.

(e) Cables shall be labelled at both ends.

(f) All cabling must be routed in such a manner as to ensure all bundled cabling is neat.

(g) All exposed cable bundles to be bound at a maximum of every 24 inches, Velcro bindings shall be hand tightened only to a point where the sheath is not deformed.

(h) The cables shall be rated for the specific indoor or outdoor use as required, e.g. Aerial, Buried, Conduit and/or Plenum.

(j) When conduit is used, the maximum number of bends between cable pulling points shall be no more than two(2) ninety-degree bends.

(k) Fiber:

(i) 50/125micrometer, 6 core OM3, Multimode

(ii) Maximum Attenuation: 3.5/1.0

(iii) NFPA 70, Type OFN complying with UL 1666.

(iv) Comply with TIA/EIA-568B

(v) At no time shall the cable's static or dynamic bending radius be exceeded.

(vi) A service loop of 12ft shall be secured in the raceway for future use.

(vii) The manufacturer's instruction for securing the fiber in the fiber enclosure shall be followed.

(viii) Fiber enclosure shall be mounted close to the top of a rack.

(ix) Install in inner duct. Inner ducts are to be permanently labeled as containing fiber optic cable.

(l) Voice Copper:

(i) Cable capable of meeting the power sum requirements of ANSI/TIA/EIA-568-B.2

(ii) Terminated in patch panels on racks.

6.2.2 Intra-Building

(a) The building backbone cabling shall be configured as a physical star, with separated dedicated cables to each BDF/IDF.

(b) Fiber minimum of 06/12/24 core multi mode 50/125micrometer fibers OM3 per each IDF to the BDF shall be installed for Data.

(c) Data Copper

(i) CAT6 or better shall be utilized in office buildings.

(ii) Cat6 shall be utilized in buildings such as administration and residential life buildings.

(iii) The specified standard shall be maintained throughout a project.

(iv) When the need for non-plenum rated cable is established for a portion of a project that standard will be maintained throughout the project.

(v) Color blue.

6.2.3 Inter-Building & Perimeter Backbone Cabling

(i) Inter-building. Fiber Optic Cable shall be 06 core OM-3 fiber multimode 50/125-micrometer

(ii) Perimeter Backbone Cabling. Fiber Optic Cable shall be 12/24/48 core OM-3 fiber multimode 50/125-micrometer. OFC to be laid underground on HDPE pipe as per standards. Every 100 mtrs, provide IP56 network enclosures to support extension of BDF and CCTV surveillance equipments.

6.2.4 Horizontal/Home Run Cable

(a) Outlet Specifications

(i) Minimum of two (2), or maximum of four (4), series data cables will be one continuous run to each work station location.

(ii) All 4 pairs will be terminated pin/pair assignment T568B.

(iii) A minimum of one (1) foot of each cable shall be left coiled in the ceiling above the workbox for future re-terminations and will include the station location label.

(b) Patch Panel Specifications

(i) One CAT6, 4pair media series cable will be terminated to one CAT6e patch panel RJ45 jack position.

(ii) One CAT6, 4pair media series cable will be terminated to one CAT6 patch panel RJ45 jack position.

(iii) All 4 pairs will be terminated pin/pair assignment T568B.

(iv) Patch panels will have min 24 ports for Buildings A and 8 ports for D & E.

(v) A minimum six(6)ft. service loop shall be coiled, and secured in the Cable tray or Unistrut in the BDF and IDF room(s) and will include the station location label.

6.2.5 Pathway Specifications

(a) All cabling shall be installed in a dedicated pathway/raceway system. The system is generally composed of EMT and cable tray but may also include Wire Basket where necessary. Non-metallic wire mould is not allowed. Refer to EIA/TIA-569 Pathway & Spaces.

(b) All raceway systems shall be installed so that they form a contiguous pathway system and are securely fastened to building surfaces. The SI may propose an alternate route to minimize interference with existing systems, however all alternate routes must be approved by ICG.

(c) All wiring shall be neatly installed into pathway. No wiring shall be attached to any other electrical conduits, plumbing, heating or air conditioning structures. Wiring shall be routed so that it does not interfere with access to panels, switches, valves or other maintenance systems.

(d) All surface run cabling will be installed in raceway, wiremold, EMT conduit, or other approved system. All transitions (bends, tees, et cetera) will be done with factory made fittings or properly executed field bends. The maximum number of bends between cable pulling points shall be two(2) ninety-degree bends. Runs over 100 ft shall have a pullout box.

(e) Any cable concealed above ceiling grids will be supported off of ceiling grid using D-Rings or bridle rings and, wherever practical, bundled together. All bindings used (Velcro or hook and pile) shall be hand tightened only to a point where the sheath is not deformed.

(f) Conduit for running the cables should be fixed in the wall by concealing them. The conduits should be placed by removing the plaster on the wall by minimum one inch and placing the conduit. The plastering and painting should be redone for a smoother finish of the wall. The conduits should be avoided on the Columns and Beams.

(g) All penetrations in station raceway will have rubber or equivalent grommets to prevent cable cuts on rough edges.

(h) All pathway/raceway will be of sufficient size to accommodate all wiring. Fill density not to exceed 40%.

(j) All raceway will be attached to the building structure using screws and anchors. A minimum, attachment will be every two feet.

(k) When the cable tray is passing through a hard-lid ceiling, access ceiling panels shall be installed at 8-foot intervals. The panels shall be within 2 feet of the cable tray. Access panels shall not be mounted directly underneath the cable tray.

(l) All coring in viewable areas must be patched with appropriate material and painted if necessary. This work will be inspected.

(m) Existing cable trays may be used where additional capacity does not exceed 40% fill density.

(n) After all cables are installed and successfully tested, station runs penetrating fire and/or smoke barriers will be sealed with a UL listed removable smoke and flame stop, having a fire rating suitable for the penetration concrete is not acceptable.

(p) Conduit space in the riser path between the BDF and each IDF shall not exceed 50% capacity. Pull string must be left in conduit.

- (q) The riser path must be smooth with no right angles or sharp bends.
- (r) All cable sheaths will be protected from sharp metal edges. Where the cable passes over a sharp edge, a bushing or grommet will be installed to protect the cable.
- (s) Customized Raceway with aesthetically matching with interiors of furnished cabin/rooms to be used.

6.2.6 General PVC Conduit and Raceways Specifications

- (a) The conduits for all systems shall be high impact rigid PVC heavy-duty type and shall comply with I.E.E regulations for non-metallic conduit 1.6 mm thick as per IS 9537/1983
- (b) All sections of conduit and relevant boxes shall be properly cleaned and glued using appropriate epoxy resin glue and the proper connecting pieces, like conduit fittings such as Mild Steel and should be so installed that they can remain accessible for existing cable or the installing of the additional cables.
- (c) No conduit less than 20mm external diameter shall be used. Conduit runs shall be so arranged that the cables connected to separate main circuits shall be enclosed in separate conduits, and that all lead and return wire of each circuit shall be run to the same circuit.
- (d) All conduits shall be smooth in bore, true in size and all ends where conduits are cut shall be carefully made true and all sharp edges trimmed. All joints between lengths of conduit or between conduit and fittings boxes shall be pushed firmly together and glued properly.
- (e) Cables shall not be drawn into conduits until the conduit system is erected, firmly fixed and cleaned out. Not more than two right angle bends or the equivalent shall be permitted between draw or junction boxes. Bending radius shall comply with I.E.E, regulations for PVC pipes.
- (f) Conduit concealed in the ceiling slab shall run parallel to walls and beams and conduit concealed in the walls shall run vertical or horizontal.
- (g) The chase in the wall required in the recessed conduit system, shall be neatly made and shall be of angle dimensions to permit the conduit to be fixed in the manner desired. Conduit in chase shall be hold by non-corrosive steel or copper hooks of approved design of 60 cm centre the chases shall be filled up neatly after erection of conduit and brought to the original finish of the wall with cement concrete mixture 1:3:6 using 6mm thick stone aggregate and course sand.
- (h) For placing out door conduits this should be fixed at equal intervals using non-corrosive steel or copper hooks of approved design.
- (j) For running different types of cables under the soil for campus networking, the conduits should be placed in a trench dug at least one foot deep and packed externally with coarse sand for extra cushioning effect and then with soil / blue metal / concrete.
- (k) Fixing of the Conduits – Conduits junction boxes shall be kept in position and proper holdfasts shall be provided. Conduits shall be so arranged as to facilitate easy drawing of the wires through them. Adequate junction boxes of approved shape & size shall be provided. All conduits shall be installed so as to avoid stream and hot water pipes. After conduits, junction boxes, outlet boxes & switch boxes are installed in position their outlets shall be properly plugged so that water, mortar, insects or any other foreign matter does not enter into conduit system. Conduits shall be

laid in a neat and organized manner as directed and approved by the ICG officials or person on their behalf. Conductors shall be planned so as not to conflict with any other service pipe lines / ducts.

(l) Protection – To minimize condensation or sweating inside the conductors all outlets of conduit system shall be adequately ventilated and approved by the proper competent authority. All screwed and socket connections shall be adequately made fully water tight and non corrosive materials and be use of proper jointing materials.

(m) Inside the **Server farm area**, dedicated raceways / cable-trays of 200 / 50 mm GI for routing the cable should be used separately for laying LAN and the electrical cables. They should run in separate race ways under the raised floor with the distance of at least 2 feet between them. While crossing they should cross at 90°.

(n) Wherever wiring is run through raceways, the wires emerging from individual distributions shall be bunched together with cable straps at required regular intervals. For electrical cabling identification ferrules indication the circuit and D. B number shall be used for sub main, sub circuit wiring the ferrules shall be provided at both end of each sub main and sub-circuit.

(p) All the cable raceways shall be adequately grounded and fully concealed with covers and the cables should be appropriately marked and labelled.

(q) In general distance between supports shall not be greater than 600mm for horizontal run and 750mm for vertical run.

6.3 **Work Station Area(s)**

6.3.1 **Standard Telecommunications Outlet**

(a) Communication station outlets will be located in the permanent building structure.

(b) Minimum of two, maximum of four(4), receiver modules(jacks), will be installed at each location. Colour to be specified by job, module default colour is grey.

(c) Faceplates will have a minimum of two(2), maximum of four(4) positions. Faceplates shall accept modules for each cable available at the location. Faceplate default color is grey.

(d) The odd patch panel position(s) to be mounted on the left and the even patch panel position(s) to mounted on the right when the faceplate is mounted in the finished position. Lower value number(s) on top and higher value number(s) below.

(e) In all dry wall office areas, modular jacks and inserts will be flush mounted in double gang 4x4", 4" deep boxes with plaster rings. All double gang boxes will be fed with a minimum of a 1"conduit.

(f) In residence halls, laboratories and computer oriented workplaces; the mounting height for the boxes is 32" above the finished floor (i.e. just above desktop level). Otherwise ICG will specify the heights of all boxes as part of the detailed design process before work begins.

(g) In demountable partition and/or areas requiring surface mount boxes, Contractor will supply and install double gang boxes with a minimum depth of 2-¼" near existing services. Boxes will be affixed to surfaces using screws and/or special purpose clips; the use of double-sided tapes is not acceptable.

- (h) All outlets positioned in sheetrock shall conceal all cable exit holes.
- (j) Labeling on the faceplate will be typed in bold black over white.
- (k) All faceplates shall be identified with permanent labels. Label will indicate floor, telecommunications room and patch panel position. Labels shall use ANSI/TIA/EIA-606-A standards. An example label would be 3A1 where:
 - (l) '3' indicates that the cable is going to the third floor.
 - (m) 'A' indicates that the cable is terminated at the first or only IDF.
 - (n) '1' indicates that the patch panel position.

6.3.2 Wireless

- (a) Will have double gang box mounted a minimum of twelve (12) inches below the ceiling surface or into an approved ceiling tile.
- (b) Will contain two (2), CAT6 or greater home run data cables.
- (c) Does not need a faceplate.
- (d) In every other way outlet specifications apply, see [3.3.1](#) and [3.2.4](#).

6.3.3 Wall Phone

- (a) Will have single gang box mounted fifty-two(52) inches above floor (ada).
- (b) Will contain two (2), CAT6 or greater home run data cables.
- (c) In every other way outlet specifications apply, see [3.3.1](#) and [3.2.4](#).

6.3.3 Floor Box

- (a) Specified mounts shall be used.
- (b) Will contain two (2), CAT6 or greater home run data cables.
- (c) Other mounts may be used after modules (jacks) have been replaced with modules used by Coast Guard, must be verified before install.
- (d) In every other way outlet specifications apply, see [3.3.1](#) and [3.2.4](#).

6.3.4 Modular Furniture

- (a) As modular furniture is not part of the permanent building structure, no station run cabling shall be located or terminated within it.
- (b) Patch cables shall be run from communication station outlets located in the building structure by the Modular furniture contractor.
- (c) Accessibility to communications work station outlet critical when installing Modular furniture.

(d) The modular furniture contractor will determine the lengths of voice and data patch cords required at each location, not to exceed 25'. They will document this information on drawings and in a spreadsheet.

(e) Patch cables in lengths of 7', 14' and 25' should be used by SI as required.

(f) All patch cables will be protected from metal edges with grommets or other permanent means (tape is not acceptable). Applicable Cat 6 bend radiuses for flexible cable will be observed.

(g) Power will be avoided as much as is reasonably possible.

(h) The contractor will be responsible for the cable installation within the Modular furniture and are not done until the data cable is plugged into an appropriate wall jack and tested.

7. Generic Bill of Material for Local Area Networking

(a) Sample High level¹ bill of material as per technical specification in Appendix-1 & 2. Bill of Material on actuals.

Sl.	Description	Qty.	Unit Rate	Total
(i)	24 Port Switch L2 switch, Stackable	6		
(ii)	8 Port L2 switch	2		
(iii)	24 Port PoE L2 Switch, Stackable	2		
(iv)	24 Port L3 Switch, Stackable	2		
(v)	SFP Transceiver module Multi-Mode	18		
(vi)	Fiber-optics vertical cabling with redundant physical laying, CAT6 horizontal cabling I/O points and UPS power cabling to active components. Horizontal cabling to run in conduit pipe wherever specified (Refer Passive BoM at Para 7(b))	300		
(vii)	Installation, Configuration, Certifications and three year support charges	1		
(viii)	Additional items/charges, if any*.	300		

¹ Sample BOM only, actual may vary depends on project

(* - Any other miscellaneous items/charges if applicable, to be billed on pro rata basis wrt I/O Points only. List of such items be provided with complete details.)

(x) Taxes as applicable

Grand Total

Note:

- (i) All active components should carry minimum 03 years warranty. Preferred Brands: Cisco/HPE/Juniper
- (ii) All passive components should carry minimum 03 years warranty. Preferred Brands: AMP/Systemax/Panduit
- (iii) Generic bill of material is only indicative and of minimum specification only.
- (iv) Actual material used to be supported by detailed networking diagram on Auto CAD software/Professional networking design software.
- (v) Sample BOM of indicative nature only and vendor to provide BOM as required. Any miscellaneous item not covered, to be included under Para 7 (a) (viii) as 'Additional Items/Charges'.
- (vi) Bill of Material on actuals.

(b) Sample Passive Components Bill of Material – Back Bone and UTP

(i) **Supply Fiber Back Bone**

S.No	Make	Part No	Description	Unit	Qty	Unit Rate	Total Amt
(a)			6-core Outside Plant Cable - Corrugated Steel tape Armored, Loose-tube, Gel-filled, 50/125 micron OM3 MM	Meters	730		
(b)			SC-Style Pigtail, 50/125, Multimode, OM3, 1.5 meter	Nos	108		
(c)			FMS, 24F,OM3/OM4,24 fiber,SCDuplex,Splice tray -2 nos,1 U,	Nos	4		

(d)	FMS, 12F,OM3/OM4,12 fiber, SC Duplex,Splice tray -1 nos,1 U,	Nos	6			
(e)	ST-LC Style Multimode 50/125 micron Duplex Patch Cord, 3 Meter	Nos	19			
Total - Supply of Fiber Back bone				Total (A)	INR 0.00	

(ii) Supply UTP

S.No	Make	Part No	Description	Unit	No of Unit	Rate	Total
(a)			4-pair, Cat6 UTP Cable, roll of 305m	Box	60		
(b)			24-port unloaded Modular Straight Jack Panel for SL series, 1U	Nos	03		
			24-port unloaded Modular Angles Jack Panel for SL series, 1U	Nos	16		
(c)			Cat 6 UTP Jack with Strain relief and bend limiting boot	Nos	320		
(d)			Cat 6 UTP Jack with Strain relief and bend limiting boot	Nos	320		
(e)			2-port British Style Shuttered faceplate, White.	Nos	320		
(f)			Gang Box (PVC)	Nos	320		
(g)			Cat6 SL Series Patch Cords - 07 Feet - (LAN –White, Multi-Purpose – Grey, Internet – Yellow)	Nos	320		
Total - Supply of UTP Components				Total (B)	INR 0.00		

(iii) **UPS Power Cabling to Switches**

S.No	Make	Part Code	Description	Unit	No of Unit	Rate	Total
(a)		Any ISI	Centralized UPS power from Server Room for all active components. Suitable XLPE insulated copper cable with earthing line. All accessories included.	Meters	400		

(iv) **Rack**

S.No	Make	Part Code	Description	Unit	No of Unit	Rate	Total
(a)			Wall mount Single fan 6U x 600W x 600D with Standard Accessories. Color-Black. (Make: APW/ Netrack/ WQ/ Valrack)	Each	2		
(b)			12U 600W x600D mm Networking Rack with Standard Accessories. Color-Black. (Make: APW/ Netrack/ WQ/ Valrack)	Each	3		
(b)			42U Server Rack 600MM W x1000 MM D with Standard Accessories. Color-Black. (Make: APW/ Netrack/ WQ/ Valrack)	Each	5		
Total – Rack						Total (C)	INR 0.00

(v) **Conduits/Ducts**

S.No	Make	Part Code	Description	Unit	No of Unit	Rate	Total
(a)		Any ISI	Supply of 1" PVC Conduits including bends, Lbow, Junction Box and Stainless Steel saddles with non-corroded Screw	Meters	8000		
(b)		Any ISI	Supply of 2" PVC Conduits including bends, Lbow,	Meters	500		

			Junction Box and Stainless Steel saddles with non-corroded Screw				
(c)	Any ISI		Supply/Laying of Customized and aesthetically finished Raceway for interiors of furnished room	Meters	500		
(d)	Any ISI		50mmx100mm PVC Duct along with accessories	Meters	300		
(e)	Any ISI		Supply of 1" HDPE Conduits including bends,Lbow,Junction Box and Stainless Steel saddles with non-corroded Screw	Meters	657		
Total – Conduits						Total (D)	INR 0.00

(vi) **Services**

S.No	Make	Part Code	Description	Unit	No of Unit	Rate	Total
(a)		N/A	Laying of OFC cables	Meters	730		
(b)		N/A	LIU Fixing charges	Nos	6		
(c)		N/A	OFC Splicing Charges, Labeling, Testing	Nos	108		
(d)		N/A	Laying of PVC Conduits	Meters	8800		
(e)		N/A	Concealing of PVC Conduits inside Wall surface	Meters	1000		
(f)		N/A	Laying of UTP	Meters	18300		
(g)		N/A	6U Rack Fixing charges	Nos	2		
(h)		N/A	12 U Rack Fixing charges	Nos	3		
(j)		N/A	42 U Rack Fixing charges	Nos	3		
(k)		N/A	Jack panel fixing charges	Nos	16		
(l)		N/A	Fixing of Information Outlet	Nos	320		

(m)	N/A	Testing, Scanning and Documentation for UTP Nodes	Nos	320
(n)	N/A	Testing, Scanning and Documentation for Fiber Cores	Nos	54
(p)	N/A	Digging of Soft Soil and Refilling the Same	Meters	150
(q)	N/A	Digging of Hard Soil and Refilling the Same	Meters	30
(r)	N/A	Digging of Road /Concrete Cutting and refilling with concrete with black painting on Surface for matching tar road Color	Meters	30

Note:

- (a) ISI certified passive components should be used where ever available.

Annexure '1'

(Refers to Section 'A' of Appendix 'A')

IMPORTANT SPECIFICATIONS OF HIERARCHICAL TOPOLOGY NETWORK EQUIPMENTS

1. Hierarchical Topology – General Specification. In hierarchical model the topology is divided into discrete layers, and each layer is focused on a set of specific functions, allowing the choice correct equipment for each layer. A typical hierarchical topology is composed of layers of core, composed of high-tech equipment, optimized for performance and availability, distribution, where they are concentrated equipment that control the flow of information across the network and access layer, formed by equipment that provides the connections for the network users. The general specification as following.

- (a) Layer 3 Switch shall be modular in nature, rack mountable.
- (b) Modular Uplinks, Redundant PSU, Hot Swap PSU and IOS/Equivalent Upgrade
- (c) Should have primary & redundant management module with stateful failover. Failover of one of the CPU module should not affect the performance of the switch.
- (d) All hardware, software and licenses required to support all the features below should be quoted from Day 1 at the time of bidding. The common hardware required to support such features should be quoted in dual redundant manner.

2. Protocol. The switch should support atleast the following features

- (a) IPv4 routing & multicast protocols like OSPF, RIPv1/v2, BGP4, M-BGP, PIM, SSM, IGMP v1, IGMP v2 or IGMP v3.
- (b) IPv6 protocols like OSPFv3, ICMPv6, RIPng, PIMv6, ICMPv6.
- (c) It should have security features like IP source guard, DHCP snooping, port security, NAT, Unicast MAC filtering, Access control lists on all ports.

Core Switch – Technical Specification

3. The detailed technical specifications for core switches are as below:

- (a) 24 Fixed Ports supporting 10/100/1000Mbps on Each Port
- (b) Stackable with atleast 4 such switches
- (c) Atleast 2Nos of 1GbE SFP should be included in the proposed Switches
- (d) Switching Fabric Bandwidth up to 160Gbps

- (e) Support for Jumbo Frame Support (over 9000Byte Frames)
- (f) Port Aggregation Protocol Support
- (g) Link Aggregation Protocol
- (h) Auto MDI/MDI-X Support
- (j) Uni-Directional Link Detection Protocol
- (k) Voice VLAN Support
- (l) Ability to configure Voice VLAN and Data VLAN in the same Ethernet Port
- (m) Support for Dynamic VLAN/Dynamic trunk Configuration
- (n) Support for MACSec as defined in IEEE 802.1AE
- (p) Should support IPv4 and IPv6 Routing, Multicast Routing, Advanced QoS
- (q) Support for Smart Multicast
- (r) Redundant Power Supply
- (s) When stacked, switches shall allow redundancy of Power Supply over the Stacking interface, thus a power supply failure of one of the member in the stack can be
- (t) Future Scalability:
 - (i) Upgradable to Dynamic Routing Protocols such as OSPF
 - (ii) Uplink ports should support atleast 2Nos of 10GbE Ports (Fiber or Copper)
 - (iii) Optional support for NetFlow or other Flow technologies

Access/Edge Switch – Technical Specification

4. The detailed technical specifications for core switches are as below:
 - (a) 24 Port or 48 Port 10/100/1000Mbps on all Ports with Auto negotiation Support
 - (b) Dynamic Trunk Protocol
 - (c) Switches shall support minimum of 2Nos of 10GbE or 2Nos of 1GbE SFP Ports

- (d) Switches shall be stackable and provide single back plane across all the members of a stack
- (e) Ability to auto upgrade the latest version of the Software when connected to a Stack from Master Switch
- (f) PoE Models should support atleast 15.4W (PoE) on all ports or 30W (PoE+) on Half of the Ports or Should support PoE powered all-in-one VDI supported thin client.
- (g) Shall be able to set maximum Power consumption per port
- (h) Support Dynamic Trunking Protocol
- (j) Support Port Aggregation protocol / Link Aggregation Protocol
- (k) Voice VLAN Support
- (l) Ability to configure Voice VLAN and Data VLAN in the same Ethernet Port
- (m) Shall support upto 64 VLANs / Switch
- (n) Support for Dynamic VLAN/Dynamic trunk Configuration
- (p) Unidirectional Link Detection Protocol

Annexure '2'

(Refers to Section 'A' of Appendix 'A')

IMPORTANT SPECIFICATIONS OF FLAT TOPOLOGY NETWORK EQUIPMENTS

1. General Specification. Flat topology general technical specification as follows.

1.1 General Requirement from Flat topology implementation are.

- (a) Interconnected switches establishes a single unit that can be managed as though it were a single switch
- (b) Single IP manageable
- (c) Single configuration file
- (d) Single network operating system shared among switches
- (e) Prevent spanning tree and thus avoid network re-convergence associated delays
- (f) Eliminates the need for re-convergence as part of spanning tree protocol
- (g) Primary or master switch with adequate redundancy
- (h) Minimum of 1Gbps non-blocking bandwidth between Server-User PC
- (j) Minimum of 10Gbps non-blocking bandwidth between Server-Server & Server-iSCSI SAN
- (k) Support for iSCSI SAN storage
- (l) 48 nos. of PoE ports with minimum redundancy configuration of 24+24 ports or better redundancy configuration. No single point of failure.
- (m) Required nos. of 10G ports to support iSCSI based SAN and HP C3000-BL460 with 04 blades or Equivalent blade system. Adequate redundancy in 10G ports with no single point of failure.
- (n) Scalable architecture

2. Modular/Virtual chassis implementation.

2.1 Technical Specification. Switches of following technical specification or better configuration be considered for implementation.

<u>SL</u>	<u>Technical Specification</u>
	<u>Architecture</u>
(i)	Modular architecture, minimum 10 slots for interface modules
(ii)	Shall have two dedicated switch fabric slots in addition to the interface modules

SL	Technical Specification
(iii)	Shall have fully distributed architecture (any additional hardware required for the same shall be proposed)
(iv)	Shall provide distributed Layer-2 (switching) and Layer-3 forwarding (Routing) on all line cards (any additional hardware required for the same shall be proposed)
(v)	Shall have minimum 1152 Gbps of switching backplane capacity
(vi)	Shall have up to 714 Mpps of switching throughput
(vii)	Shall be 19" Rack Mountable
	<u>Resiliency</u>
(viii)	Shall have the capability to extend the control plane across multiple active switches making it a virtual switching fabric, enabling interconnected switches to perform as single Layer-2 switch and Layer-3 router
(ix)	Shall support virtual switching fabric creation across four chassis-based switches using 10G Ethernet Links
(x)	Hot-swappable Modules
(xi)	Passive backplane with no active components for increased system reliability
(xii)	IEEE 802.1D Spanning Tree Protocol, IEEE 802.1w Rapid Spanning Tree Protocol and IEEE 802.1s Multiple Spanning Tree Protocol
(xiii)	IEEE 802.3ad Link Aggregation Control Protocol (LACP)
(xiv)	Ring protocol support to provide sub-100 ms recovery for ring Ethernet-based topology
(xv)	Virtual Router Redundancy Protocol (VRRP) to allow a group of routers to dynamically back each other up to create highly available routed environments
(xvi)	Graceful restart for OSPF, IS-IS and BGP protocols
(xvii)	Bidirectional Forwarding Detection (BFD) for OSPF, IS-IS and BGP protocols
	<u>Layer 2 Features</u>
(xviii)	Shall support up to 4,000 port or IEEE 802.1Q-based VLANs
(xix)	Shall support GARP VLAN Registration Protocol or equivalent feature to allow automatic learning and dynamic assignment of VLANs
(xx)	Shall have the capability to monitor link connectivity and shut down ports at both ends if uni-directional traffic is detected, preventing loops
(xxi)	Shall support IEEE 802.1ad QinQ and Selective QinQ to increase the scalability of an Ethernet network by providing a hierarchical structure
(xxii)	Shall support Jumbo frames on GbE and 10-GbE ports
(xxiii)	Internet Group Management Protocol (IGMP)
(xxiv)	Multicast Listener Discovery (MLD) snooping
(xxv)	IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
(xxvi)	Multicast VLAN to allow multiple VLANs to receive the same IPv4 or IPv6 multicast traffic
	<u>Layer 3 Features (any additional licenses required shall be included)</u>

SL	Technical Specification
(xxvii)	Static Routing for IPv4 and IPv6
(xxviii)	RIP for IPv4 (RIPv1/v2) and IPv6 (RIPng)
(xxix)	OSPF for IPv4 (OSPFv2) and IPv6 (OSPFv3)
(xxx)	IS-IS for IPv4 and IPv6 (IS-ISv6)
(xxxi)	Border Gateway Protocol 4 with support for IPv6 addressing
(xxxii)	Policy-based routing
(xxxiii)	Unicast Reverse Path Forwarding (uRPF)
(xxxiv)	IPv6 tunneling to allow IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet
(xxxv)	Dynamic Host Configuration Protocol (DHCP) client, Relay and server
(xxxvi)	PIM Dense Mode (PIM-DM), Sparse Mode (PIM-SM), and Source-Specific Mode (PIM-SSM) for IPv4 and IPv6 multicast applications
	<u>QoS and Security Features</u>
(xxxvii)	Access Control Lists for both IPv4 and IPv6 for filtering traffic to prevent unauthorized users from accessing the network
(xxxviii)	Port-based rate limiting and access control list (ACL) based rate limiting
(xxxix)	Congestion avoidance using Weighted Random Early Detection (WRED)
(xl)	Powerful QoS feature supporting strict priority (SP) queuing, weighted round robin (WRR) and weighted fair queuing (WFQ)
(xli)	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port
(xlii)	Media access control (MAC) authentication to provide simple authentication based on a user's MAC address
(xliii)	Dynamic Host Configuration Protocol (DHCP) snooping to prevent unauthorized DHCP servers
(xliv)	Port security and port isolation
	<u>Management Features</u>
(xlv)	Configuration through the CLI, console, Telnet, SSH and Web Management
(xlvi)	SNMPv1, v2, and v3 and Remote monitoring (RMON) support
(xlvii)	sFlow (RFC 3176) or equivalent for traffic analysis
(xlviii)	Management security through multiple privilege levels with password protection
(xlix)	FTP, TFTP, and SFTP support
(l)	Port mirroring to duplicate port traffic (ingress and egress) to a local or remote monitoring port. Shall support minimum four mirroring groups
(li)	RADIUS/TACACS+ for switch security access administration
(lii)	Network Time Protocol (NTP) or equivalent support
(liii)	Shall have Ethernet OAM (IEEE 802.3ah) management capability
	<u>Environmental Features</u>

SL	Technical Specification
(liv)	Shall provide support for RoHS and WEEE regulations
(lv)	Shall be capable of supporting both AC and DC Power inputs
(lvi)	Operating temperature of 0°C to 45°C
(lvii)	Safety and Emission standards including UL 60950-1; IEC 60950-1; VCCI Class A; EN 55022 Class A
	Warranty and Support
(lviii)	Minimum Three years onsite warranty from OEM

3. **Stacked Switches implementation.**

3.1 **Technical Specification.** Switches of following technical specification or better configuration be considered for implementation.

SI	Specifications	Description
(i)	Ports & Speed	
(ii)	Access Ports	48 x 10/100/1000
(iii)	Uplinks	4 x 1G SFP
(iv)	10GIG Speed	Minimum 2 x 10G Support
(v)	Performance	
(vi)	Switching Capacity	Minimum 136 Gbps (only switching capacity)
(vii)	Backplane Speed	Minimum 128 Gbps (Stack or Virtual Chassis)
(viii)	Forwarding Rate	Minimum 101 Mpps
(ix)	Stacking Ports	Must support minimum of 128 Gbps in Virtual Chassis on Single Stack
(x)	DRAM	Min. of 1 Gb
(xi)	Flash	Min. of 1 Gb
(xii)	CPU	Min. of 1 Ghz
(xiii)	Hardware Architecture	
(xiv)	Logical Chassis	Must support logical chassis hardware architecture
(xv)	Routing Engines	Dedicated Master and standby routing engines
(xvi)	GRES	Graceful Routing engine switchover
(xvii)	Nonstop routing	Nonstop routing and bridging
(xviii)	Local switching	Line cards must support local switching without the help of routing engine

SI	Specifications	Description
(xix)	Table Sync	Both the routing engines must sync all tables and info on live
(xx)	Software Architecture	
(xxi)	Control plane separation	Must support control plane separation
(xxii)	Data plane separation	Must Support Data plane separation
(xxiii)	Core's allotment for processes	Must Support Core's allotment for processes
(xxiv)	Redundancy/High Availability	
(xxv)	CPU	Must support Dual Routing engine in the Virtual chassis / Stack
(xxvi)	Power	Dual power supply
(xxvii)	PFE - Packet forwarding engine	Dual packet forwarding engine - Only for packet forwarding
(xxviii)	Plane Separation	CPU - Must handle data plane functions. PFE - Must handle forwarding
(xxix)	Routing High availability	Non-Stop Routing (NSR) - OSPF v2, RIP v2, BGP, ISIS, IGMP v1, v2, v3
(xxx)	Non-Stop Software Upgrade (NSSU)	Non-Stop Software Upgrade (NSSU)
(xxxi)	Redundant, field-replaceable, hot-swappable fans	Redundant, field-replaceable, hot-swappable fans
(xxxii)	Graceful protocol restart – OSPF, BGP	Graceful protocol restart – OSPF, BGP
(xxxiii)	Online insertion and removal (OIR) uplink module	Online insertion and removal (OIR) uplink module
(xxxiv)	Layer 3 Features (IPv4)	
(xxxv)	Routing protocols	Should support OSPF, BGP, IS-IS, RIP v1 and v2 [OSPF support from day 1]
(xxxvi)	Unicast routes	8000 or more
(xxxvii)	Multicast routes	4000 or more
(xxxviii)	Layer 3 Redundancy	VRRP
(xxxix)	Layer 3 Features (IPv6)	
(xl)	Unicast routes	Should support 16000 routes
(xli)	Routing protocols	Should support RIPng OSPFv3 IPv6 BGP4+ MLDv2
(xlii)	Layer 2 Features	
(xliiii)	MAC address	30000 or more
(xliv)	Jumbo frames	9200 or more
(xlv)	Vlans support	4000 or more
(xlvi)	Security	

SI	Specifications	Description
(xlvii)	Mac limiting	Mac limiting
(xlviii)	IP source guard	IP source guard
(xlix)	DHCP snooping	DHCP snooping
(l)	Ddos protecion	Ddos protecion
(li)	Scalability	
(lii)	Logical Chassis scalability	Must Support 10 members in a single virtual chassis / Stack
(liii)	Routing engine scalability	Must support routing engine scalability in future
(liv)	Resiliency - Uptime	
(lv)	Layer 2 (failover)	< milliseconds
(lvi)	Layer 3 (failover)	< milliseconds
(lvii)	Stacking Ports (failover)	< milliseconds
(lviii)	Warranty	Minimum Three years onsite warranty from OEM

Annexure '3'

(Refers to Section 'A' of Appendix 'A')

Important Specifications of Networking Passive Components

(a) General Specification

Sl.	Details	Specification
(i)	Type	Unshielded twisted pair cabling system, Certificate by Intertek (ETL) for the 4-Connectors channel testing to the Cat 6 Cabling system as per the ANSI/TIA 568 C.2 & as well as the ISO 11801 standards up to 600 MHz.
(ii)	Networks Supported	10 / 100/1000 Ethernet, 155 Mbps ATM, 1000 Mbps IEEE 802.3ab Ethernet, and proposed Cat 6 Gigabit Ethernet
(iii)	TIA / EIA 568 C.2	ETL Verified / UL Listed
(iv)	Warranty	(a) 25 year systems warranty; Warranty to cover Bandwidth of the specified and installed cabling system, and the installation costs (b) CAT6 cabling system should be tested and verified by the Independent third party laboratories for Zero Error (Bit Error Rate) testing at the data transmission speed of 1 Gbit/s.

(b) UTP Cable

Sl.	Details	Specification
(i)	Type	Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 & ISO/IEC 11801
(ii)	Conductors	23 AWG solid bare copper
(iii)	Insulation	Polyethylene
(iv)	Jacket	Flame Retardant PVC (COLOR White & Grey)
(v)	Pair Separator	Cross-member (+) fluted Spine.
(vi)	Approvals	(a) UL Listed / UL Verified (b) ETL verified to TIA / EIA Cat 6
(viii)	Operating temperature	-20 Deg. C to +60 Deg. C
(ix)	Storage Temperature	-20 Deg. C to +80 Deg. C
(x)	Frequency tested up to	Minimum 600 MHz
(xi)	Performance characteristics to be provided along with bid	Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR
(xii)	ROHS Compliance	ROHS/ELV Complaint

(c) UTP Jack

Sl.	Details	Specification
(i)	Type	PCB based, Unshielded Twisted Pair, Category 6, TIA /EIA 568-C.2 and ISO/IEC 11801
(ii)	Modular Jack	750 mating cycles
(iii)	Wire terminal	200 termination cycles
(iv)	Accessories	- Integrated bend-limiting strain-relief unit for cable entry
		- Integrated hinged dust cover
		- Support cable pair termination process on the jacks at 90 degree angle.
		- Bidder should have a mechanism to maintain the quality of the termination ir-respective of the skill level of the termination staff.
(v)	Housing	Polyphenylene oxide, 94V-0 rated.
(vi)	110 Blocks	polycarbonate, 94V-0 rated
(vii)	Jack contacts	Beryllium copper, plated with 1.27 mm [.000050] thick gold in localized area and 3.81 mm [.000150] minimum thick tin-lead in solder area over 1.27 mm [.000050] minimum thick nickel under plate
(viii)	Wiring blocks	Polycarbonate, 94V-0 rated
(ix)	Approvals	(a) UL Listed / CSA Approved
		(b) ETL verified to TIA / EIA Cat 6
(x)	Performance Characteristics to be provided with bid	Attenuation, NEXT, PS NEXT, FEXT and Return Loss
(xi)	ROHS Compliance	ROHS/ELV Complaint

(d) UTP Unloaded patch panel

Sl.	Details	Specification
(i)	Type	24-port, Unloaded Angular Jack Panel, Category 6, TIA /EIA 568-C.2 and ISO/IEC 11801
(ii)	Ports	24
(iii)	Port arrangement	Configured as 6 Port Module with individually replaceable CAT-6 Jacks
(iv)	Category	Should accept 10G Approved Jacks
(v)	Circuit Identification	Front of each module shall be capable of accepting 9mm to 12 mm labels
(vi)	Port Identification	9mm or 12mm Labels on each of 24-ports (to be included in supply)
(vii)	Panel	Black, powder coated steel
(viii)	Approvals	UL listed / ETL Verified
(ix)	Interface	Polyester Molding Compound, Black
(x)	Height	1 U (1.75 inches) for 24-Ports and 2 U for 48-ports

Sl.	Details	Specification
(xii)	Support	Cable Support Bar 2" deep - Mounts to back of Rack
(xi)	ROHS Compliance	ROHS/ELV Complaint

(e) Workstation / Equipment Patch Cords

Sl.	Details	Specification
(i)	Type	Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 & ISO/IEC 11801
(ii)	Conductor	24 AWG 7 / 32, stranded copper conductors 100 Ohm
(iii)	Length	4 feet, 7 feet, 10 feet
(iv)	Plug Protection	Transparent Slim boot
(v)	Warranty	25-year component
(vi)	Insulation	Flame Retardant Polyethylene
(vii)	Tensile Strength	50 Newton
(viii)	ROHS Compliance	ROHS/ELV Complaint

(f) Faceplate

Sl.	Details	Specification
(i)	Type	Single Gang, BS
(ii)	Material	ABS / UL94 V-0
(iii)	No. of ports	One/Two/Four
(iv)	Shutter	ABS UL94V-0
(v)	Spring of Shutter	Steel, Stainless
(vi)	Holder, Jack	ABS UL 94V-0
(vii)	Cover Label	Acrylic UL94V-0
(viii)	ROHS Compliance	ROHS/ELV Complaint

(g) Fiber

Sl.	Details	Specification
(i)	Cable description	- 6/12/24/48 core, 50/125 micron OM3 MM Armoured Optical Fiber cables
		- Designed with a Loose tube construction
		- Tubes are gel filled to ensure protection against moisture ingress
		- Designed for use in the following applications like Backbone cabling, Campus site cabling & Outdoor Ducts or Direct Burial applications
		- Cable contains upto 6 Fibers
		- Water Blocking E-Glass Strength member
		- HDPE Sheath Outer Sheath (HDPE)
(ii)	Type of cable	6F Unitube Armoured Optical Fiber Cable
(iii)	Standards	

Sl.	Details	Specification
	EN 50173; ISO/IEC 11801	Yes
	ANSI/TIA-568-C.3	YES
	Telcordia GR-409	YES
(iv)	Fiber	Multi-mode Fiber
	(a) Fiber Size (um)	50/125/250 (OM3)
	(b) No. Of Fibers / Loose Tube (No.)	6F
	(c) Fiber Identifications	
	6F	Blue, Orange, Green, Brown, Grey & White
(v)	Optical Parameters - MM	
	(a) Attenuation @ 850nm	dB/Km , < 2.7 (MAX)
	(b) Attenuation @ 1300nm	dB/Km , < 0.7 (MAX)
	(c) Cabled Fiber Attenuation @ 850 nm	dB/Km , < 3.0 (MAX)
	(d) Cabled Fiber Attenuation @ 1300 nm	dB/Km , < 1.0 (MAX)
	(e) Overfill Bandwidth	
	@ 850nm	MHz x km , > 1500
	@ 1300nm	MHz x km , > 500
	(f) Max. Link Length for 1Gbit/s	
	@ 850nm (1000Base-SX)	Meter , 1000
	@ 1300nm (1000Base-LX)	Meter, 600
	(g) Max. Link Length for 10 Gbit/s	
	- @ 850nm (10GBase-SR & SW)	Meter , 300
	- @ 1300nm (10GBase-LX4)	Meter ,300
	- By using Mode Conditioning Patch cord	
	(h) Core/ Mode-Field	um 50
	(j) Cladding	um 125
	(k) Coating	um 250
(vi)	Loose Tube/ Tight Buffer	Loose Tube
	(a) Material	PBTP
	(b) No. of Loose Tubes	No.1
	(c) Diameter	mm 3+0.2
	(d) Colour of Loose Tube	ORANGE
	(e) Sequence of Elements In Core	NA
	(f) Loose Tube Gel	Water Blocking Gel
(vii)	Jacketing	
	(a) Material	HDPE
	(b) Colour	Black
	(c) Nominal Thickness	mm 21

Sl.	Details	Specification
	(d) Overall Diameter (Nominal)	mm 10.0
	(e) Strength Members	Yes
	(f) Type (Peripheral)	Water Blocking E-Glass
(viii)	Armouring	
	(a) Type	Corrugated Steel Tape
	(b) MS Tape Thickness	> 0.15
	(c) Mechanical Properties	
	(d) Minimum Installation Bend Radius	Mm 200
	(e) Minimum Service Bend Radius	Mm 160
	(f) Cable Weight (Nominal)	Kg/Km 100
	(g) Standard Length	Mtrs 2km+5%
	(h) Tensile Strength	N 1250
	(j) Maximum Crush Resistance	N 3000
	(k) Operating Temperature	Deg C -20 To 70
	(l) Type Of Packing	Wooden Drum
	(m) ROHS Compliance	ROHS Complaint
(ix)	Fiber LIU	
	(a) Coupler Type	SC-Style, duplex
	(b) Operating temperature	-40 Degree C to +85 Degree C
	(c) FMS- Front Patching / Splicing Shelf	1U - 19" / ETSI versions available
		The FMS fiber management shelf series for high density front patching applications.
		Compact design and high density capacity shall allow to deliver carrier class fiber management to central offices, Pops, FTTx, mobile systems and LANs.
		High Density:
		1U: 6/24 Fiber terminations
		Mounting brackets able to be placed in different positions
		Drawer concept allows for
		- Easy access to back side of connector
		- Trays with hinges(book type) which allows facilitates easy fiber management and greater access during installation and rework
		- Fiber guides, radius controls & secure tie downs provided
	(d) Dimensions	Width- 450 mm & Depth - 280 mm , Height - 44 mm
	(e) Color	RAL 7035 / Black

Sl.	Details	Specification
(x)	SC-LC Patch cord MM	
	(a) Make and Type	SC to LC Duplex Fiber Optic Patch Cord 3 Mtr 50/125 Micron OM3
	(b) Cable Sheath	LSZH
	(c) Cable Diameter	1.8 mm twin zip
	(d) Ferrule	Ceramic
	(e) Buffer	.6 mm easy strip
	(f) Insertion Loss	MAX .3 db
	(g) Return Loss	> 20 db
	(h) Temperature Range	Minus -10 Degree C to +60 Degree C
	(j) ROHS	ROHS/ELV Compliant
(xi)	Pig Tail SC type Multimode	
	(a) Attenuation	<= 0.3 dB, measured at 1300 nm ACC. To IEC 61300-3-4 Equilibrium mode condition
	(b) Return Loss	>= 20 dB, measured against REF Connectors
	(c) Cable info	
	(d) Core DIA	50/125 micron
	(e) Outer DIA	0.9 mm
	(f) Buffer color	Gold Metallic
	(g) Buffer material	UV Curved Acrylate

(h) 25 Pair Multi Pair RISER CABLE

Sl.	Details	Specification
(i)	Type	Unshielded Twisted Pair, Category 5, 25 pair TIA / EIA 568-C.2
(ii)	Conductors	24 AWG solid bare copper
(iii)	Insulation	Polyethylene
(iv)	Jacket	0.035 in nominal (Ø.480 nominal), PVC
(v)	Approvals	(a) UL Listed / UL Verified (b) ETL verified to TIA / EIA
(vi)	Operating temperature	-20 Deg. C to +60 Deg. C
(vii)	Storage Temperature	-20 Deg. C to +80 Deg. C
(viii)	Frequency tested up to	Minimum 100 MHz
(ix)	Packing	Box of 305 meters
(x)	Cable Outer Diameter	.025 NOM

(xi)	Delay Skew	25ns/100m. maximum
(xii)	Bend Radius	4 * Cable Diameter
(xiii)	Impedance	100 Ohms + / - 15 ohms, 1 to 100 MHz.
(xiv)	UL/NEC Ratings	CMR Rated
(xv)	Mutual Capacitance	5.6nF/100m nominal
(xvi)	Conductor DC Resistance	9.38 Ohms/100m Max.
(xvii)	Propagation Delay	538 ns/100 Mtrs. MAX @ 100 MHz
(xviii)	Performance characteristics to be provided along with bid	Insertion Loss, PSNext, Return Loss

(j) Cat 5e, UTP JACK PANEL 24 PORT

Sl.	Details	Specification
(i)	Type	24-port, Angular, PCB based, Unshielded Twisted
		Pair, Category 5e, TIA / EIA 568-C.2
(ii)	Ports	24
(iii)	Port arrangement	Configured as 6 Port Module with individually replaceable CAT5e Jacks
(iv)	Circuit Identification	Front of each module shall be capable of accepting 9 mm to 12 mm labels
(v)	Port Identification	9mm or 12mm Labels on each of 24-ports (to be included in supply)
(vi)	Modular Jack	750 mating cycles
(vii)	Wire terminal	200 termination cycles
(viii)	Accessories	Integrated bend-limiting strain-relief unit for cable entry
(ix)	Materials	
	(a) Housing	Polyphenylene oxide, 94V-0 rated
	(b) Wiring blocks	Polycarbonate, 94V-0 rated
	(c) Jack contacts	Phosphorous bronze, plated with 1.27µm [.000050in] thick gold in localized area and 3.81µm [.000150in] minimum thick tin-lead in solder area over 1.27µm [.000050in] minimum thick nickel underplate.
(x)	Panel	Black, powder coated steel
(xi)	Approvals	UL listed / ETL Verified

(k) Cat 5e 300 pair frame Kit

Sl.	Details	Specification
(i)	Material	Horizontal cross-connects for voice connectivity shall be Rack-mount 110Connect XC frames
(ii)	Performance category	Cat 5E
(iii)	Termination Style	110 Style Punch - Down
(iv)	Number of Pairs	300
(v)	Approvals	(a) UL Listed / UL Verified (b) ETL verified to TIA / EIA
(vi)	Durability	200 termination cycles (24 AWG wire)
(vii)	Designation Strip	Rigid PVC, clear
(viii)	Terminals	phosphor bronze plated with 150 micro inches bright tin-lead over 50 micro inches nickel under plate
(ix)	Wiring block assembly and connecting block	polycarbonate, UL 94V-0
(x)	Wiring blocks Termination	Should be terminated with [4- and 5-pair] connecting blocks
(xi)	Performance characteristics to be provided along with bid	Attenuation, NEXT, PSNext, FEXT, Return Loss

(l) Cat6 Out Door Cable

Sl.	Details	Specification
(i)	Conductors (a) Wire AWG (b) Range in MM (c) Material (d) Plating (e) Elongation	24 AWG solid 0,485<= <0,546 Copper Bare 15% per EN 50288-1
(ii)	Insulation (a) Material (b) Overall Diameter Nom	Polyethylene 1,03
(iii)	Cross filler (a) Material	Polyethylene
(iv)	Inner jacket (a) Material	Polyethylene

Sl.	Details	Specification
	(b) Overall Diameter (d)	6,0
(v)	Outer jacket	
	(a) Material	LSZH
	(b) Overall Diameter (d)	7,2
	(c) Pulling force	80 N

(m) Hook Up wire

Sl.	Details	Specification
(i)	Type	Unshielded Twisted pair Single pair
(ii)	Conductors	24 AWG solid bare copper
(iii)	Insulation	HD-PE
(iv)	Tensile stress	2400 PSI Min
(v)	Conductor DC Resistance	17.1 Ohms/100m Max.

(n) 19" Open Standard Two Post Rack

Sl.	Specification
(i)	Open Floor-mount two-post rack supports 19" wide rack-mount equipment for Indoor Use
(ii)	Available Sizes: (a) Heights: 84" (b) Width: 20.3" (c) Depth: 15"
(iii)	Equipment Space: (a) Heights: 45 RMU (b) Width: 19"EIA (17-3/4" Clearance) (c) Depth: 20"D
(iv)	Finish: Black Powder Coating
(v)	Equipment Support: 1 Pair C-Shaped equipment mounting channels fixed in place
(vi)	19"W, EIA-310D
(vii)	Universal hole Pattern, 5/8" - 5/8" - 1/2" vertical hole spacing
(viii)	Threaded #12-24 equipment mounting holes includes 50 each #12-24 equipment mounting screws
(ix)	Cable Management:
(x)	Use Vertical and horizontal cable managers, sold separately as accessories
(xi)	Load capacity: 1,000 lb of equipment

Sl.	Specification
(xii)	Material: Aluminium Alloy
(xiii)	Construction: Bolted assembly, Ships unassembled
(xiv)	Ladder 2 mtrs per rack with all fixing accessories

(p) Vertical Cable Manager

Sr. No.	Specification
(i)	These vertical wire managers have the following dimensions as detailed Herewith. (8" Wide x 21" Depth x 84" Height).
(ii)	This vertical wire manager covers the complete height of the 19" open frame rack and depth is almost double compared to conventional wire manager, hence it can accommodate more no. of cables.
(iii)	Snap on hinged door/cover. Extended finger ducts and hinged locking door gives proper space for easy management of LAN cables.
(iv)	Door cover swings on hinges on both sides (Left or Right) hence better manageability of all the lan cables.
(v)	Made up of aluminium and plenum rated composite material. This makes it more robust and expensive than conventional wire managers.
(vi)	Can easily take care of future expansions and frequent add and move changes are possible.
(vii)	Each Rack would require two nos.

(q) Horizontal Cable Manager

Sr	Details	Specification
(i)	Material	Finger Sections – UL 94V-0 Polycarbonate, black Cable Manager Covers and Rear Removable Cover –FR PVC , black Spacers and Uprights – PC 143R 701, black Hinged Lock assembly – PA 6, black
(ii)	Panel	Cable management accessories for EIA standard 19" equipment racks
(iii)	Compatibility	Suitable for high performance twisted pair and optical fiber distribution cables and patch cords
(iv)	Style	Horizontal finger duct panels available in single- and double-sided versions
(v)	Depth	8 inch deep cable management fingers and are 2U high
(vi)	ROHS Compliant	ROHS/ELV Compliant

(r) Server Rack (9600x1000 mm)

Sl.	Specification
(i)	19" 42 U (600w X 1000d) Alum. Closed Server Rack, Black Colour- 1 Nos
(ii)	Front Perforated Door With Lock- 1 Nos
(iii)	Rear Perforated With 2 Doors (Split Door) With Lock - 1set
(iv)	Side Panel 2 Nos For Each Rack
(v)	Bottom Plate - 1 Nos
(vi)	Castor Wheels Set Of 4 (2 With Brakes)
(vii)	Horizontal Cable Manager 2u (Single Side) - 2 Nos
(viii)	Equipment Tray-2 Nos
(ix)	Key Board Tray Rolling-1 Nos
(x)	Coupler Plate (Set Of 6) - 1 Set
(xi)	Earthing Kit - 1 Set
(xii)	Mounting Hardware (Set Of 50) -2 Pkt
(xiii)	4 Set Of Fan Assembly Fitted In The Rack - 1 Nos
(xiv)	16 Amps Vertical Power Manager With 10 Nos of 15Amp cum 5 Amps Round Pin With 3 Mtr Length 2.5sq Mm Power Cable With Single MCB
(xv)	16/5*5 Horizontal PDU With 3 Mtr Length 2.5sq Mm Power Cable With Single With Single MCB - For Open Rack

(s) Wall Mountable Rack (600x500 mm)

Sl.	Specification
(i)	19" 6 U (600w X 500d) Black Colour- 1 Nos
(ii)	Front Glass Door With Lock- 1 Nos
(iii)	Horizontal Cable Manager 1u (Single Side) - 2 Nos
(iv)	Mounting Hardware (Set of 50) -1 Pkt
(v)	1 Set of Fan Assembly Fitted In The Rack - 1 Nos
(vi)	5*5 Amps Horizontal PDU With 2 Mtr Length 2.5sq Mm Power Cable With Single With Single MCB

(t) Pre-terminated MPO trunk cable

Sl.	Details	Specification
1	TYPE	Factory pre-terminated assemblies
2	Attenuation 850 nm	<= 0.5 db
3	Return Loss 850 nm	>= 25 db
4	Test Sheet	Test report sheet will each individual packed assembly
5	Information on label	Barcode, Part number, factory order number, Cable length, Unique Sno
6	Packaging	Assembly fom 2M to 50M will be packed in carton box

		Assembly < 50 M will be on a reel
7	Cable Information	
8	Core Diameter	50/125 micron
9	Outer cable Diameter	6.4 mm
10	Outer cable color	Aqua
11	Outer cable material	LSZH
12	Cable Loss	3.0 db/Km at 850 nm
13	Features	<p>(a) Cables terminated with high density MPO connectors</p> <p>(b) All products with protocol, for constant and reliable quality</p> <p>(c) The trunks are equipped with midi fan-out and round cable MPO tails protected with transparent protection sleeve available in 12, 24 and 48 fiber(other counts on request)</p>

(u) MPO Cassette

Sl	Details	Specification
(i)	Performance	Exceeds requirement IS 11801 , TIA/EIA 568B.3
(ii)	Attenuation	<p>(a) I.E.C 61300-3-4 with mode condition according to : IS 14763-3, OFSTP-14, IEC 61280-4-1</p> <p>(b) Attenuation <= 0.75db * measured between reference condition at 850 nm</p>
(iii)	Return Loss	<p>(a) I.E.C 61300-3-6 with mode condition according to : IS 14763-3, OFSTP-14, IEC 61280-4-1</p> <p>(b) Return loss >= 23db * measured between reference condition at 850 nm</p>
(iv)	Features	<p>(a) Simple and flexible premises fiber cabling</p> <p>(b) Pre-terminated cassettes with 1 MPO trunk connection (1 x 12 fibers) at rear</p> <p>(c) 6 x SC Duplex (12 fibers) connections in the front</p> <p>(d) All products with protocol, for constant and reliable quality</p> <p>(e) Easy installation, moves, adds and changes</p> <p>(f) Fits in Patch Panels for Quick-Fit Modules</p> <p>(g) Panels accept up to 4 cassettes on 1U</p>

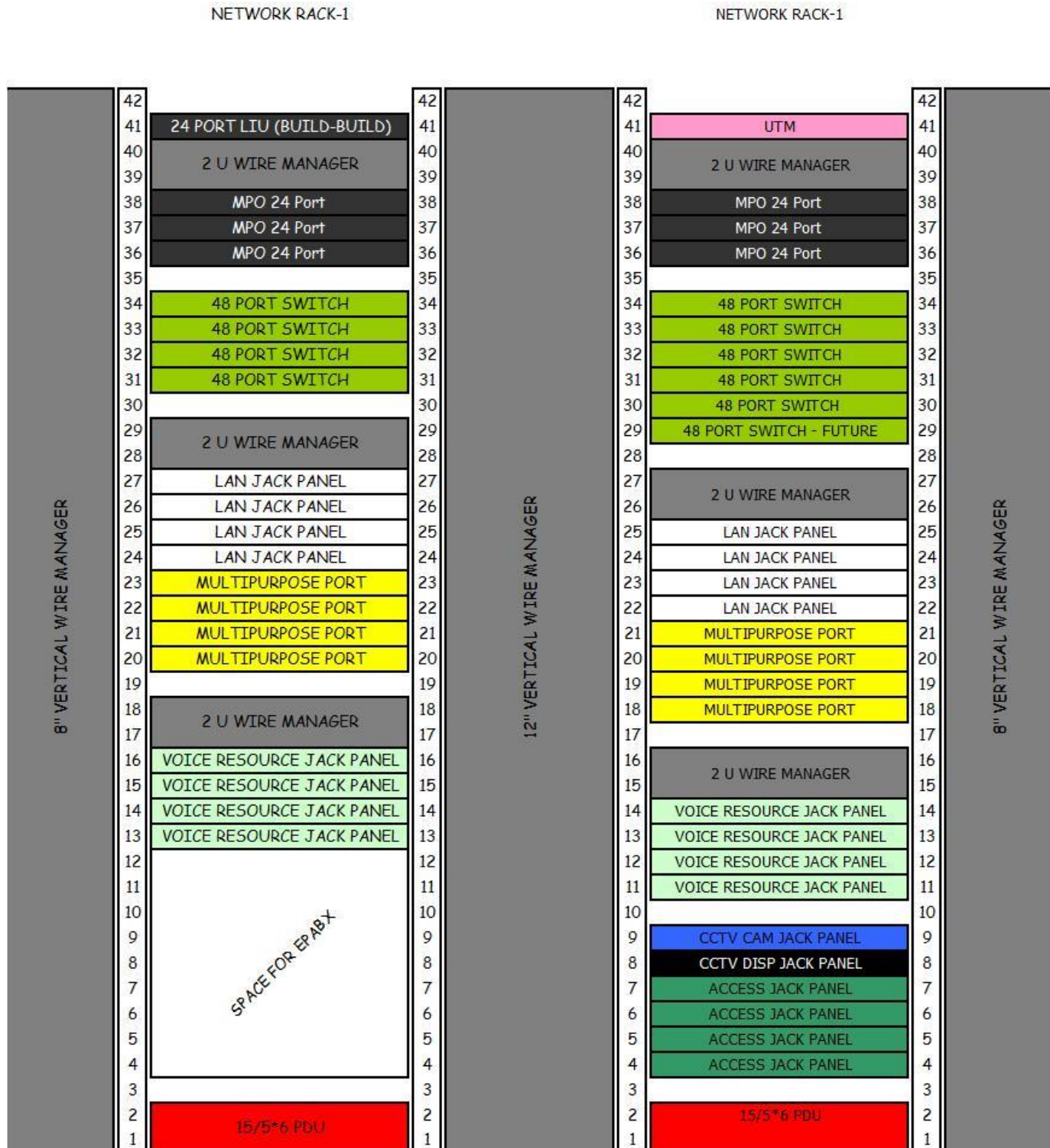
(v) Flush Quick-Fit MPO/MP Optimate drawer panel

Sl.	Details	Specification
(i)	Features	<p>(a) Accommodates up to 4 MPO/MPOptimate Quick-Fit cassettes</p> <p>(b) High-End solution</p> <p>(c) Fully integrated and retractable cable management bracket</p> <p>(d) Allows for easy Move, Adds and Changes</p> <p>(e) Flushmount</p> <p>(f) Color: black (RAL 9005)</p>

(w) Fiber patch panel

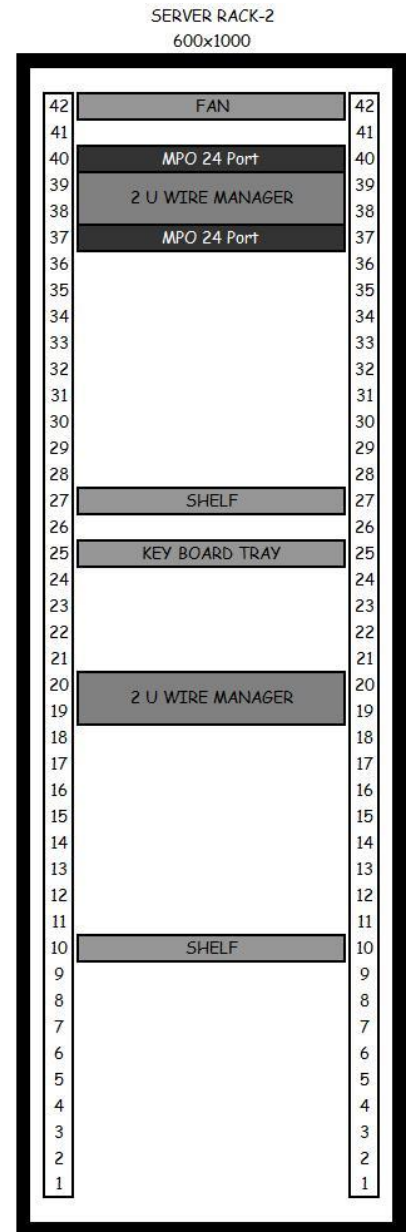
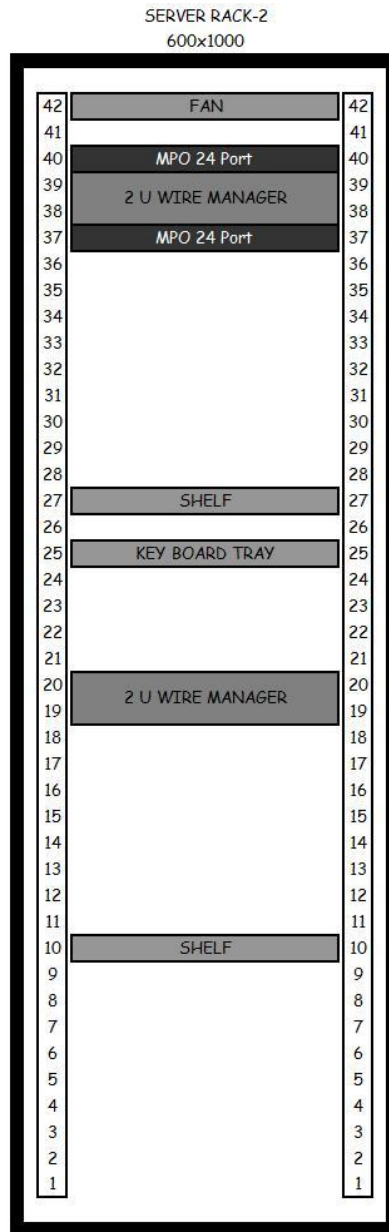
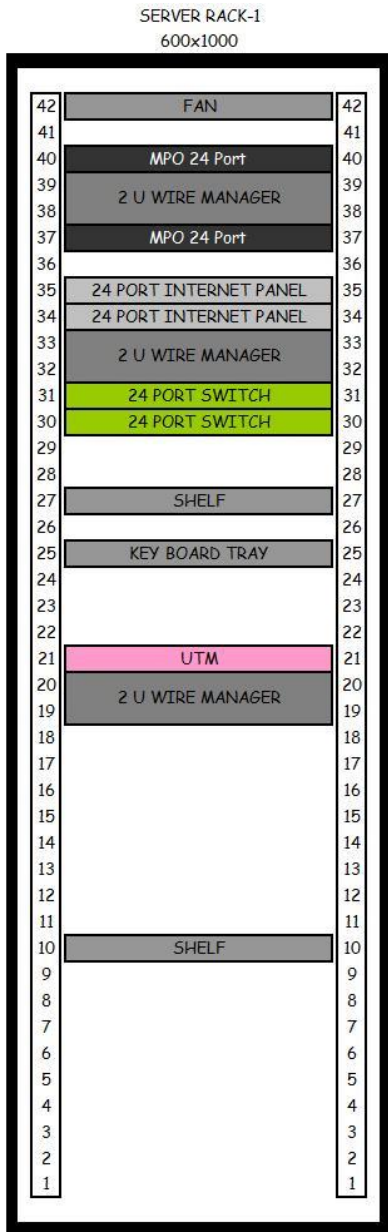
Items Description	Required Features Description
General Features	24 Port (48 Ports when use MRTJ and LC Connectors) Rack Mount Fibre Patch panel should be of Dimensions: 19" (Width) x 1U (Height) x 270mm (Depth)
	Should be able accept SC Duplex, SC Simplex, LC Duplex and MTRJ Adaptors.
	Should have snap-in sub modules with six single fibre or 3 dual fibre ports
	Should have a fibre management system molded in to the unit structure to effectively route fibres from an incoming cable through to the connector interface.
	Should have knockouts at the rear to enable termination of loose tube or tight buffered cables as well as blown fibre tubes
	Should be made up of Non - corrosive material preferably polycarbonate, PC/ABS.
	Should have the option of accommodating 6 nos. of splice protection sleeve, each can accommodate 4 connectors.
	Should be slide able and should have tamper proof
	positive locking mechanism by means of clips supplied as standard with each unit
	Should meet EN50173 and ISO/IEC 11801 operating specifications
Technical info	Should be made up of non-corrosive material, preferably polycarbonate, PC/ABS.
	Dimensions: 19" (Width) x 1U (Height) x 270mm (Depth)
	Weight: 5.7Kg
Warranty	25 years system performance warranty

Network Rack Elevation Diagram



Annexure-5

Server Rack Elevation Diagram



DETAILED TECHNICAL SPECIFICATIONS FOR DESIGN, IMPLEMENTATION AND MAINTENANCE OF CAMPUS LOCAL AREA NETWORKING AT CG COMPLEX, NOIDA SECTOR-62 - INDIAN COAST GUARD

Table of Contents

Part-I: Campus LAN IT Infrastructure Minimum Required Sizing

Part-II: Campus LAN IT Infrastructure - Detailed Specifications

PART-I: CAMPUS LAN IT INFRASTRUCTURE MINIMUM REQUIRED SIZING

Sl.	IT Infrastructure Type	Intranet LAN	Internet LAN	Detailed Specifications	Complied (Yes/ No)
2.	Virtual Next Generation Firewall	(a) Throughput- 01 Gbps (b) Qty. 02 Nos. in HA/ Active-Active	(a) Throughput- 01 Gbps (b) Qty. 02 Nos. in HA/ Active-Active	Section-A, Part-II, Appendix-B	
3.	Zero-Touch ROBO Rack	Qty.-01 No.	N/A	Section-B, Part-II, Appendix-B	
4.	Software Defined Data Center (SDDC) Suite	N/A	N/A	Section-C, Part-II, Appendix-B	
5.	Backup Software	02 Socket x 03 Nodes	02 Socket x 03 Nodes	Section-D, Part-II, Appendix-B	
6.	Software Defined WAN	Qty.-01 No.	N/A	Section-E, Part-II, Appendix-B	
7.	Rack Server for HCI	Qty. 03 Nos. (a) Core per Socket: 20 Cores, (b) CPU per Server: 01 No, 2.4Ghz (c) Storage Type for Capacity: SAS HDD,	Qty. 03 Nos. (a) Core per Socket: 08 Cores (b) CPU per Server: 01 No., 2.4Ghz (c) Storage Type for Capacity: SAS HDD,	Section-F, Part-II, Appendix-B	

Sl.	IT Infrastructure Type	Intranet LAN	Internet LAN	Detailed Specifications	Complied (Yes/ No)
		5TB on RAID-10 (d) Storage for performance : SSD, 1TB on RAID-10 (e) Memory per Server: 256 GB	3TB on RAID-10 (d) Storage for Caching: SSD, 256 GB on RAID-10 (e) Memory per Server: 64 GB		
8.	Network Access Control (NAC), Virtual Appliance	1500 Devices	500 Devices	Section-G, Part-II, Appendix-B	
9.	Switch Fabric for Data Center/ DR Data Center	(a) TOR Switches – 02 Nos.	N/A	Section-H, Part-II, Appendix-B	
10.	Network Access Chassis Switch	Qty.- 1125 Ports (Scalability upto 1500 Ports, 48 Port per Switch)	N/A	Section-J, Part-II, Appendix-B	
11.	Network Access Rack Switch	N/A	Qty.- 525 Ports (Scalability upto 700 Ports, 48 Port Per Switch)	Section-K, Part-II, Appendix-B	
12.	Core Switch	Qty.-02 Nos.	Qty.-02 Nos	Section-L1, Part-II, Appendix-B Section-L2, Part-II, Appendix-B	
13.	Network Lifecycle Management Software	Qty.-01 No.	Qty.-01 No.	Section-M, Part-II, Appendix-B	
14.	Basic IP Phone	Qty.-100 Nos.	N/A	Section-N, Part-II, Appendix-B	
15.	Executive IP Phone	Qty.-25 Nos.	N/A	Section-P, Part-II, Appendix-B	
16.	PRI Gateway	Qty.-02 Nos.	N/A	Section-Q, Part-II, Appendix-B	

Sl.	IT Infrastructure Type	Intranet LAN	Internet LAN	Detailed Specifications	Complied (Yes/ No)
17.	OEM Qualification, Warranty & Implementation support	Warranty 03 Years from GoLive	Warranty 03 Years from GoLive	Section-R, Part-II, Appendix-B	

PART-II: CAMPUS LAN IT INFRASTRUCTURE – DETAILED SPECIFICATIONS

Index of Sections

	IT Infrastructure Type	Complied (Yes/No)
Section-A :	Virtual Next Generation Firewall	
Section-B :	Zero-Touch ROBO Rack	
Section-C	Software Defined Data Center (SDDC)	
Section-D :	Backup Software	
Section-E :	Software Defined WAN	
Section-F :	Rack Server	
Section-G :	Network Access Control (NAC)	
Section-H :	Switch Fabric for Data Center/ DR Data Center	
Section-J :	Network Access Chassis Switch	
Section-K :	Network Access Rack Switch	
Section-L1 :	Core Switch (Intranet)	
Section-L2 :	Core Switch (Internet)	
Section-M :	Network Lifecycle Management Software	
Section-N :	Basic IP Phone	
Section-P :	Executive IP Phone	
Section-Q :	PRI Gateway	
Section-R :	OEM Qualification, Warranty & Implementation support	

Section-A – **Virtual Next Generation Firewall**

Sl.	Category	SD-Security Technical Requirements	
1.0	General	The device should be capable to identify and prevent in-progress phishing attacks by controlling sites to which users can submit corporate credentials based on the site's URL category thus blocking users from submitting credentials to untrusted sites while allowing users to continue to submit credentials to corporate and sanctioned sites.	
2.0	Virtual appliance	The proposed Next Generation Firewall should be in Software Form factor and can be either present in the Virtualization/ Hypervisor layer or as a Virtual Machine	
3.0	Single Policy Rule	The proposed solution must allow single policy rule creation for application control, user based control, host profile, threat prevention, Anti-virus, file filtering, content filtering, QoS and scheduling at single place within a single rule and not at multiple locations. There must not be different places and options to define policy rules based on these parameters.	
4.0	Single-Pass Architecture	It should have the Single-Pass Architecture approach. The architecture should enable full, contextual classification of traffic, followed by a rich set of enforcement and threat prevention options. The architecture should also classify and control traffic in a "single pass" through the firewall.	
5.0	Native SIEM Integration	The Firewall should be able to integrate on standard protocols with leading SIEM solutions and should natively support minimum of like ArcSight and, Splunk.	
6.0	Security features	The solution must support Routing, load sharing, Firewall, Application visibility and control, User ID, IPS, Anti-virus from day one.	
7.0	Application Aware	The solution must provide application identification natively, without requiring any license/subscription/blade, provide real time	

Sl.	Category	SD-Security Technical Requirements	
		<p>traffic logs based on applications irrespective of ports. While monitoring real time traffic logs, solution must provide detailed view of Defense Services 's application and Users, not just ports and IP addresses. E.g. the solution must distinguish between telnet on port 80 and http traffic between same pair of source and destinations. The proposed solution must also have capabilities for decrypting SSL and SSH traffic for both inbound (connection across any port and not just 443 and 22) and outbound</p>	
8.0	<p>Multi-Hypervisor Support</p>	<p>The firewall should support following hypervisor and orchestration environments</p> <p>VMware NSX, KVM with optional support for the OpenStack plugin, ESXi, Hyper-V, Citrix NetScaler SDX</p>	
9.0	<p>Zero-day threat detection using Sandbox</p>	<p>The proposed solution shall provide sandbox behavior based inspection and protection of unknown viruses and zero-day malware for any application and protocol (not limited to HTTP, SMTP, FTP) in future and the solution shall be able to provide automated signature generation for discovered zero-day malware and the solution should ensure the delivery of the signature in 5 mins from the time of detection. No file has to be shared and the analysis should be done on premise at the central location if required.</p>	
10.0	<p>Performance Requirement</p>	<p>The proposed solution should support from 4 Mbps scalable to 100 Mbps of performance with Firewall, application control, IPS, Anti-Virus and Anti-malware enabled from day-1.</p>	
10.1		<p>The proposed solution must support 60,000 concurrent sessions and 2,500 new sessions per second. The session count must be active TCP connections. The concurrent sessions must not drop while enabling all requested features and should be scalable to 4 times.</p>	

Sl.	Category	SD-Security Technical Requirements	
10.2		The proposed solution must support at least 100 Mbps of IPSEC VPN throughput and 500 IPsec VPN tunnels and 500 SSL VPN Users from Day one without requiring any license.	
10.3		The proposed solution must be in the Gartner Magic Quadrant of Enterprise Firewalls for the last 3 years- 2017, 2016 & 2015.	
11.0	Central Management Software Requirement for Central location	Should be deployed in virtual form factor and group devices into logical, hierarchical for management flexibility and deploy policies centrally to be used in conjunction with regional or functional policies. Delegate appropriate levels of administrative control at the regional level or centrally with role-based management.	
11.1		It should be capable of automatically correlate indicators of threats for improved visibility and confirmation of compromised hosts across network and centrally analyze, investigate and report network traffic, security incidents and administrative modifications.	
11.2		It should be possible to view a customizable graphical summary of security threats, applications, users and content.	
11.3		Should support XML based REST API and should have canned as well as option for customized reports for custom number of days, geographical based reports, top threats, applications etc.	
12.0	Enterprise Integration	Should provide RESTful API based integration with Enterprise systems	

Section-B **Zero-Touch ROBO Data Rack**

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
1.0.0	ROBO Data Rack		
1.1.0	Type of modular data rack for ROBO	Integrated Modular Data Rack. Rack should be intelligent and should facility of inbuilt UPS, Precision cooling units and Fire detection.	
1.2.0	Zero Touch Monitoring/ Management	Zero-touch monitoring, management of all parameters including Cooling and Power along with IP PDU, Fire detection, suppression and Safety Features of Biometric Access control, IP Cameras etc	
1.3.0	Usable IT load to support	4.2 KW , scalable upto 6kW with additional racks	
1.4.0	High-Availability with No Single-Point-of-Failure	All components including power, cooling, PDUs, monitoring should be in HA with no Single-Point-of-Failure, monitoring unit should also support redundant power supply source	
1.5.0	Design	(a) Modular and Scalable design for power and cooling (b) Single Rack solution	
1.6.0	RU space for IT load	Minimum usable space 70U (HCA Server-04U x 02 Nos., L3 Chassis Switches-06U x 03 Nos., L3 Rack Switches-01U x 03 Nos., Core Switch-02U x 02 Nos., MPLS Router-2U x 2, Spare-43U)	
1.7.0	UPS	(a) Rack mountable, N+1 configuration for rack mountable internal lithium-ion battery modules, Minimum backup of 5 minutes in full load. (b) IP PDU with strip level monitoring to be provided and connected to integrated monitoring system	
1.8.0	Cooling	(a) As required to support IT load, Rack mounted, Redundant units of minimum, N+1 configuration (b) Cooling unit to ensure UPS & Battery cooling positioned inside rack	

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
		<p>(c) Split indoor & Outdoor unit design</p> <p>(d) Cooling Unit integrated in rack, rack mountable not more than 6U</p> <p>(e) High reliable Scroll compressor</p> <p>(f) Electronically Commutated centrifugal evaporator fan for high energy efficiency</p> <p>(g) Air flow suitable to rack equipment in vertical direction</p> <p>(h) Cooling unit must have safety protections - Under voltage and Overvoltage, High Pressure & Low Pressure for safe operation</p> <p>(j) For easy maintenance, washable filter 80% efficiency to 20 micron and HDPE media</p> <p>(k) Flare type Thermostatic Expansion Valve for easy serviceability</p> <p>(l) Anticorrosive Condenser coil for coastal area environmental application</p> <p>(m) Individual breakers at indoor and outdoor unit for protection</p> <p>(n) ON/OFF switch at indoor unit for emergency purpose</p>	
1.9.0	Safety & security features	<p>(a) Smoke detection and fire suppression, Biometric Access control, IP Camera, Rodent Repellant.</p> <p>(b) Environment monitoring like water-leak detection, Temperature and Humidity sensor, Door sensor etc.</p> <p>(c) Emergency automatic door opening for both front & back doors based on temperature</p>	
1.10.0	Single Pane of Glass Monitoring and Management	<p>(a) All ROBO units across geographical locations should be centrally monitored and manageable through web based single window integrated monitoring of ROBO data racks for vital parameters such as UPS, Cooling, temperature, door position, humidity, etc.</p> <p>(b) Should be able to group ROBO units into logical, hierarchical for management</p>	

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
		flexibility. Delegate appropriate levels of administrative control at the regional level or centrally with role-based management (c) Should able to generate system status/alert.	
1.11.0	Protocol support	SNMP/RS 485. Required interface units need to be provisioned. Should support ready integration with NMS & EMS for 3 rd party IBMS/ITOM software monitoring & management.	
1.12.0	High Availability features	Active Cooling redundancy as mentioned above, UPS system redundancy as mentioned above, PDU should have N+N redundancy. Redundant separate raw power supply & distribution units within data rack.	
1.13.0	Other	(a) Project specific design should be certified for mentioned features by CDCP certified engineer from OEM (b) Installation to include laying of appropriate power cabling from Main panel to rack along with Chemical earthing.	
1.14.0	Centralised monitoring software	(a) Centrally monitor & manage all ROBO units over WAN (b) Should be deployed in virtual form factor	
1.14.1		(a) All parameters of power, cooling and IP-PDU should be available for remote monitoring. (b) Fire Detection system should also integrate with PFC contacts for status of health with main monitoring system. (c) Cooling monitoring should include parameters like compressor and fan running hours, UPS monitoring should include battery health, environmental monitoring, raw incoming power parameters such as frequency /amperes /voltage, UPS outgoing power parameters, IP PDU strip level power, access control operational status, remote viewing of camera.	

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
		<p>(d) Alerts for abnormalities on power consumption pattern at IP PDU strip level, abnormalities in Compressor health pattern.</p> <p>(e) No 'Single-Point-Failure'</p> <p>(f) Seamless 'Single-glass-plane-monitoring' for all ROBO units across India. Dashboard should display BI live-reports of all ROBO units in single unified Dashboard and should not pop-up/ display multiple windows for each ROBO unit management.</p> <p>(g) Software should have open architecture, open protocols to support wide variety of integration for different OEMs</p>	
1.14.2		<p><u>Central Management Software Requirement for Central location</u></p> <p>(a) Group ROBO data racks into logical, hierarchical for management flexibility and deploy policies centrally to be used in conjunction with regional or functional policies.</p> <p>(b) Delegate appropriate levels of administrative control at the regional level or centrally with role-based management.</p>	
1.14.3		<p><u>User Permissions / Security</u></p> <p>Use of LDAP and Active Directory for user authentication in central console</p>	
1.15.0	WAN Optimised	<p>(a) Should support network environment consists of no network connectivity, 64Kbps VSAT high-latency connectivity, 2 Mbps to 8 Mbps</p> <p>(b) DCIM software should able to function within allotted WAN bandwidth and at predefined duration defined as custom WAN profile. For example, for Site-X, allotted maximum allotted bandwidth for DCIM software is 64 Kbps and only communicate during off-hours it mid-night 00:00 hrs to 04:00 hrs.</p> <p>(c) Should support off-line no network environment such as remote islands and ICG ships. On availability/ restoration of network</p>	

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
		connectivity should sync with central server subject to custom WAN profile.	
1.15.0	Single network fabric & management console	(a) ROBO network fabric should integrate with Campus LAN network fabric to form a single unified virtual network fabric (b) ROBO physical network switches should be part of Campus network fabric	
1.16.0	ROBO OEM	ROBO components of data rack including, Ventilation/ Cooling, UPS, IPDU and centralised monitoring software similar to DCIM should be of same single OEM to have seamless integration and management support	
2.0.0	Hyper Converged Appliance (HCA) with accessories for ROBO		
2.1.0	Key Requirements	(a) Should provide Software Defined Data Center following: - (i) Compute (ii) Storage (iii) Networking (b) WAN including router, load balancer (c) Security through Next Generation Firewall (Virtual NGFW) (d) Backup and recovery including ROBO site recovery and sandbox testing (e) Enterprise wide centralised ' Single-pane-of-monitoring and management ' for all above 04 requirements. (f) High-Availability (HA) configuration with no 'Single-point-of-failure'	
2.2.0	Bandwidth throughput	WAN bandwidth of 8 Mbps at ROBO site	
2.3.0	Hardware capacity	(a) Node for clustering - 03 Nos (b) CPU Sockets per Node - 02 Nos (c) CPU loaded per Node - 01 No./02 No.	

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
		(d) Minimum of 64GB Memory RAM expandable upto 1TB for each node (e) SSD and SAS HDD support (f) SSD storage support - Yes (g) NL-SAS HDD per node for Capacity - Yew (h) Lights-out management (j) Maximum RU space for HCA - 4U	
2.3.1	Hardware specifications	(a) Intel Xeon Gen10 or latest (b) Processor cache 20 MB or higher (c) DDR4-2666 NVDIMM or higher (d) Memory should feature Advanced ECC, Memory Mirroring Mode and Memory Online Spare	
2.4.0	Form Factor	Hardware Appliance with compute/storage nodes of minimum 03 nos. in single frame, not exceeding of 4U space as required for HCA configuration	
2.4.1		Overall Rack Unit (RU) size of entire solution including racks/ node, L3 switches should not exceed 6U	
2.5.0	OEM of HCA	(a) Zero-Touch ROBO OEM components of HCA, Virtual NGFW, Backup software of latest Gartner Report on Magic Quadrant for Hyper Converged Servers for Software/Appliance. HCI software should provide SD-Compute, Storage and Networking. (b) Should be registered in India and present for minimum of 05 years (c) Should have minimum 03 deployments of provided hardware/ software in Central/State Govt. Organisations in India and 05 deployments in private sector (d) Should have OEM 24x7x365 onsite support for hardware/ software in India. Should provide Service Desk contact details and Service Level Agreement (SLA) in proof.	
2.5.1		<u>OEM design validation and implementation</u>	

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
		Design plan, implementation and validation for compute, storage, network virtualisation and SD-WAN to be done by OEM. Undertaking for the same to be mentioned on the MAF certificate.	
2.6.0	Single pane of glass monitoring and management	<p>(a) All ROBO units should be managed from single centralised web based panel</p> <p>(b) Should provide aggregated single unified dashboard to monitor all ROBO sites. Single dashboard should not popup/ display multiple windows for each ROBO HCI/HCA unit.</p> <p>(c) Should provide dashboard of aggregated sensor data by group of sites/ site as required</p>	
2.7.0	High Availability	High Availability of all active/ passive components including servers and switches. No Single-Point-of-Failure architecture and associated components should be provided	
2.8.0	SDDC/Private Cloud	<p>(a) Shall provide software defined Compute, Storage, Network, automation, orchestration for private cloud, all managed through single management console spanning across sites</p> <p>(b) Detailed technical requirements as per Section-J/Software Defined Data Center of Annexure-1</p>	
2.9.0	Backup, Recovery & Replication	<p>(a) Should provide backup, recovery & replication for virtual machines, bare metal from single unified console.</p> <p>(b) Should support multi-hypervisors</p> <p>(c) Detailed technical requirements as per Section-K/Software Defined Data Center of Annexure-1</p>	
2.10.0	Virtual NGFW	<p>(a) Should provide micro-segmentation with native support of hypervisor</p> <p>(b) Should provide Routing, load sharing, firewall, Application visibility & control, User ID, IPS, Anti-virus, Anti-malware, SSL</p>	

Sl.	Parameters	Technical Specification-Zero Touch ROBO Data Rack	
		gateway and zero-day threat detection using sandbox (c) Detailed technical requirements as per Section-F/Software Defined Data Center of Annexure-1	
3.0.0	General	All ROBO sites should establish single network fabric spanning across ICG Data Center, DR Data Center, SDN of multi-hypervisors including VMware vSphere/Microsoft Hyper-V based virtual distributed switches, physical switches.	

Section-C – **Software Defined Data Center (SDDC) for DC, DR & ROBO sites**

Srl.	Parameters	Technical Specification-SDDC for DC, DR & ROBO	Complied (Yes/No)
1.0.0	Key SDDC requirements	Should provide Software Defined Compute, Storage and Networking	
		Should provide automation & orchestration and support self-service for provisioning/ deprovisioning of Compute/storage/networking on-the-fly	
1.1.0		Enterprise wide centralised ' Single-pane-of-monitoring and management ' from single integrated window	
1.2.0		High-Availability (HA) configuration with no 'Single-point-of-failure'	
2.0.0	Software Defined Compute		
2.1.0	Hypervisor	Virtualization software should be bare metal hypervisor with functionality of High Availability, Fault Tolerance, hot Add (CPU, Memory, Storage & Network), dynamic resource scheduler, distributed switch, dynamic power management, storage and network IO control, VM level encryption	
2.1.1		Virtualization software shall provide a Virtualization layer that sits directly on the bare metal server hardware with no dependence on a general purpose OS	
2.2.0	Multi-OS support	Virtualization software shall allow heterogeneous support for guest Operating systems like Windows client, Windows Server, Linux (at least Red Hat, SUSE, Ubuntu, CentOS and Solaris x86)	
2.3.0	VM migration	Virtualization software should support live Virtual Machine migration between different generations of CPUs in the same cluster and without the need for shared storage option.	
2.4.0	Hot swap	Virtualization software should provide capabilities of Hot Add (CPU, Memory & devices) to virtual machines when needed, without disruption or downtime in working for both windows and Linux based VMs	

Srl.	Parameters	Technical Specification-SDDC for DC, DR & ROBO	Complied (Yes/No)
2.5.0	OpenStack API integration	Virtualization solution should have the capability to provide out of box integration with Openstack API's and should support all services of Core Open Stack	
2.6.0	Agentless Endpoint protection	Virtualization software should provide integration of 3rd party endpoint security to secure the virtual machines with offloaded antivirus, anti-malware solutions without the need for agents inside the virtual machines.	
3.0.0	Software Defined Storage		
3.1.0	Hardware vendor agnostic	The solution should provide software based enterprise class storage services on server hardware available from all the leading server vendors in the industry. It should support both hybrid and all flash configurations on the server	
3.1.1		The solution should have a flexibility to choose any hardware OEM and not only the one with which the solution is being provided for future expansions.	
3.2.0	Storage scalability	The software defined storage solution should support the capability of increasing the storage capacity by simply adding another hard drive in the physical node instead of adding another physical server in the cluster	
3.3.0	Single-glass-pane-management	The solution should provide a single unified management console for the management of the entire environment including virtualized environment as well as software defined storage environment to simplify the manageability of the entire solution	
3.4.0	Zero-data loss	The solution should provide distributed RAID and cache mirroring for intelligent placement of VM objects across disks, hosts and server racks for enhanced application availability. Zero data loss with zero downtime in case of disk, host, network or rack failure.	
3.5.0	Native in-built software based storage controller	The solution should have in-built software defined storage capability integrated within or outside the hypervisor kernel itself and should work with or without the need for any specialized dedicated controller virtual appliance.	

Srl.	Parameters	Technical Specification-SDDC for DC, DR & ROBO	Complied (Yes/No)
4.0.0	Software Defined Networking		
4.1.0	Network functions	The solution should offer to deploy virtualized network functions (like switching, routing, firewalling, VPN, DHCP and load-balancing). Administrators can build virtual networks for Virtual Machines without the need for complex VLANs, ACLs, or hardware configuration syntax on physical network.	
4.1.1		The Solution should offer Centrally managed distributed L2-L4 stateful firewall that is kernel-level integrated into the host architecture	
4.2.0	Gateway NGFW & Endpoint Protection support	The solution should be capable to provide agent based or agentless guest introspection services like Enterprise Gateway NGFW, Enterprise Endpoint Protection Software, Anti-Malware etc. and Network introspection services like IPS/IDS etc.	
4.3.0	Virtual Extensible LAN (VXLAN)	The virtual solution should offer extending Layer-2 network across multiple sites , without re-architecture or any configuration on physical network	
4.4.0	Security policy affinity	The Security policies must follow the VM in the event of migration (i.e. live migration)	
4.5.0	SD-WAN integration	Should integrate natively with SD-WAN software for ICG	
5.0.0	SDDC - Automation and Orchestration		
5.1.0	Self-service	Provide Self-service portal for Users to enable provisioning/ deprovisioning of Computer, Storage and Networking on-demand	
5.1.1		Should provide PaaS, IaaS services across IT resources on ICG DC, DR and ROBO sites	
5.2.0	Application Delivery	Automate application delivery and container management	
5.3.0	SSO support	Should support Single-Sign-On	
5.4.0	What-if analysis	Provide What-if analysis for various Orchestration related situations	

Srl.	Parameters	Technical Specification-SDDC for DC, DR & ROBO	Complied (Yes/No)
6.0.0	SDDC - Operations		
6.1.0	DevOps support	Should support DevOps	
6.2.0	Container support	Should natively support Containers of Docker/ Kubernetes	
6.2.1		Provision/ deprovisioning of Containers in native virtualisation environment	
6.2.2		Provide HA support for Containers	
6.2.3		Provide persistent storage across Containers	
6.2.4		Support micro-segmentation for Containers	
6.2.5		Provide dedicated Container management portal integrated into SDDC main console	
6.2.6		Provide Docker image repository	
6.3.0	Performance & Capacity Monitoring Dashboard	Should provide Performance monitoring and analysis on SDDC capacity utilisation	
6.3.1		Should provide aggregated compute/ storage utilization analysis at cluster, site and enterprise level	
6.3.2		Should provide real-time predictive capacity management including trending, metering, right-sizing, optimization to achieve enhanced utilisation of IT resource	
6.3.3		Monitoring of OS Resources including CPU, disk, memory, network etc.	
6.4.0	Overall cost view	Should provide overall cost associated with provisioned IT resources such as VM, Storage etc.	

Srl.	Parameters	Technical Specification-SDDC for DC, DR & ROBO	Complied (Yes/No)
6.5.0	What-if analysis	Provide What-if analysis for various operations related situations	
6.6.0	Application Monitoring	Should able to monitor Application, Middleware and Database for leading enterprise software systems	
6.6.1		Should natively support application monitoring for Oracle Fusion Middleware, Oracle Databased, Cisco CUCM for Enterprise Unified Communication and MS Exchange.	

Section-D – **Backup, Recovery & Replication for Business Continuity**

Sl.	Category	Technical Requirements – Backup, Recovery & Replication	Complied (Yes/No)
3.1.0	High Availability	No Single-Point-of-Failure architecture and associated components should be provided	
3.1.1		The solution should support VM on HA configuration	
3.2.0	Licensing	The proposed Backup software must offer host based / CPU based licensing with no restrictions on type of arrays (protecting heterogeneous storage technologies), front end production capacity or backend backup target capacity for virtual or physical servers. Licenses and associated hardware should be supplied for DC, DR DC & ROBO as required.	
3.2.1	Application awareness	Backup software should be totally agentless but should support application aware backups for MS SQL, Oracle, Exchange transaction logs with non-staged granular recovery of all these applications. It should support crash consistent VM level backup for all other workloads.	
3.2.2	Hardware Agnostic	Backup software should be Hardware Agnostic software and it should support any type of storage for storing backups on disk and yet support de-duplication on the storage targets quoted. It should be able to backup data to tapes as well for long term retention.	
3.2.3	Granular recovery	Backup software should support file level recovery from an image level backup of Windows/Linux guest file systems.	
3.2.4		Backup software should provide Recovery of Application Items, File, Folder and Complete VM recovery capabilities from the image level backup (irrespective of the source size) within 15Mins RTO.	
3.2.5	VM replication	Replication in the software should be a VM level replication and must replicate the VM level data with or without backing it up at the source site. It should also include failover and failback capabilities and should be able to perform automatic acquisition of network addresses at the destination site.	

Sl.	Category	Technical Requirements – Backup, Recovery & Replication	Complied (Yes/No)
3.2.6	Unified console operation	Backup software should provide Backup and Replication capabilities in one console only.	
3.2.1	Encryption, WAN optimization	The software should be Network-efficient, Secure backup data replication with variable-length encryption at the source, along with compression and encryption to ensure that backups are optimized for WAN transmission. This should be ensured without need of any other 3rd party WAN Accelerator requirements.	
3.2.1		The proposed backup solution must support at least AES 256-bit encryption capabilities for Data-in-Rest, Data-in-Transfer support	
	Tape library	Should support tape mirroring of the same job running concurrently with primary backup.	
		Should allow creating tape clone facility after the backup process.	
3.2.1	Recovery verification	Backup software must have a feature of data validation, whereby a workload is powered-on in a sandbox environment and tested for its recoverability.	
3.2.1		Recovery verification should automatically boot the server from backup and verify the recoverability of VM image, Guest OS and Application Consistency.	
3.2.1	API Integration	Should provide RESTful API for integration with 3 rd party Enterprise applications	
3.2.1	Unified management console	Should provide Enterprise level unified Dashboard 'Single-pane-of-glass-monitoring and management' from central site for all ROBO units. All ROBO sites backup servers' status should be available from single unified dashboard at central site.	
3.2.1	Replication on offline connectivity	Should support auto ROBO replication with central site on restoration of network without any manual intervention	
3.2.1		Recovery of ROBO sites from central backup at data center should be supported with zero-touch at ROBO. Take backup of ROBO sites locally and then replicate it to central location	

Section-E – **Software Defined WAN**

Sl.	Category	Technical Requirement of SD-WAN	Complied (Yes/ No)
1.0	Form factor	The proposed branch solution should be available in both pre-packaged physical appliance and software virtual form factor.	
2.0	Central orchestrator	<p>The solution should compromise of a centralized orchestrator capable of configuration and monitoring of multiple WAN Edge devices in the branches, data-centers and remote locations. Solution should also compromise of a high performance branch Customer Premises Equipment (CPE) or Virtual CPE devices which can replace traditional WAN routers or co-exist with traditional WAN routers. These branches are to be managed from the centralized orchestrator. The centralized orchestrator should also provide for an option of remote diagnostics to validate reachability of both WAN and LAN sides, packet captures ARP tables, route tables etc.</p> <p>The proposed solution should provide an option of using the Orchestrator (Management and Provisioning Platform) from a public cloud and it should also have the capability to be deployed on-premises.</p>	
3.0	Bandwidth aggregation	The proposed hub/CPE devices should be able to aggregate the bandwidth across multiple links and should have zero-IT touch deployment capabilities.	
4.0	Link steering	<p>The solution should provide for sub-second per-packet link steering based on the measured performance metric, application requirements, business priority of the application and link cost</p> <p>The solution should provide for on-demand link remediation in the event of packet loss, increase in latency and jitter</p>	
5.0	Transport agnostic	The proposed solution should be an enterprise grade WAN solution and should be completely transport independent. And, should support multiple technologies like MPLS, Internet, P2P Links, 3G/4G/LTE.	

Sl.	Category	Technical Requirement of SD-WAN	Complied (Yes/ No)
6.0	Application awareness	<p>The solution should be able to detect, classify and control various applications running over WAN.</p> <p>The solution should provide historical and real time link usage and performance of applications.</p> <p>The solution should provide for application usage related data over time and should provide an option to filter it down to things like Source Devices/IPs, destinations etc.</p>	
7.0	Multi-hypervisor support	<p>The branch device should be capable of running/supported over major hypervisors like VMware, Hyper-V, Xen and KVM</p>	
8.0	VPN Tunnels	<p>The solution should enable creation of full mesh, partial mesh and hub-n-spoke VPN tunnels including dynamic branch to branch tunnels with a single click.</p>	
9.0	Link fail-over	<p>The solution should be capable of detecting WAN failures and dynamically steering the traffic to available WAN links in a sub-second manner.</p>	
10.0	Quality of Service (QoS)	<p>The solution must be able to define classes of application traffic and apply Quality-of-Service policies to each class. The solution must be able to apply QoS policies to all traffic seen in the network, including both optimized and non- optimized traffic flows, including TCP, UDP, and other non-TCP traffic types.</p>	
10.1		<p>The solution must be able to apply inbound QoS by TCP/UDP rate limiting low priority traffic.</p> <p>QoS policies should be centrally defined and can be applied to classes of applications and individual applications</p>	
11.0	Encryption	<p>The encryption scheme used by SD-WAN solution should be FIPS 140-2 compliant.</p> <p>The solution should provide 128-bit AES or 256-bit AES encryption on the VPN.</p> <p>The branch device should have an inbuilt firewall for providing Layer 4 policies and the branch device should also be capable of running 3rd part firewall VNFs and provide service chaining for the same.</p>	

Sl.	Category	Technical Requirement of SD-WAN	Complied (Yes/ No)
12.0	Bandwidth throughput	WAN bandwidth of 8 Mbps at ROBO site and 40 Mbps at Central Data Center site	
13.0	Single-pane-of-glass monitoring	Should provide Enterprise level unified Dashboard 'Single-pane-of-glass-monitoring and management' from central site for all ICG DC/ DR/ ROBO sites. All sites backup servers' status should be available from single unified dashboard at central site. Should support single unified policy across all sites	

Section-F – **Rack Server**

Sl.	Category	Technical Requirements for Rack Server	Complied (Yes/ No)
1.0	Compute	(a) 2 socket x 20 Core, 3.0 GHz per Node (b) Intel Xeon Gen9 or latest (c) Processor cache 25 MB or higher (d) DDR4-2666 NVDIMM or higher (d) NVMe SSD, 12 G (e) Memory should feature Advanced ECC, Memory Mirroring Mode and Memory Online Spare	
2.0	Storage	(a) Support minimum of 04 SFF 12G SAS/ 6G SSD (b) Capacity to be scalable upto 100 TB or higher per node (c) Storage be provided in SAS HDD	
3.0	Network	(a) Provide FC-HBA in High Availability with SAN Switch, Tape Library and Composable IT Infra Chassis (b) Provide FC-HBA in High Availability with Backup Appliance (c) Provide Ethernet ports in HA as required	
4.0	Other Software	(a) Windows 2016 or latest with SA (b) Backup software, 10 VM or 02 Socket (c) Endpoint Protection Software - 01 No. (d) Virtualisation software – 02 Socket	

Section-G – **Network Access Control**

Sl.	Category	Technical Requirements - NAC	Complied (Yes/ No)
1.0	General	(a) Support for enterprise level policy based network and access management on devices and users (b) Comply to 802.1x NAC standard	
1.1		Shall enforce device and user compliance	
1.2		Quarantine noncompliant device	
1.3		Shall enforce restricted access to devices depends on central policy	
2.0	Policy lifecycle management	Enforces policies for all operating scenarios without requiring separate products or additional modules	
3.0	Profiling and visibility	Recognizes and profiles users and their devices before malicious code can cause damage	
4.0	Guest networking access	Manage guests through a customizable, self-service portal that includes guest registration, guest authentication, guest sponsoring, and a guest management portal	
5.0	Security posture check	Evaluates security-policy compliance by user type, device type, and operating system. Should check for compliance including lack antivirus, patches, or host intrusion prevention software from accessing the network	
6.0	Incidence response	Mitigates network threats by enforcing security policies that block, isolate, and repair noncompliant machines without administrator attention	
7.0	Bidirectional integration	Integrate with other security and network solutions through the open/RESTful API	
8.0	Mobile/ IoT support	Shall support Mobile devices, Internet of Things (IoT) devices against central NAC policy compliance	
9.0	Vendor agnostic	Shall support 3rd party L2 switches/ Network components compliant to 802.1x standard	
10.0	SIEM compliant	Should support leading SIEM software including Splunk and ArcSight	

Sl.	Category	Technical Requirements - NAC	Complied (Yes/ No)
11.0	Offline support	Should support MPLS network outages for prolonged period and Users/ Devices continue to access local network with NAC in the event of MPLS network outage with DC, DR DC	
11.1		Should support ICG Ships which likely to remain in disconnected mode, yet NAC is made available at local level	

Section-H **Switch Fabric for Data Center/ DR Data Center**

Sl.	Category	Technical Requirements – Switch Fabric for DC/DR DC	Complied (Yes/ No)
1.0	Backplane	1 Tbps or higher	
2.0	SFP Ports	(a) 40G SFP for North-South traffic (b) 10G SFP for East-West traffic	
3.0	SDN Ready	Yes	
4.0	VxLAN with BGP	Yes	
5.0	High Availability	(a) All network components should be in HA configuration (b) Should be free of STP (c) Should deploy ECMP or equivalent	
6.0	Single Network Fabric	(a) Single Network Fabric to be achieved using virtual/ physical across Campus LAN (b) Should support multi-hypervisor based SDN	

Section-J – **Network Access Chassis Switch**

Srl.	Parameters	Technical Specification-Access Chassis Switch	Complied (Yes/No)
1.0	Hardware and Performance	Switch should be chassis based switch with minimum 5 interface slots and two supervisor/routing engine slots	
1.1		Switch should support N+1 and N+N power redundancy	
1.2		Switch should support 80Gbps per slot bandwidth from day one and scalable up to 120 Gbps per slot	
1.3		Switch should support at least 750 Mpps throughput from day-1	
1.4		Switch should be able to support up to 240 1Gig PoE (60 Watts) simultaneous ports	
1.5		Switch be provided with 96 ports of 100/1000Base T supporting 30W and 48 ports of 100/1000BaseT of 60W so total 144 GE Electrical ports	
1.6		To simplify sparing, components like switch supervisor, fabric modules, line cards, power supplies must be interchangeable between different chassis types and sizes of same series switches.	
1.7		Switch should able to support PoE, PoE+ and UPoE from day-1 and ready to support upcoming PoE standards like IEEE 802.3BT	
1.8		Switch should be provisioned with both 4x10Gig and 1x40Gig interface from Day-1 to have up to 80Gbps uplink bandwidth	
1.9		Switch should be provided with single supervisor engine (control, management and forwarding engine) from day-1	
1.10		Switch should support NSF/SSO where information fully synchronized between both supervisor engine to allow sub second failover and non stop operation	
2.0	L2 Feature	Switch should support at least 60K Mac address	

Srl.	Parameters	Technical Specification-Access Chassis Switch	Complied (Yes/No)
2.1		Switch should support Ethernet standards like IEEE802.1p, IEEE802.1Q, Flow control, Jumbo frame, 802.1D, 802.1w, 802.1s, Jumbo frames, 802.3ad, private vlan	
2.2		Switch should support 4000 vlans and 4000 SVI	
2.3		Switch should support vlans based on ports, MAC address, Voice vlan, IP-Subnet based vlan	
3.0	L3 Features	Switch should support 64K IPv4 and 32K IPv6 entries	
3.1		Switch should support minimum 12K multicast routes	
3.2		Switch should support routing protocols like BGPv4, OSPF(v2, v3), ISISv4, ECMP, VXLAN, PIM-SSM, BFD, VRF aware BFD and MPLS	
3.3		Switch should support VRRP, policy based routing and hardware ready for IEEE 802.1ae on all GE ports	
4.0	QoS features	Switch should support 8 queues per port	
4.1		Switch should support IPv4 and IPv6 QoS classification and policing	
4.2		Switch should support priority queuing, DSCP, traffic shaping, WRED	
4.3		Switch should support control plane policing to protect switch CPU from DoS attack	
5.0	Security	Switch should support at least 15K hardware based ACL	
5.1		Switch should support VLAN ACL, Port based ACL, Time based ACL	
5.2		Switch should support IP Source guard, Dynamic ARP inspection, DHCP Snooping	

Srl.	Parameters	Technical Specification-Access Chassis Switch	Complied (Yes/No)
5.3		Switch should support 802.1x for user authentication and authorization, Dynamic vlan assignment, Guest VLAN assignment, MAC based authentication	
5.4		Switch should support real time data collection with line rate hardware based netflow/sflow up to 300 K	
5.5		Switch should have unique secure identity so that it's authenticity and origin can be confirmed with OEM. Switch BIOS, software image should be cryptographically signed to ensure integrity and switch should not boot with modified software regardless of user's privilege level.	
6.0	Management and Troubleshooting	Switch should have atleast 200GB SSD storage to store logs and container based application hosting. It should also have RAM of 16GB	
6.1		Switch should support telnet, ssh, https, SNMPv3, configuration rollback feature for ease of management	
6.2		Switch should support API Driven configuration and support Netconf and Restconf using YANG data model. It should support automation tool like python	
6.3		Switch should support port mirroring based on Inbound & outbound, mirroring based on ports, vlans, RSPAN, ERSPAN	
6.4		Switch should support software upgrade without any downtime to network. Switch should able to support linux based container to run applications	
6.5		Switch should have field replaceable power supplies and FAN trays	
6.6		Switches need to be provided with all software license from day-1 as per RFP specification	

Section-K – **Network Access Rack Switch**

Srl.	Parameters	Technical Specification-Access Rack Switch	Complied (Yes/No)
1.0	Generic Requirements	Switch should be 1RU with minimum 48 nos. 10/100/1000 Base-T ports and additional 4 nos. SFP uplinks ports. Switch should be loaded with 2 no. of 1G SFPs from Day1.	
1.1		Switch should have slot/ports(excluding uplinks) for minimum 80 Gbps of stacking bandwidth with dedicated stacking ports and cables with minimum 8 switch in stack.	
1.2		Switch should have 2 GB RAM and 4 GB Flash.	
1.4		Switch shall have minimum 100 Gbps of switching fabric and 150 Mpps of forwarding rate.	
1.5		Shall have minimum 16K MAC Addresses and 250 active Vlans.	
1.6		Shall have 802.1p class of service, marking, classification, policing and shaping. Should support strict priority queuing.	
1.9		Switch should support port security, DHCP snooping, Dynamic ARP inspection, IP Source guard, BPDU Guard, Spanning tree root guard.	
1.10		Switch shall support application visibility and traffic monitoring with minimum 12 K netFlow/sflow/jflow entries.	
1.11		Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment.	
1.12		Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.	
1.13		All switches and management solution shall be from same OEM	
2.0	High Availability	Switch should support redundant field replaceable power supplies	

Srl.	Parameters	Technical Specification-Access Rack Switch	Complied (Yes/No)
3.0	IEEE Standards	Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.3az, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.	
4.0	L3 Protocol Support	Switch must have support for L3 functionality like static routing, RIP & PBR from Day1 upgradable to OSPF, VRF, VXLAN and IS-IS.	
5.0	Management Protocol Support	Switch should support management features like SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS and TACACS+ .	
6.0	Security	During system boots, the system's software signatures should be checked for integrity. System should capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.	
6.1		Should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment.	
7.0	IPv6 Support	Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbor Discovery Inspection and IPv6 Source Guard & MACsec-128 on hardware.	

Section-L1 – **Core Switch (Intranet)**

Srl.	Parameters	Technical Specification-Core Switch	Complied (Yes/No)
1.0	Hardware and Performance	Switch should be fixed configuration 1 RU platform to support atleast 40 x 10 Gigabit ports and additional slot to add 8x10G or 2 x40G ports in future. Switch should be provided with SFP as per solution proposed	
1.1		Switch should have redundant power supplies	
1.2		Switch should have non-blocking architecture and should support switching bandwidth up to 480 Gbps and 672Mpps throughput	
1.3		Two core switches will be connected in virtual stack to increase performance and active-active performance with support of NSF/SSO when connected	
2.0	L2 Feature	Switch should support at least 60K Mac address	
2.1		Switch should support Ethernet standards like IEEE802.1p, IEEE802.1Q, Flow control, Jumbo frame, 802.1D, 802.1w, 802.1s, Jumbo frames, 802.3ad, private VLAN	
2.2		Switch should support 4000 VLANs and 4000 SVI	
2.3		Switch should support VLANs based on ports, MAC address, IP-Subnet based VLAN	
2.4		Switch should support UDLD, CDP or LLDP	
3.0	L3 Features	Switch should support 64K IPv4 and 32K IPv6 entries	
3.1		Switch should support up to 16K multicast routes	
3.2		Switch should support routing protocols like BGPv4, OSPF(v2, v3), ISISv4, RIP, Static, ECMP, LISP, VXLAN, PIM, SSM, DVMRP, BFD, VRF aware BFD	

Srl.	Parameters	Technical Specification-Core Switch	Complied (Yes/No)
3.3		Switch should support VRRP/HSRP	
3.4		Switch should support VRF, MPLS, Policy based routing	
4.0	QoS features	Switch should support 8 queues per port	
4.1		Switch should support IPv4 and IPv6 QoS classification and policing	
4.2		Switch should support priority queuing, DSCP, traffic shaping, WRED	
4.3		Switch should support control plane policing to protect switch CPU from DoS attack	
4.4		Switch should support IEEE 1588v2 for clocking precision	
5.0	Security	Switch should support at least 15K hardware based ACL	
5.1		Switch should support VLAN ACL, Port based ACL, Time based ACL	
5.2		Switch should support IP Source guard, Dynamic ARP inspection, DHCP Snooping and IEEE 802.1ae based MACSEC (AES encryption)	
5.3		Switch should support 802.1x for user authentication and authorization, Dynamic VLAN assignment, Guest VLAN assignment, MAC based authentication	
5.4		Switch should support real time data collection with line rate hardware based netflow/sflow up to 300 K	
5.5		Switch should have unique secure identity so that it's authenticity and origin can be confirmed with OEM. Switch BIOS, software image should be cryptographically signed to ensure integrity and switch should not boot with modified software regardless of user's privilege level.	

Srl.	Parameters	Technical Specification-Core Switch	Complied (Yes/No)
5.6		Switch should able to integrate with netflow based campus visibility and threat detection solution and should able to support threat detection within encrypted traffic	
6.0	Management and Troubleshooting	Switch should have atleast 500GB SSD storage to store logs and container based application hosting	
6.1		Switch should support telnet, SSH, https, SNMPv3, IPFIX, configuration rollback feature for ease of management	
6.2		Switch should support API Driven configuration and support Netconf and Restconf using YANG data model. It should support automation tool like python	
6.3		Switch should support port mirroring based on Inbound & outbound, mirroring based on ports, VLANs, RSPAN, ERSPAN	
6.4		Switch should support software upgrade without any downtime to network. Switch should able to support Linux based container to run applications	
6.5		Switch should support SNMP notification for dynamic change in MAC table	
6.6		Switch should support blue beacon technology to identify hardware during troubleshooting	
6.7		Switch should support AC and DC power supplies	
6.8		Switch should have field replaceable power supplies and FAN trays	
6.9		Switches need to be provided with all software license from day-1 as per RFP specification and all switches should be from same OEM	
6.10		OEM should be in Leader quadrant of the latest Gartner report	

Section-L2 – **Core Switch (Internet)**

Srl.	Parameters	Technical Specification-Core Switch	Complied (Yes/No)
1.0	Hardware and Performance	Switch should be fixed configuration 1 RU platform to support atleast 40 x 10 Gigabit ports and additional slot to add 8x10G or 2 x40G ports in future. Switch should be provided with SFP as per solution proposed	
1.1		Switch should have redundant power supplies	
1.2		Switch should have non-blocking architecture and should support switching bandwidth up to 480 Gbps and 672Mpps throughput	
1.3		Two core switches will be connected in virtual stack to increase performance and active-active performance with support of NSF/SSO when connected	
2.0	L2 Feature	Switch should support at least 60K Mac address	
2.1		Switch should support Ethernet standards like IEEE802.1p, IEEE802.1Q, Flow control, Jumbo frame, 802.1D, 802.1w, 802.1s, Jumbo frames, 802.3ad, private VLAN	
2.2		Switch should support 4000 VLANs and 4000 SVI	
2.3		Switch should support VLANs based on ports, MAC address, IP-Subnet based VLAN	
2.4		Switch should support UDLD, CDP or LLDP	
3.0	L3 Features	Switch should support 64K IPv4 and 32K IPv6 entries	
3.1		Switch should support up to 16K multicast routes	
3.2		Switch should support routing protocols like BGPv4, OSPF(v2, v3), ISISv4, RIP, Static, ECMP, LISP, VXLAN, PIM, SSM, DVMRP, BFD, VRF aware BFD	

Srl.	Parameters	Technical Specification-Core Switch	Complied (Yes/No)
3.3		Switch should support VRRP/HSRP	
3.4		Switch should support VRF, MPLS, Policy based routing	
4.0	QoS features	Switch should support 8 queues per port	
4.1		Switch should support IPv4 and IPv6 QoS classification and policing	
4.2		Switch should support priority queuing, DSCP, traffic shaping, WRED	
4.3		Switch should support control plane policing to protect switch CPU from DoS attack	
4.4		Switch should support IEEE 1588v2 for clocking precision	
5.0	Security	Switch should support at least 15K hardware based ACL	
5.1		Switch should support VLAN ACL, Port based ACL, Time based ACL	
5.2		Switch should support IP Source guard, Dynamic ARP inspection, DHCP Snooping and IEEE 802.1ae based MACSEC (AES encryption)	
5.3		Switch should support 802.1x for user authentication and authorization, Dynamic VLAN assignment, Guest VLAN assignment, MAC based authentication	
5.4		Switch should support real time data collection with line rate hardware based netflow/sflow up to 300 K	
5.5		Switch should have unique secure identity so that it's authenticity and origin can be confirmed with OEM. Switch BIOS, software image should be cryptographically signed to ensure integrity and switch should not boot with modified software regardless of user's privilege level.	

Srl.	Parameters	Technical Specification-Core Switch	Complied (Yes/No)
5.6		Switch should able to integrate with netflow based campus visibility and threat detection solution and should able to support threat detection within encrypted traffic	
6.0	Management and Troubleshooting	Switch should have atleast 500GB SSD storage to store logs and container based application hosting	
6.1		Switch should support telnet, SSH, https, SNMPv3, IPFIX, configuration rollback feature for ease of management	
6.2		Switch should support API Driven configuration and support Netconf and Restconf using YANG data model. It should support automation tool like python	
6.3		Switch should support port mirroring based on Inbound & outbound, mirroring based on ports, VLANs, RSPAN, ERSPAN	
6.4		Switch should support software upgrade without any downtime to network. Switch should able to support Linux based container to run applications	
6.5		Switch should support SNMP notification for dynamic change in MAC table	
6.6		Switch should support blue beacon technology to identify hardware during troubleshooting	
6.7		Switch should support AC and DC power supplies	
6.8		Switch should have field replaceable power supplies and FAN trays	
6.9		Switches need to be provided with all software license from day-1 as per RFP specification and all switches should be from same OEM	
6.10		OEM should be in Leader quadrant of the latest Gartner report	

Section-M – **Network Lifecycle Management Software**

Srl.	Parameters	Technical Specification- Network Lifecycle Management Software	Complied (Yes/No)
1.0	Architecture and Performance	The proposed solution should have simplified user interface for navigation and provides operator with a quick and easy view to isolate issues in the network and identify root cause remediation.	
1.1		Network Management System should be provided as Physical/ Virtual Appliance	
1.2		Should be comprehensive solution to manage, visualize and monitor the network from a single graphical interface for wired and wireless for network devices.	
1.3		The proposed solution should support policy based automation that simplifies and abstracts the network management complexities of deployment & provisioning across enterprise	
1.4		The proposed solution should enable to transform enterprise business intent to network policies	
1.5		The proposed solution to provide single point for network-wide automation and control	
1.6		The proposed solution should be able to configure and use embedded instrumentation or configuration template and technologies for application visibility and network policy optimization.	
1.7		The proposed solution offer real-time network assurance capabilities for entire enterprise	
1.8		The proposed solution shall provide at least 3 levels of access, read, write and super administrator.	
1.9		Proposed solution should supports Representational State Transfer (REST) APIs at the northbound layer for programmability	
1.10		It shall be possible to allocate the above access level per configuration type and/or devices type.	

Srl.	Parameters	Technical Specification- Network Lifecycle Management Software	Complied (Yes/No)
2.0	Product Operations & Management	The proposed Automation solution should support Remote Installation / Upgradation	
2.1		The proposed Solution should support multiple credentials for the devices to be discovered	
2.2		The Operation Solution should auto discover the network elements as well as their current status.	
2.3		The proposed solution have the ability to add network devices into inventory via import from a comma-separated variable (CSV) file	
2.4		The Automation Solution should support Device inventory displaying detailed hardware components of all managed devices.	
2.5		The proposed solution polls the network devices at regular intervals	
2.6		The proposed solution should provide Interface inventory details and connected device's IP addresses.	
2.7		The proposed solution should able to display the current running configuration of the network device	
2.8		The proposed Solution should automatically identify the device roles based on the device configuration	
2.9		The proposed solution should have the ability to search by multiple device attributes	
2.10		Proposed solution should allow the user to import software images from multiple sources.	
2.11		The proposed solution should provide customizable configuration templates based on validated designs and guided workflows	
2.12		The proposed solution should have a quick 360 degree view of each network devices in the domain.	

Srl.	Parameters	Technical Specification- Network Lifecycle Management Software	Complied (Yes/No)
2.13		The proposed solution should allow import of csv files to manage the inventory	
2.14		Proposed solution should automatically discover and maps network devices. Should have an ability to display real-time graphical representation.	
2.15		The Operation tool should support filters in the topology map	
2.16		The Automation solution should classify devices in the topology map based on different network layers	
2.17		The vendor solution shall provide the capability to search in the topology map.	
2.18		The proposed solution should enable to nest multiple views to allow a user to drill down to subsystem level.	
3.0	Network Lifecycle	The proposed solution should support performance monitoring of device health metrics for the network elements like CPU, memory etc	
3.1		The proposed solution should provide information regarding utilization and error statistics for WAN and LAN interfaces.	
3.2		The proposed tool should diagnose client and application issues using recent and historical data.	
3.3		The proposed solution shall provide at-a-glance fault summary dashboards to view top unhealthy network elements with status KPIs and drill down to view the detailed information	
3.4		The proposed solution should identify top network issues to delivers an understanding of which faults to investigate first	
3.5		The proposed solution should provide Network element troubleshooting views to allow easy access to device-specific information and alarm details	
3.6		The proposed solution should provide Network infrastructure hierarchy	

Srl.	Parameters	Technical Specification- Network Lifecycle Management Software	Complied (Yes/No)
		visualization for fault impact also provides cross navigation to forms for further troubleshooting	
3.7		The proposed Solution should allow the user to create the custom dashboards as per the user needs	
3.8		The proposed solution shall have the capability to monitor the application performance and provide information on the network resources by applications/flows.	
3.9		The proposed Solution should allow the user to provide enforcement for the granular control for the bandwidth used by a specific application	
3.10		The proposed solution should support the capability for Applications or flows collected on the server have to be recognized and categorized accordingly	
3.11		The proposed solution should allow the user to define a custom application	
3.12		The proposed solutions has to provide information on application performance parameter such as delay/jitter, packet lost etc.	
3.13		The proposed solution should provide Global View of application running in the network, Top Applications	
3.14		The proposed solution should provide a network dashboard, providing up-to-date network-wide information on key usage and performance metrics.	
3.15		Operations staff should be able to search for users based on readily available attributes, e.g., username, MAC or IP address.	
3.16		Solution should provide client troubleshooting information including client health, connectivity issues etc.	
3.17		The proposed solution should support converged network infrastructure for Performance Management	

Srl.	Parameters	Technical Specification- Network Lifecycle Management Software	Complied (Yes/No)
3.18		The proposed solution should collect telemetry information from network devices	
3.19		The proposed solution shall be capable of performing path trace from the endpoint/host to identify connectivity or performance issues between the nodes.	
3.20		The proposed solution should display the flow path statistics while executing a Path Trace	
3.21		The proposed solution should support Intent-based Access control Application Policy management	
3.22		The proposed solution should have the capability in determining the Business Relevance of an application in order to identify how important is an application to your business	
3.23		The proposed solution should determine support identical bandwidth provisioning on both ends of a connection in an application.	
3.24		The proposed solution should allow the user to mark a application as Favorite application	
3.25		The system should have built-in work flow to preview Policy configuration to validate the configuration deployment.	
3.26		The proposed solution should have the capability to configure SP profiles on specific interface for WAN devices.	
3.27		The proposed solution should allow to customize the percentage of bandwidth allocation in a Service Provider profile when configuring an application policy.	
4.0	Plug-n-Play Application	The proposed Solution should support Zero-touch deployment of routers, switches and wireless controllers to eliminate human intervention	
4.1		The proposed solution should have capability to design, provision, manage, and monitor the hardware, the hosting platforms and the software services required for	

Srl.	Parameters	Technical Specification- Network Lifecycle Management Software	Complied (Yes/No)
		successfully getting a new branch up and running	
4.2		The proposed Solution should support for automatic IP address assignments to the required components. And also automates the supply of common network attributes for configuring the devices based on the region, location, or type of branches	
4.3		The proposed Solution should support physical branch provisioning by automating onboarding, initial configuration, and customer-supplied configurations for the complete branch network.	
4.4		The proposed Solution should support simultaneous provisioning of multiple branches with the standardized configurations through easy-to-use bulk provisioning mechanisms	
5.0	High Availability	The proposed Solution should support manual Failover during the disaster recovery	
5.1		The proposed solution should be capable to provide redundancy geographically	
5.2		The proposed solution should have Database clustering based on an architecture that shall eliminate the application or its part going down in case of failure of any of the node in cluster.	

Section-N – **Basic IP Phone**

Srl.	Parameters	Technical Specification-Basic IP Phone	Complied (Yes/No)
1.0	General	IP Phone shall be able to register on the existing Call manager and EMS along with required license to be provided	
1.1		IP phone should have minimum 3.5" Screen	
1.2		Should support text based XML applications	
1.3		Should have minimum two 10/100 Ethernet ports with 1 connecting to Desktop and another for LAN	
1.4		Should support POE	
1.5		Should have Headset port and volume control toggle switch	
1.6		Switch should support two lines and support extension mobility	
2.0	Basic Features	(a) Call forward (b) Call forward notification (c) Call filter (d) Call history lists (e) Call park (f) Call pickup (g) Call timer (h) Call waiting Callback (j) Call forward (k) Call forward notification (l) Call filter (m) Call history lists (n) Call park (p) Call pickup (q) Call timer (r) Call waiting (s) Call back	
3.0	Protocol Support	Standards: SIP, G.729/G.729a, G.711/G.711a, TLS and SRTP	
4.0	Security	802.1x support and encrypted configuration files	

Section-P – **Executive IP Phone**

Srl.	Parameters	Technical Specification-Executive IP Phone	Complied (Yes/No)
1.0	General Features	IP Phone shall be able to register on the existing Call manager and EMS. Phone to be supplied with required license on existing Call manager and EMS	
1.1		IP phone should have minimum 5" Color VGA Screen	
1.2		Should support text based XML applications	
1.3		Should have minimum two 10/100/1000 Ethernet ports with 1 connecting to Desktop and another for LAN	
1.4		Should support POE	
1.5		Should have Headset port and volume control toggle switch	
1.6		Switch should support two lines and support mobility. Should have minimum 5 soft keys on the phone	
1.7		Should be provided with extension module having minimum 18 keys and separate display	
2.0	Basic Features	(a) Callback (b) Call forward (c) Call forward notification (d) Call filter (e) Call history lists (f) Call park (g) Call pickup (h) Call timer (j) Call waiting Callback (k) Call forward (l) Call forward notification (m) Call filter (n) Call history lists (p) Call park (q) Call pickup (r) Call timer (s) Call waiting	
3.0	Advanced Features	(a) Consultative Call Forwarding (b) Boss-Secretary Forwarding (c) Corporate and Personal Directory	
4.0	Protocol Support	Standards: SIP, G.729/G.729a, G.711/G.711a, TLS and SRTP	

Srl.	Parameters	Technical Specification-Executive IP Phone	Complied (Yes/No)
5.0	Security	802.1x support and encrypted configuration files	

Section-Q – **PRI Gateway**

Srl.	Parameters	Technical Specification-PRI Gateway	Complied (Yes/No)
1.0	General	The gateway should have 4 onboard WAN or LAN 10/100/1000 ports and 2 ports of E1 PRI (supporting PPP, ISDN-PRI)	
1.1		The gateway should have additional 2 slots	
1.2		The gateway should support 4GB Flash and 4 GB RAM	
1.3		The Router shall support Operating Temperature range of 32 to 104°F (0 to 40°C)	
1.4		The gateway shall support Operating Relative humidity range of 5% to 85%	
1.5		The gateway should have a Performance of 500 Mbps	
1.6		The gateway shall support Voice DSP's	
1.7		The gateway shall support Time-Based Access Lists Using Time Ranges(ACL)	
1.8		The gateway shall support advanced application inspection and control	
1.9		The gateway shall support collection of IP traffic information	
1.10		The gateway shall support CUBE, SIP functionalities	
1.11		The Router shall support for improvement of application performance and availability	
1.12		The Router shall support selection of the best path for each application based upon reachability, delay, loss, jitter	
1.13		OEM should be in Leader quadrant of the latest Gartner report	
2.0	IPv6 Support	The Router shall support IPv6 (Internet Protocol Version 6) included OSPF, BGP	
2.1		The Router shall be IPv6 Ready Logo as certified by the IPv6 Forum	

Srl.	Parameters	Technical Specification-PRI Gateway	Complied (Yes/No)
3.0	Security	The gateway shall support functionality to protect the route processor from unnecessary or malicious levels of traffic, including DoS attacks	
3.1		Gateway should support TLS and SRTP. It should be capable to support AES-256 encryption with SuiteB support	
4.0	Local Survivability	The gateway shall support Local Survivability functionality and needs to integrate with Call Manager installed at the HQ and IP Phones to be installed locally	
5.0	High Availability	The Router shall support Internal Redundant Power-supply options and should be populated with both the power supplies from day 1	
5.1		Shall provide Active-Active/ Active-Passive redundancy to provide continuous availability	

Section-R – **OEM Qualification, Warranty & Implementation support**

Sl.	Category	OEM Qualification and Requirements	Complied (Yes/ No)
1.0	OEM Qualification	<p>(a) Data Center, DR Data Center and Zero-Touch ROBO OEM components of Hardware, Hyper-Converged Appliances for ROBO, Virtual NGFW, Backup software, SDDC software, SD-WAN should have been mentioned in latest Gartner Magic Quadrant/ Forrester Wave Reports in respective product category.</p> <p>(b) Should be registered in India and present for minimum of 05 years</p> <p>(c) Should have minimum 03 deployments of hardware/ software in Central/State Govt. Organisations in India and 05 deployments in private sector of similar size in the past 03 years.</p>	
2.0	OEM implementation	<p>Design plan, implementation and validation for compute, storage, network virtualisation and SD-WAN to be done by OEM authorised partners having implemented minimum 03 similar projects. Undertaking for the same to be mentioned on the MAF certificate/ OEM partners should obtain ICG project specific authorization from OEM</p>	
3.0	OEM Support	<p>(a) Should have OEM 24x7x365 onsite support for hardware/ software in India. Should provide Service Desk contact details and Service Level Agreement (SLA) in proof</p> <p>(b) All products for ICG should have minimum of 03 years warranty post-GoLive/ 05 years warranty from the date of delivery</p>	

Appendix-'C'
(Refer to Para-5 of RFP)

Company letter head

[Date]

The Director General
{for D(IT) }
Directorate of IT, Coast Guard Headquarters
New Delhi – 110 001

Dear Sir,

**SUB: DESIGN, IMPLEMENTATION AND MAINTENANCE OF CAMPUS LOCAL
AREA NETWORKING AT CG COMPLEX, NOIDA, SECTOR-62 - INDIAN COAST
GUARD**

1. Refer to your RFP No. CGHQ/IT/LAN-SEC62/2018-19 dated ___ Jan 2019.
2. This is to notify you that our company intends to submit a proposal for "Design, implementation and maintenance of Campus Local Area Aetworking at CG Complex, Noida, Sector-62 - Indian Coast Guard".
3. Primary and Secondary contacts for our company are:

	Primary Contact	Secondary Contact
Name:		
Title:		
Company Name:		
Address:		
Phone:		
Mobile:		
Fax:		
E-mail:		

4. We confirm that the information contained in this response as per **Annexure-1 of Appendix-'C'** or any part thereof, including its exhibits, and other documents and instruments delivered or to be delivered to the Indian Coast Guard is true, accurate, verifiable and complete.

Dated this Day of Jan 2019

(Signature) (In the capacity of)

Duly authorized to sign

Sincerely,

[SYSTEM INTEGRATOR'S NAME]

Name

Title

Signature

Date

(Name and Address of Company) Seal/Stamp of System Integrator

CERTIFICATE AS TO AUTHORISED SIGNATORIES

I, certify that I am of the, and that who signed the above response is authorized to bind the corporation by authority of its governing body.

Date

(Seal here)

Annexure-1 of Appendix-'C'

(Refer to Para-5 of RFP, Para-4 of Appendix-B)

CHECKLIST & INDEX OF BID

[Important note: All filenames of documents uploaded in e-procurement website should be numbered to match with 'Bid Page' without exception. For example: 04-technical-bid-covering-letter.pdf, 22-datasheet-datarack.pdf etc.]

1. RFP with enclosures

Sl.	Details	Bid Page No.	Check (Yes/No)
<u>General Documents</u>			
(a)	Checklist & Index of Bid is attached		
(b)	Bid submission covering letter (<i>Appendix-'B'</i>)		
(c)	Technical Bid with Covering letter. Covering letter & EMD to be placed inside sealed cover (<i>Appendix-'C'</i>)		
(d)	RFP acknowledgement & compliance (<i>Copy of RFP duly signed on each page</i>)		
(e)	Bidder profile format included (<i>Appendix-'M'</i>)		
(f)	Technical Compliance (<i>Appendix-'E'</i>)		
(g)	Commercial Bid (<i>Appendix-'F'</i>) with Covering letter (<i>Appendix-'E'</i>).		
(h)	(i) Technical Solution document (<i>Appendix-'L'</i>) (ii) Technical Solution document for IT infrastructure (<i>Part-I of Annexure-I of Appendix-B</i>)		
(j)	Detailed Bill of Material with relevant OEM products, Supply, Services etc. & Sizing of Solution sheet. (<i>Annexure-1 of Appendix-'K' - Commercial Bid Format</i>)		
(k)	PQ POC of ROBO Data rack project document included (<i>Appendix-'G'</i>)		
(l)	Nagios NMS implementation integrator undertaking. Integrator to be authorised partner of OEM/ have deployed atleast 02 projects having 1,500 IP devices		

Sl.	Details	Bid Page No.	Check (Yes/No)
	including Servers, Networking, Applications with reference document.		
(m)	MAF Certificate from OEM for ROBO Data rack, Server, Switch/ Router, NMS and Network implementation		

2. **Technical Brochures/ Data Sheets/ Manuals**

Sl.	Technical Brochures/ Data Sheets/ Manuals	Bid Page No.	Check (Yes/No)
(a)	Brochure & Datasheet of ROBO Datarack		
(b)	Brochure & Datasheet of IT infrastructure including Composable IT Infra, Rack Servers, SAN Switch and Tape library		
(c)	Brochure & Datasheet of Virtual NGFW		
(d)	Brochure & Datasheet of Private Cloud Virtualisation Software		
(e)	Brochure & Datasheet for Backup, recovery and replication Software		

3. **List of Enclosures**

Sl.	Appendix Description	Bid Page No.	Check (Yes/No)
(a)	Technical Offer with EMD, if applicable(In separate sealed cover)		
(b)	Detailed breakdown of Bill of Material/ Services (Annexure-I to Appendix-K)		

Note:

(a) The check list as above is to be fully completed and enclosed along with the bid covering letter along with technical bid.

(b) The technical bid shall, additionally, consist of the following documents in the sequence given below: -

(i) Index page indicating the technical bid contents with appropriate page numbers.

(ii) Deviations, assumption and exclusions from Scope of Work.

(c) In case necessary documentary proofs are not enclosed the firm would be rejected during Technical Evaluation.

Signature with date & Stamp of Firm

Covering letter format for Technical Bid

(Company letter head) [Date]

To

The Director General
{for D(IT) }
Directorate of IT, Coast Guard Headquarters
New Delhi-110 001

Dear Sir,

**SUB: DESIGN, IMPLEMENTATION AND MAINTENANCE OF CAMPUS LOCAL
AREA NETWORKING AT CG COMPLEX, NOIDA, SECTOR-62
- INDIAN COAST GUARD**

1. Refer to your RFP No. CGHQ/IT/LAN-SEC62/2018-19 dated ___ Jan 2019.
2. Having examined the bid document, the receipt of which is hereby duly acknowledged, we, the undersigned, offer for "Design, implementation and maintenance of Campus Local Area Aetworking at CG Complex, Noida, Sector-62 - Indian Coast Guard" as required and outlined in the RFP for Indian Coast Guard. To meet such requirements and provide such services as required are set out in the bid document.
3. We attach hereto the bid technical response as required by the bid document as per format in **Appendix-'D'**, which constitutes our proposal. We undertake, if our proposal is accepted, to provide all the functional and non functional requirements of the solution put forward in Part II of the RFP or such features as may subsequently be mutually agreed between us and Indian Coast Guard or its appointed representatives. We agree for unconditional acceptance of all the terms and conditions set out in the bid document and also agree to abide by this bid response for a period of SIX (06) MONTHS from the date of submission of bids and it shall be valid proposal till such period with full force and virtue. Until within this period a formal contract is prepared and executed, this bid response, together with your written acceptance thereof in your notification of award, shall constitute a binding contract between us and Indian Coast Guard.
4. We confirm that the information contained in this proposal or any part thereof, including its exhibits, schedules and other documents and instruments delivered or to be delivered to Indian Coast Guard is true, accurate and complete. This proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead Indian Coast Guard as to any material fact.
5. We agree that you are not bound to accept the lowest or any bid response

you may receive. We also agree that you reserve the right in absolute sense to reject all or any of the products/ service specified in the bid response without assigning any reason whatsoever.

6. The soft-copies of the proposal submitted by us and the related addendums and other documents including the changes made to the original tender documents issued by Indian Coast Guard, conform to and are identical with the hard-copies of aforesaid proposal submitted by us, in all respects.

7. It is hereby confirmed that I/We are entitled to act on behalf of our corporation/company/ firm/organization and empowered to sign this document as well as such other documents, which may be required in this connection.

Dated this Day of **Sep 2018**

(Signature) (In the capacity of)

Duly authorized to sign the Bid Response for and on behalf of: (Name and Address of Company) Seal/Stamp of SI

CERTIFICATE AS TO AUTHORISED SIGNATORIES

I, certify that I am of the and
that
..... who signed the above Bid is
authorized to bind the company, pursuant to the resolution passed in the meeting
of Board of Directors of the company _____(date).

Date

(Seal here)

Encl:

- (a) Earned Money Deposit (EMD), if applicable.
- (b) Technical Bid as per **Appendix-'E'** of RFP
- (c) Copy of RFP duly ink-signed with company seal in each page

Appendix-'E'
(Refer to Para-3 of Appendix-D)

TECHNICAL COMPLIANCE SHEET

(Note: Vendor to upload duly ink-signed copy of RFP alongwith technical compliance sheet. Details of following RFP clauses as per RFP issued by this Office)

Sl.	RFP Clause	RFP Requirement	Compliance (Yes/No), deviations if any
01.	RFP Covering letter, Para-1 to 7	Covering letter for RFP No. CGHQ/IT/LAN-SEC62/2018-19 dated ___ Jan 2019 of Coast Guard Headquarters, New Delhi	
02.	Part-I of Encl.-I:- General Information		
(a)	Para-1	Last date and time for depositing the Bids	
(b)	Para-2	Manner of depositing the Bids	
(c)	Para-3	Time and date for opening of Bids	
(d)	Para-4	Address of Submission of EMD	
(e)	Para-5	Place of opening of the Bids: [DIT,CGHQ, New Delhi]	
(f)	Para-6	Two-Bid system	
(g)	Para-7	Forwarding of bids	
(h)	Para-8	Clarification regarding contents of the RFP	
(j)	Para-9	Modification and Withdrawal of bids	
(k)	Para-10	Clarification regarding contents of the bids	
(l)	Para-11	Rejection of Bids	
(m)	Para-12	Unwillingness to Quote	
(n)	Para-13	Validity of Bids	
(p)	Para-14	Earnest Money Deposit	
03.	Part II – Essential Details of Items/Services required		
(a)	Para-1	Schedule of Requirements.	
(b)	Para-2	Technical Details. Detailed compliance submitted as per Appendix-'A' .	
(c)	Para-3	Two bid system	
(d)	Para-4	Delivery Period	
(e)	Para-5	INCOTERMS for Delivery and Transportation	
(f)	Para-5	Consignee Details	
04.	Part III – Standard Conditions		
(a)	Para-1	Law	
(b)	Para-2	Effective Date of the Contract	

Sl.	RFP Clause	RFP Requirement	Compliance (Yes/No), deviations if any
(c)	Para-3	Arbitration	
(d)	Para-4	Penalty for use of Undue influence	
(e)	Para-5	Agents / Agency Commission	
(f)	Para-6	Access to Books of Accounts	
(g)	Para-7	Non-disclosure of Contract documents	
(h)	Para-8	Liquidated Damages	
(j)	Para-9	Termination of Contract	
(k)	Para-10	Notices	
(l)	Para-11	Transfer and Sub-letting	
(m)	Para-12	Patents and other Industrial Property Rights	
(n)	Para-13	Amendments	
(p)	Para-14	Taxes and Duties	
(q)	Para-15	Pre-Integrity Pact Clause	
05.	Part IV – Special Conditions		
(a)	Para-1	Performance Guarantee	
(b)	Para-2	Option Clause	
(c)	Para-3	Repeat Order Clause	
(d)	Para-4	Tolerance Clause	
(e)	Para-5	Payment Terms for Indigenous Sellers	
(f)	Para-6	Payment terms for Foreign Sellers	
(g)	Para-7	Advance Payments	
(h)	Para-8	Paying Authority	
(j)	Para-9	Fall clause	
(k)	Para-10	Exchange Rate Variation Clause	
(l)	Para-11	Risk & Expense clause	
(m)	Para-12	Force Majeure clause	
(n)	Para-13	Buy-Back offer	
(p)	Para-14	Specification	
(q)	Para-15	OEM Certificate	
(r)	Para-16	Export License	
(s)	Para-17	Earliest Acceptable Year of Manufacture	
(t)	Para-18	Buyer Furnished Equipment	
(u)	Para-19	Transportation	
(v)	Para-20	Air lift	
(w)	Para-21	Packing and Marking	
(x)	Para-22	Quality	
(y)	Para-23	Quality Assurance	

Sl.	RFP Clause	RFP Requirement	Compliance (Yes/No), deviations if any
(z)	Para-24	Inspection Authority	
(aa)	Para-25	Pre-Dispatch Inspection	
(ab)	Para-26	Joint Receipt Inspection	
(ac)	Para-27	Franking clause	
(ad)	Para-28	Claims	
(ae)	Para-29	Warranty	
(af)	Para-30	Product Support	
(ag)	Para-31	AMC Clause	
(ah)	Para-32	ESP Clause	
(aj)	Para-33	PV Clause	
06.	Part V – Evaluation Criteria & Price Bid issues		
(a)	Para-1	Evaluation Criteria	
(b)	Para-2	Price Bid Format	

Annexure-I to Appendix-'E'
(Refer to Para-3(a) & (b) of Appendix-'E')

SCHEDULE OF REQUIREMENT & TECHNICAL SPECIFICATION COMPLIANCE

SL.	QR Requirement	QR Specification	Compliance (Yes/ No). Deviations, if any.
01.	Schedule of Requirements <i>(Para-1(a), Part-II of RFP)</i>	<p>(a) Design, implementation and maintenance of Campus Local Area Networking at CG Complex, Noida, Sector-62 based on proven Structured Cabling Standards including supply/ implementation of required IT infrastructure and onsite support manpower as required. Total of 1,500 IP points at Intranet LAN and 700 IP points at Internet LAN to be provisioned for passive work and about 75% of active components to be provided with scalability upto 100% as part of project delivery. Project to be implemented on turn-key basis and vendor to include all required hardware/ software as required.</p> <p>(b) Campus LAN Warranty for 01 year from final GoLive and 02 year All Inclusive Annual Maintenance Support (AIAMC) including onsite manpower support. Other OEM hardware/ software to be supplied with 03 year warranty with 24x7 support</p> <p>(c) Detailed Scope of Work as per Annexure-'A' of RFP.</p>	
02.	Vendor Pre-qualification Requirement <i>(Para-1(d), Part-II of RFP)</i>	<p>(a) <u>Package-A</u>: Supply, design, implementation and support of Active IT infrastructure {Para-1(A), 1(B), 1(D), 1(E), 1(F) of Appendix-A}</p> <p>(ii) <u>Package-B</u>: Supply, design, implementation of Passive Network Infrastruture {Para-1(C) of Appendix-A}</p> <p>(iii) Both Package-A & B should have PQ as per Para-1(e) of Part-II of RFP</p>	
03.	Technical Specifications	Design, implementation and maintenance of Campus Local Area Networking at CG	

SL.	QR Requirement	QR Specification	Compliance (Yes/ No). Deviations, if any.
	<i>(Para-2, Part-II of RFP)</i>	Complex, Noida, Sector-62. Detailed scope of work as per Appendix-A of RFP.	

Covering letter format for Commercial Bid.

Company letter head

[Date]

The Director General
{for D(IT) }
Directorate of IT, Coast Guard Headquarters
New Delhi – 110 001

Dear Sir,

**SUB: DESIGN, IMPLEMENTATION AND MAINTENANCE OF CAMPUS LOCAL
AREA NETWORKING AT CG COMPLEX, NOIDA, SECTOR-62 - INDIAN COAST
GUARD**

1. Refer to your RFP No. IT/3014/PARAM dated ____ Sep 2018.
2. Having examined the bid document, the receipt of which is hereby duly acknowledged, we, the undersigned, offer for "Design, implementation and maintenance of Campus Local Area Aetworking at CG Complex, Noida, Sector-62 - Indian Coast Guard" as required and outlined in the RFP for Indian Coast Guard. To meet such requirements and provide such services as required are set out in the bid document.
3. We attach hereto the bid of commercial response as required by the bid document, which constitutes our proposal. We undertake, if our proposal is accepted, to provide all the functional and non functional requirements of the solution put forward in Part II of the RFP or such features as may subsequently be mutually agreed between us and Indian Coast Guard or its appointed representatives. We agree for unconditional acceptance of all the terms and conditions set out in the bid document and also agree to abide by this bid response for a period of SIX (06) MONTHS from the date of submission of bids and it shall be valid proposal till such period with full force and virtue. Until within this period a formal contract is prepared and executed, this bid response, together with your written acceptance thereof in your notification of award, shall constitute a binding contract between us and Indian Coast Guard.
4. We confirm that the information contained in this proposal or any part thereof, including its exhibits, schedules and other documents and instruments delivered or to be delivered to Indian Coast Guard is true, accurate and complete. This proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead Indian Coast Guard as to any material fact.

5. We agree that you are not bound to accept the lowest or any bid response you may receive. We also agree that you reserve the right in absolute sense to reject all or any of the products/ service specified in the bid response without assigning any reason whatsoever.

6. The soft-copies of the proposal submitted by us and the related addendums and other documents including the changes made to the original tender documents issued by Indian Coast Guard, conform to and are identical with the hard-copies of aforesaid proposal submitted by us, in all respects.

7. It is hereby confirmed that I/We are entitled to act on behalf of our corporation/company/ firm/organization and empowered to sign this document as well as such other documents, which may be required in this connection.

Dated this Day of **Jan 2019**

(Signature) (In the capacity of)

Duly authorized to sign the Bid Response for and on behalf of: (Name and Address of Company) Seal/Stamp of SI

CERTIFICATE AS TO AUTHORISED SIGNATORIES

I, certify that I am of the and that who signed the above Bid is authorized to bind the company, pursuant to the resolution passed in the meeting of Board of Directors of the company ____ (date).

Date

(Seal here)

Encl: Commercial Bid as per **Appendix-'K'** of RFP

CAMPUS SECURE LAN-62 : PRE-QUALIFICATION POC TESTS
PACKAGE-A: Zero-Touch ROBO Edge Cloud Data rack

Test ID	Category	POC Description	Qualified (Yes/No)
General			
01-00	ROBO technical solution document <i>(Should be submitted as part of Technical bid)</i>	As per Annexure-1 of Appendix-'G'	
02-00	POC Setup <i>(Carry out as part of Technical Evaluation)</i>	<p>(i) Centralised monitoring software (DCIM) as per tender for ROBO Rack</p> <p style="padding-left: 40px;">(a) 03 ROBO site instances simulating ROBO data-rack</p> <p style="padding-left: 40px;">(b) Centralised DCIM to provide Enterprise level unified 'Single-pane-of-glass' dashboard at central site</p> <p>(ii) Edge Cloud software</p> <p style="padding-left: 40px;">(a) Setup with 03 ROBO instances</p> <p style="padding-left: 40px;">(b) Centralised edge cloud setup with 'Single-pane-of-glass' dashboard at central site</p> <p style="padding-left: 40px;">(c) SD-WAN of 03 instances with central management console</p> <p>(iii) Backup & Recovery</p> <p style="padding-left: 40px;">(a) Setup for 03 ROBO instances with backup software</p> <p style="padding-left: 40px;">(b) Centralised Cloud Management console integrated with Backup software setup with 'Single-pane-of-glass' dashboard at central site</p> <p>(iv) Virtual Next Generation Firewall</p> <p style="padding-left: 40px;">(a) Setup for 03 ROBO instances with backup software</p>	

Test ID	Category	POC Description	Qualified (Yes/No)
		(b) Centralised HCI/HCA with NGFW software setup with 'Single-pane-of-glass' dashboard at central site	
03-00	Presentation	Overall solution presentation to include layout diagram, sizing/bill of material and project plan	
04-00	Layout diagram	(i) 2D layout diagram of Zero-Touch ROBO Cloud Edge data-rack, depicting electrical, piping, room layout for a sample room size of 10ft x 10ft with ICG provided raw power as boundary (ii) 3D layout diagram of Zero-Touch ROBO Cloud Edge Data rack with all power, cooling of 1U, 1U for L3 switch, MPLS STM-1 of 1U.	
05-00	Sizing & Bill of Material list	(i) Sizing of entire solution including Zero-Touch ROBO Cloud Edge Data rack, Cloud virtualisation with SD-WAN/SD-NGFW/Backup & Recovery software (ii) Bill of Material with Make & Model, Quantity	
06-00	Project Plan	(i) Delivery timeline for Zero-Touch ROBO Cloud Edge Data rack (ii) Delivery timeline for software (iii) Gantt chart based project timeline	
07-00	Zero-Touch ROBO Data rack	POC setup made available as per ICG requirement	
08-00	Single-pane-of-glass monitoring	DCIM software of Zero-Touch ROBO configured and display all 03 ROBO instances aggregated into single unified dashboard.	
08-01		Cloud virtualisation software of Zero-Touch ROBO configured and display all 03 ROBO instances aggregated into single unified dashboard	
08-02		SD-WAN software of Zero-Touch ROBO configured and display all 03 ROBO	

Test ID	Category	POC Description	Qualified (Yes/No)
		instances aggregated into single unified dashboard	
08-03		Virtual NGFW software of Zero-Touch ROBO configured and display all 03 ROBO instances aggregated into single unified dashboard	
08-04		Backup and recovery software of Zero-Touch ROBO configured and display all 03 ROBO instances aggregated into single unified dashboard	
09-00	WAN optimised DCIM, Cloud edge central monitoring systems	Should support network environment consists of no network connectivity, 64Kbps VSAT high-latency connectivity, 2 Mbps to 8 Mbps	
09-01		DCIM software should able to function within allotted WAN bandwidth and at predefined duration defined as custom WAN profile. For example, for Site-X, allotted maximum allotted bandwidth for DCIM software is 64 Kbps and only communicate during off-hours it mid-night 00:00 hrs to 04:00 hrs.	
09-02		Should support off-line no network environment such as remote islands and ICG ships. On availability/ restoration of network connectivity should sync with central servers subject to custom WAN profile.	
10-00	Central policy defining, and applying from central location	Cloud virtualisation software of Zero-Touch ROBO configured for central policy & enforcement dynamically for all 03 ROBO instances from central location	
10-01		Virtual NGFW software of Zero-Touch ROBO configured for central policy & enforcement dynamically for all 03 ROBO instances from central location	
10-02		SD-WAN software of Zero-Touch ROBO configured for central policy & enforcement dynamically for all 03 ROBO instances from central location	

Test ID	Category	POC Description	Qualified (Yes/No)
10-03		SD-WAN software of Zero-Touch ROBO configured for central policy & enforcement dynamically for all 03 ROBO instances from central location	
11-00	Survivability	Provide live demo on Cloud virtualisation for Software Defined Computer, Storage & Networking to exhibit High-Availability (HA) within Site to provide both RTO & RPO to 12 hrs	
12-00	Disaster Recovery using backup software	Site Recovery (SR) to provide RTO & RPO of not exceeding 12 Hrs and automated Recovery Testing scenario of VMs to other remote site	
13-00	Test recovery using backup software	Able to test backup & recovery on sandboxed network environment of having different subnet IP. Backup should be recovered for testing from production backup on disk	
14-01		App aware test recovery of MS Exchange. It is required to test disaster recovery drill at regular intervals without affecting production environment	
15-00	Backup software	Carryout demo backup & recovery of VM images, blocks and files	
16-00	Backup software for app aware	Carryout app aware backup & recovery of MS Exchange test deployment and recover granular data such as individual email and mail box	

Annexure-1 of Appendix-'G'
(Para-1(e)(xvii) of Part-II of RFP, Para-01.00 of)

POC Demo for Zero-Touch ROBO Edge Cloud Data rack with SD-WAN

Note:

(a) Bidder should provide demo POC project documentation in following format as part of Technical Bid. Subsequently should provide live demo and MS PowerPoint presentation to Coast Guard Technical Evaluation Committee (TEC)

Template format for POC Project Document. The Bidder should prepare document in following structure

Part-A: Introduction

1.0: Title of POC demo project

2.0: Index

3.0: Executive Brief (Should be within single A4 size page)

4.0: User Requirement

4.1: Solution architecture diagram including 3D CAD diagram of ROBO

4.2: Bill of material & purpose of each item

Part-B: Design & Deployment architecture

5.0: Solution sizing including power/ heat calculation

5.1: Overall deployment architecture of ROBO

5.2: Deployment architecture of Data Center Infrastructure Management (DCIM) software and Centralised management console sample screen depicting all 04 ROBO racks in unified Dashboard

Part-D: Project Planning

6.0: Project planning & monitoring

(a) Include Work Breakdown Structure (WBS), Resource Allocation etc using MS Project/ Oracle Primavera

(b) Overall timeline

Part-E: Deployment at site

7.0: Sample Site diagram and area of responsibility for Vendor and Coast Guard

7.1: Scope of work for Vendor

Responsibilities of Vendor

7.2: Centralized data rack monitoring integration

Part-F: Live POC Demo setup

8.0: Documentation of POC demo setup architecture layout, objective, test cases

Part-G: Documentation and presentation

9.0: Documentation and quality of presentation shall be evaluated based on compliance to Datacenter standards, Business Continuity standards, Safety standards diagrams etc.

Appendix-'G'

(Refer to Para-1(a) of Part-II, RFP)

TECHNICAL/COMMERCIAL EVALUATION FRAMEWORK
(QUALITY & COST BASED SELECTION)

Introduction.

1. Secure Campus LAN infrastructure need to be made available on reliable basis for Coast Guard and hence Coast Guard intend to qualify vendors having strong experience in implementing similar projects and Campus LAN security products qualifying to meet challenging conditions of Coast Guard.

Evaluation of Quotation:

2. Technical Evaluation: -

(a) Each Technical bid will be assigned a technical score out of a maximum of **400 marks** (marks breakup described in **Appendix-'G'**). Only the bidders who get a technical score of **50 percent or more** in each section and **60 percent or more** overall will qualify for commercial evaluation stage. Failing to secure minimum marks shall lead to technical rejection of the bid.

(b) The normalized technical score of the bidder shall be calculated as follows:

Normalized Technical Score of a bidder = {Technical Score of that bidder/Score of the bidder with the highest technical score} X 400 (adjusted to 2 decimals)

(c) Final score calculation through QCBS (Quality and Cost based selection)

Example: Technical Score

Bidders	Technical score (B)	Normalized Technical score	Final Score
1	350	$(350/390)*400$	358.97
2	360	$(360/390)*400$	369.23
3	370	$(370/390)*400$	379.49
4	380	$(380/390)*400$	389.74
5	390	$(390/390)*400$	400

3. **Commercial Evaluation:** -

(a) Technically qualified bidders as per technical evaluation process will participate in commercial bid opening process. The bidder with the lowest commercials as per Price Formats provided by ICG (**as uploaded in e-procure website**) will be declared commercially L1 bidder and further evaluated as per following method:

(b) Normalized Commercial Score of a bidder = {lowest quote/ bidders quote} X 400 (adjusted to 2 decimals)

Example: Commercial Score

Bidders	Price Quoted by bidders (in Lakhs)	Normalized commercial score	Final Score
1	10	(10/10)*400	400
2	11	(10/11)*400	363.64
3	12	(10/12)*400	333.33
4	13	(10/13)*400	307.61
5	14	(10/14)*400	285.71

4. **Final score calculation through QCBS**

(a) The final score will be calculated through Quality and Cost based selection method with the following weightage:-

Technical: 70% Commercial: 30%

(b) Final Score = (0.70*Normalized Technical Score) + (0.30* Normalized Commercial Score)

Bidders	Final Technical score	Final Commercial score	Final Score (70:30)
1	358.97*.7	400*.3	371.28
2	369.23*.7	363.64*.3	367.55
3	379.49*.7	333.33*.3	365.64
4	389.74*.7	307.61*.3	365.13
5	400*.7	285.71*.3	365.71

(c) The bids with Highest Final Score will be selected.

5. **Technical Evaluation Framework**

(a) The bidder's technical solution proposed in the technical evaluation bid document will be evaluated as per the evaluation criteria mentioned in the table below:

#	Evaluation Criteria	Total Marks	Minimum Qualifying Marks (Cut-off)
(i)	Proposed Zero-touch ROBO Rack	80	>=40 (50%)
(ii)	Bidder's Experience on passive cabling	50	>=25 (50%)
(iii)	Bidder Employee Strength for passive cabling & Active IT Infra	50	>=25 (50%)
(iv)	Prime Bidder Certification	20	>=10 (50%)
(v)	Proposed Solution	90	>=45 (50%)
(vi)	POC of ROBO Data rack, Network Lifecycle Software and NAC appliance	110	>=25 (50%)
	Total	400	>= 240 (60%)

(b) The Buyer reserves the right to check/validate the authenticity of the information provided in the pre-qualification and Technical evaluation criteria and requisite support must be provided by the bidder.

6. The following sections explain how the bidders will be evaluated on technical evaluation criteria.

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		Proposed Zero-touch ROBO Rack (80 Marks)		
(a)	Acceptability of Zero-touch ROBO Data Rack	(i) The proposed Zero-touch ROBO Data rack is expected to have minimum of 15 active implementations each in India features: - >= 30 active implementations - 50 Marks >= 20 active implementations - 40 Marks * 20 additional marks if 03 of the implementation is from Central/State Government departments/public sector units	Work Order/ Purchase Order supported by Customer Completion / Product Acceptance Certificate/ Self Certification by OEM/ Documentary Proof/ Reference letter from customers stating modules	80

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		* 10 additional marks if one of the implementation is from Armed Forces/ Defence PSU departments of India/ Abroad	implemented and active users	
		Bidder's Experience of Passive Cabling implementation (50 Marks)		
(b)	Bidder Experience in Passive Cabling Implementation	<p>Prior Experience: Bidder should have experience of atleast 03 implementations of Passive Cabling each having minimum of 1000 IP Points in India for last 5 years:</p> <ul style="list-style-type: none"> * At least one (02) citation should be completed/ progress, and should cover similar projects development environment scope in single work order * 07 citations of successfully completed) = 40 * 05 citations of successfully completed) = 30, * 01 citations of successfully completed) = 20 * 10 additional marks if 01 of the citations is from Central Govt./ Central Public Sector Unit 	Copy of work order + Completion/Progress Certificates from the client; (OR) Work Order + Self Certificate of Completion (Certified by CS/independent auditor of the bidding entity);	50
		Bidder Employee Strength for passive cabling & Active IT Infra (50 Marks)		

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
(c)	Bidder Employee Strength for Passive Cabling & Active IT Infrastructure	<p>The Bidder is expected to have:</p> <p>(i) <u>Passive cabling vendor.</u> 10 technically qualified professionals in the area of Passive Network cabling solution. Certified Passive Cabling engineer should be minimum of 01 No. with OEM Certification on Structured Cabling with 03 years' experience.</p> <p>(ii) <u>Active IT infrastructure vendor.</u> 10 technically qualified professionals in the area of virtualization, security, solution architecture, networking solution. Certified active IT infrastructure engineer should be minimum of 03 No. with OEM Certification with 03 years' experience.</p> <p>Marks for the experience shall be awarded as under: -</p> <p>* If on-roll at least 20 qualified professionals as per (i) above, 03 Network cabling certified = 20</p> <p>* If on-roll at least 15 qualified professionals as per (i) above, 02 Network cabling certified = 10</p> <p>* 10 additional marks for at least 03 Software Development professionals qualifying as per (i) in Central/State Govt. projects.</p> <p>*-----*</p> <p>* If on-roll at least 20 qualified professionals as per (ii) above, 03 active IT infrastructure certified = 20</p> <p>* If on-roll at least 15 qualified professionals as per (ii) above, 02 active IT infrastructure certified = 10</p> <p>* 10 additional marks for at least 03 Software Development professionals qualifying as per (ii) in Central/State Govt. projects.</p>	Self-declaration on company letter head signed by authorized signatory + Resume of key resources. If considering third party experts, include authorization from the employing party. If considering consulting service support from OEM, include citation of support from OEM.	50
		Prime Bidder Certification (20 Marks)		
(d)	Certification	<p>(a) The Bidder is expected to have at least CMMi-5</p> <p>* Certified for >= 5 years – 15 Marks.</p>	Valid copy of certificate	20

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		<p>* Certified for >= 3 years – 10 Marks. * Certified for >= 2 years – 05 Marks.</p> <p>(b) Additional certificates of following with more than 01 year</p> <p>* ISO 27001 & ISO 20000 – 05 Marks * ISO 27001 (or) ISO 20000 – 02 Marks</p>		
		Proposed Solution (60 Marks)		
(f)	Proposed Solution Document	<p>The Bidder submits a detailed implementation plan for the project, with clear milestones.</p> <p>The bidder is expected to define execution methodology, and how incremental development can be made operational.</p> <p>Evaluation shall be done based on how efficiently implementation window is planned</p>	Documentation of proposed solution including sizing, architecture, network layout, integration, project plan. Document to be submitted as part of Technical Bid.	10
(g)	Solution-Architecture	<p>Solution architecture including Passive cabling architecture, Integration architecture, & Infrastructure deployment architecture proposed, Project Plan and presentation covering at minimum the below key aspects:</p> <p>(i) Modularity of the system</p> <p>(ii) Scalability to handle future load by adding additional compute and no constraints on the application</p> <p>(iii) Suitability of Tools & Technologies proposed including capacity</p> <p>(iv) Approach for handling frequent changes to Workflows/ Rules/ Organization Structures/ Policies</p> <p>(v) Approach for making runtime changes, new reports/dashboards</p> <p>(vi) Cross browser compatibility - mention cross browser testing results, if available</p> <p>(vii) Risk and mitigation Plan</p>	<p>- Presentation of Solution/ Demo</p> <p>- Bill of Material</p> <p>- Illustrations supporting solution's capability in area of scaling, modularity, load, business configurations, etc.</p> <p>- OEM Certified Brochure/Data Sheet/Product Manual</p>	20

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		(viii) Single sign on with ICG domain Marking will be based on evaluation of design/architecture aspects by ICG (ix) Project plan in MS Project/ Oracle Primavera		
(h)	Solution- Multi Channel Delivery	The solution shall be capable of delivering multi-channel delivery in terms of mobility, desktop. (i) Responsive UI with menu/forms/ UI out-of-box optimized for display on mobile/ tablet/ laptop/ desktop without any distortion or loss of usability	Proposal and presentation OEM Certified Brochure/Data Sheet/Product Manual	10
(j)	Solution - Information Security	The proposal shall clearly state approach for security while: (i) Integrating with ICG domain/LDAP/AD for SSO (ii) Security architecture deployed for transactional data (iii) Deployment & integration NMS (iv) Integration with NAC (v) Integrate with ICG IAM (vi) Integrate with Gateway NGFW, Micro-segmentation using Network Virtualisation	Proposal document and presentation	20
		POC of ROBO Data rack, NMS & NAC (110 Marks)		
(e)	Demo of Software/ Hardware/ Networking	The Bidder should provide demo ROBO Data rack, NMS, NAC application & should display all of required features	Attach POC demo project documentation and to provide POC during TEC as per Appendix-'J' format	110
				400

Appendix-'G'

(Refer to Para-1(a) of Part-II, RFP)

TECHNICAL/COMMERCIAL EVALUATION FRAMEWORK
(QUALITY & COST BASED SELECTION)

Introduction.

1. Secure Campus LAN infrastructure need to be made available on reliable basis for Coast Guard and hence Coast Guard intend to qualify vendors having strong experience in implementing similar projects and Campus LAN security products qualifying to meet challenging conditions of Coast Guard.

Evaluation of Quotation:

2. Technical Evaluation: -

(a) Each Technical bid will be assigned a technical score out of a maximum of **400 marks** (marks breakup described in **Appendix-'G'**). Only the bidders who get a technical score of **50 percent or more** in each section and **60 percent or more** overall will qualify for commercial evaluation stage. Failing to secure minimum marks shall lead to technical rejection of the bid.

(b) The normalized technical score of the bidder shall be calculated as follows:

Normalized Technical Score of a bidder = {Technical Score of that bidder/Score of the bidder with the highest technical score} X 400 (adjusted to 2 decimals)

(c) Final score calculation through QCBS (Quality and Cost based selection)

Example: Technical Score

Bidders	Technical score (B)	Normalized Technical score	Final Score
1	350	$(350/390)*400$	358.97
2	360	$(360/390)*400$	369.23
3	370	$(370/390)*400$	379.49
4	380	$(380/390)*400$	389.74
5	390	$(390/390)*400$	400

3. **Commercial Evaluation:** -

(a) Technically qualified bidders as per technical evaluation process will participate in commercial bid opening process. The bidder with the lowest commercials as per Price Formats provided by ICG (**as uploaded in e-procure website**) will be declared commercially L1 bidder and further evaluated as per following method:

(b) Normalized Commercial Score of a bidder = {lowest quote/ bidders quote} X 400 (adjusted to 2 decimals)

Example: Commercial Score

Bidders	Price Quoted by bidders (in Lakhs)	Normalized commercial score	Final Score
1	10	(10/10)*400	400
2	11	(10/11)*400	363.64
3	12	(10/12)*400	333.33
4	13	(10/13)*400	307.61
5	14	(10/14)*400	285.71

4. **Final score calculation through QCBS**

(a) The final score will be calculated through Quality and Cost based selection method with the following weightage:-

Technical: 70% Commercial: 30%

(b) Final Score = (0.70*Normalized Technical Score) + (0.30* Normalized Commercial Score)

Bidders	Final Technical score	Final Commercial score	Final Score (70:30)
1	358.97*.7	400*.3	371.28
2	369.23*.7	363.64*.3	367.55
3	379.49*.7	333.33*.3	365.64
4	389.74*.7	307.61*.3	365.13
5	400*.7	285.71*.3	365.71

(c) The bids with Highest Final Score will be selected.

5. **Technical Evaluation Framework**

(a) The bidder's technical solution proposed in the technical evaluation bid document will be evaluated as per the evaluation criteria mentioned in the table below:

#	Evaluation Criteria	Total Marks	Minimum Qualifying Marks (Cut-off)
(i)	Proposed Zero-touch ROBO Rack	80	>=40 (50%)
(ii)	Bidder's Experience on passive cabling	50	>=25 (50%)
(iii)	Bidder Employee Strength for passive cabling & Active IT Infra	50	>=25 (50%)
(iv)	Prime Bidder Certification	20	>=10 (50%)
(v)	Proposed Solution	90	>=45 (50%)
(vi)	POC of ROBO Data rack, Network Lifecycle Software and NAC appliance	110	>=25 (50%)
	Total	400	>= 240 (60%)

(b) The Buyer reserves the right to check/validate the authenticity of the information provided in the pre-qualification and Technical evaluation criteria and requisite support must be provided by the bidder.

6. The following sections explain how the bidders will be evaluated on technical evaluation criteria.

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		Proposed Zero-touch ROBO Rack (80 Marks)		
(a)	Acceptability of Zero-touch ROBO Data Rack	(i) The proposed Zero-touch ROBO Data rack is expected to have minimum of 15 active implementations each in India features: - >= 30 active implementations - 50 Marks >= 20 active implementations - 40 Marks * 20 additional marks if 03 of the implementation is from Central/State Government departments/public sector units	Work Order/ Purchase Order supported by Customer Completion / Product Acceptance Certificate/ Self Certification by OEM/ Documentary Proof/ Reference letter from customers stating modules	80

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		* 10 additional marks if one of the implementation is from Armed Forces/ Defence PSU departments of India/ Abroad	implemented and active users	
		Bidder's Experience of Passive Cabling implementation (50 Marks)		
(b)	Bidder Experience in Passive Cabling Implementation	<p>Prior Experience: Bidder should have experience of atleast 03 implementations of Passive Cabling each having minimum of 1000 IP Points in India for last 5 years:</p> <ul style="list-style-type: none"> * At least one (02) citation should be completed/ progress, and should cover similar projects development environment scope in single work order * 07 citations of successfully completed) = 40 * 05 citations of successfully completed) = 30, * 01 citations of successfully completed) = 20 * 10 additional marks if 01 of the citations is from Central Govt./ Central Public Sector Unit 	Copy of work order + Completion/Progress Certificates from the client; (OR) Work Order + Self Certificate of Completion (Certified by CS/independent auditor of the bidding entity);	50
		Bidder Employee Strength for passive cabling & Active IT Infra (50 Marks)		

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
(c)	Bidder Employee Strength for Passive Cabling & Active IT Infrastructure	<p>The Bidder is expected to have:</p> <p>(i) <u>Passive cabling vendor</u>. 10 technically qualified professionals in the area of Passive Network cabling solution. Certified Passive Cabling engineer should be minimum of 01 No. with OEM Certification on Structured Cabling with 03 years' experience.</p> <p>(ii) <u>Active IT infrastructure vendor</u>. 10 technically qualified professionals in the area of virtualization, security, solution architecture, networking solution. Certified active IT infrastructure engineer should be minimum of 03 No. with OEM Certification with 03 years' experience.</p> <p>Marks for the experience shall be awarded as under: -</p> <ul style="list-style-type: none"> * If on-roll at least 20 qualified professionals as per (i) above, 03 Network cabling certified = 20 * If on-roll at least 15 qualified professionals as per (i) above, 02 Network cabling certified = 10 * 10 additional marks for at least 03 Software Development professionals qualifying as per (i) in Central/State Govt. projects. <p>*-----*</p> <ul style="list-style-type: none"> * If on-roll at least 20 qualified professionals as per (ii) above, 03 active IT infrastructure certified = 20 * If on-roll at least 15 qualified professionals as per (ii) above, 02 active IT infrastructure certified = 10 * 10 additional marks for at least 03 Software Development professionals qualifying as per (ii) in Central/State Govt. projects. 	Self-declaration on company letter head signed by authorized signatory + Resume of key resources. If considering third party experts, include authorization from the employing party. If considering consulting service support from OEM, include citation of support from OEM.	50
		Prime Bidder Certification (20 Marks)		
(d)	Certification	<p>(a) The Bidder is expected to have at least CMMi-5</p> <ul style="list-style-type: none"> * Certified for >= 5 years – 15 Marks. 	Valid copy of certificate	20

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		<p>* Certified for >= 3 years – 10 Marks. * Certified for >= 2 years – 05 Marks.</p> <p>(b) Additional certificates of following with more than 01 year</p> <p>* ISO 27001 & ISO 20000 – 05 Marks * ISO 27001 (or) ISO 20000 – 02 Marks</p>		
		Proposed Solution (60 Marks)		
(f)	Proposed Solution Document	<p>The Bidder submits a detailed implementation plan for the project, with clear milestones.</p> <p>The bidder is expected to define execution methodology, and how incremental development can be made operational.</p> <p>Evaluation shall be done based on how efficiently implementation window is planned</p>	Documentation of proposed solution including sizing, architecture, network layout, integration, project plan. Document to be submitted as part of Technical Bid.	10
(g)	Solution-Architecture	<p>Solution architecture including Passive cabling architecture, Integration architecture, & Infrastructure deployment architecture proposed, Project Plan and presentation covering at minimum the below key aspects:</p> <p>(i) Modularity of the system</p> <p>(ii) Scalability to handle future load by adding additional compute and no constraints on the application</p> <p>(iii) Suitability of Tools & Technologies proposed including capacity</p> <p>(iv) Approach for handling frequent changes to Workflows/ Rules/ Organization Structures/ Policies</p> <p>(v) Approach for making runtime changes, new reports/dashboards</p> <p>(vi) Cross browser compatibility - mention cross browser testing results, if available</p> <p>(vii) Risk and mitigation Plan</p>	<p>- Presentation of Solution/ Demo</p> <p>- Bill of Material</p> <p>- Illustrations supporting solution's capability in area of scaling, modularity, load, business configurations, etc.</p> <p>- OEM Certified Brochure/Data Sheet/Product Manual</p>	20

Sl.	Criteria	Details	Documentary Evidence	Max. Marks
		(viii) Single sign on with ICG domain Marking will be based on evaluation of design/architecture aspects by ICG (ix) Project plan in MS Project/ Oracle Primavera		
(h)	Solution- Multi Channel Delivery	The solution shall be capable of delivering multi-channel delivery in terms of mobility, desktop. (i) Responsive UI with menu/forms/ UI out-of-box optimized for display on mobile/ tablet/ laptop/ desktop without any distortion or loss of usability	Proposal and presentation OEM Certified Brochure/Data Sheet/Product Manual	10
(j)	Solution - Information Security	The proposal shall clearly state approach for security while: (i) Integrating with ICG domain/LDAP/AD for SSO (ii) Security architecture deployed for transactional data (iii) Deployment & integration NMS (iv) Integration with NAC (v) Integrate with ICG IAM (vi) Integrate with Gateway NGFW, Micro-segmentation using Network Virtualisation	Proposal document and presentation	20
		POC of ROBO Data rack, NMS & NAC (110 Marks)		
(e)	Demo of Software/ Hardware/ Networking	The Bidder should provide demo ROBO Data rack, NMS, NAC application & should display all of required features	Attach POC demo project documentation and to provide POC during TEC as per Appendix-'J' format	110
				400

Appendix-'J'

Technical QCBS - demo of ROBO Data rack, NMS & NAC application

(Total marks: 110)

Note:

(a) *Sample demo application of Bidders' existing ROBO Data rack, NMS software and NAC application as POC. Bidder need to exhibit required IT infrastructure implementation expertise to ICG Technical Evaluation Committee (TEC).*

POC Project Document (Refer. Para-6(e) of Appendix-'G' of RFP). The Bidder should prepare document and submit Part-A as part of Technical Bid in following structure and provide detailed demo of Part-B during TEC

Part-A: Project Document for POC (20 Marks) [To be submitted with Technical Bid]

As per Annexure-1 of Appendix-'J'

Part-B: POC Demonstration (90 Marks) during POC to TEC

		Marks	Scored	Qualified [Y/N] (>= 50%)	
	NMS, NAC Demo				
1.0:	Visualise entire network on NMS	10			
1.1:	Visualize and monitor the network from a single graphical interface	05			
1.2	Policy lifecycle management	05			
2.0	RESTful API for integration of NMS	10			
2.1	Get total network devices count	05			
2.2	Get list of network devices not available	05			
3.0	Automation	10			
3.1	Auto discover the network elements as well as their current status	05			
3.2	Device inventory displaying detailed hardware components of all managed devices	05			

		Marks	Scored	Qualified [Y/N] (>= 50%)	
4.0	NAC device control	10			
4.1	Block a network device on failed authentication	05			
4.2	Quarantine noncompliant device	05			
5.0	AD Authentication	10			
5.1	Authorise a network User based on AD	05			
5.2	Register a new User and Device	05			
6.0	NAC features	10			
6.1	Recognizes and profiles users and their devices	05			
6.2	Integrate with other security and network solutions through the open/ RESTful API	05			
	Zero-touch ROBO Data rack				
7.0	Single-glass-pane monitoring of ROBO Data rack	10			
7.1	Setup 03 sites and display all 03 sites as per RFP in integrated single page	05			
7.2	Display all 03 sites monitoring parameters as per RFP	05			
8.0	Single-glass-pane monitoring of Edge cloud virtualisation	10			
8.1	Integrate into ICG OneCloud Unified Console and display all 03 sites	05			
8.2	Display all 03 sites monitoring parameters of ROBO virtualisation parameters as per RFP	05			
9.0	Single-glass-pane monitoring of Backup software and NGFW software	10			
9.1	Integrate Backup/ replication software,	05			

		Marks	Scored	Qualified [Y/N] (>= 50%)	
9.2	NGFW Console and display all 03 sites Display all 03 sites monitoring parameters of Backup software, NGFW parameters as per RFP	05			
	TOTAL	90			

Annexure-1 of Appendix-'J'
(Para-1(e)(xvii) of Part-II of RFP, Para-01.00 of)

POC Demo for ROBO, NMS, NAC application

Note:

(a) Bidder should provide demo POC project documentation in following format as part of Technical Bid. Subsequently should provide live demo and MS PowerPoint presentation to Coast Guard Technical Evaluation Committee (TEC)

Template format for POC Project Document. The Bidder should prepare document in following structure

Part-A: Introduction

1.0: Title of POC demo project

2.0: Index

3.0: Executive Brief (Should be within single A4 size page)

4.0: User Requirement

4.1: Solution architecture diagram including 3D CAD diagram of ROBO

4.2: Solution architecture diagram of network architecture, NMS, NACs

4.3: Bill of material & purpose of each item

Part-B: Design & Deployment architecture

5.0: Solution sizing including power/ heat calculation

5.1: Overall deployment architecture of ROBO, NMS & NAC

5.2: Deployment architecture of Data Center Infrastructure Management (DCIM) software and Centralised management console sample screen depicting all 03 ROBO racks in unified Dashboard

Part-D: Project Planning

6.0: Project planning & monitoring

(a) Include Work Breakdown Structure (WBS), Resource Allocation etc using MS Project/ Oracle Primavera

(b) Overall timeline

Part-E: Deployment at site

7.0: Sample Site diagram and area of responsibility for Vendor and Coast Guard

7.1: Scope of work for Vendor

7.2: Centralized data rack monitoring integration

Part-F: Live POC Demo setup

8.0: Documentation of POC demo setup architecture layout, objective, test cases

Part-G: Documentation and presentation

9.0: Documentation and quality of presentation shall be evaluated based on compliance to Datacenter standards, Business Continuity standards, Safety standards diagrams etc.

Appendix-'K'

(Refer to Para-36 of Part-IV of RFP, Part-V of RFP)

COMMERCIAL-BID FORMAT

Note: Bidder to submit commercial bid on-line only. However, Annexure-1 of Appendix-'H' need to be submitted in sealed cover separately.

1. Item/ service bill of material

Item ID	Description	Qty.	Unit	Make & Model	Unit Price (Rs.)	Total Excl. Tax (Rs.)	GST (Rs.)	Total Incl. Tax (Rs.)
	(A) SUPPLY - ACTIVE COMPONENTS, INTRANET, ONE-TIME							
A-01	Modular data rack with Hyper-Converged Appliance (HCI) including Software Defined Compute, Storage, Networking, WAN components and provide 'Single-pane-of-glass-monitoring' software including for Datarack/HCI/NGFW. Required rack space to be 70 RU (intranet-40U & internet-30U) Data rack to support usable IT load of 5kW for intranet & 2kw for internet, UPS 11kW, L3 switches in HA. Onsite warranty for 03 years	1	No.					
A-02	Core Switch, 1Tbps	2	No.					
A-03	Chassis based L3 Switch with universal PoE, passive High-Availability. Spare of N+2 Switch Line Cards, scalability upto 1900 ports with day-one delivery of 1450 ports at 75% at Floor level	1	Set					
A-04	Online UPS for Access Chassis Switches, Rack form factor in HA including controller, initial 1KVA for PoE, scalability upto 4KVA with 10 minutes backup at 70% load of PoE. All other IT loads within network rack to be catered for 10 minutes backup at 70% load. SNMP enabled.	7	Set					
A-05	Network Management Software for 'Single-Pane-of-Glass' monitoring/ management	1	No.					
A-06	Network Access Controller (NAC)	1	No.					
A-07	Rack Server for Backup and Patch server	2	No.					

Item ID	Description	Qty.	Unit	Make & Model	Unit Price (Rs.)	Total Excl. Tax (Rs.)	GST (Rs.)	Total Incl. Tax (Rs.)
	(B) SUPPLY - ACTIVE COMPONENTS, INTERNET, ONE-TIME							
B-01	Extension of intranet Modular data rack with Hyper-Converged Appliance (HCI) including Software Defined Compute, Storage, Networking, WAN components and provide 'Single-pane-of-glass-monitoring' software including for Datarack/HCI/NGFW , Onsite warranty for 03 years	1	No.					
B-02	Core Switch, 1Tbps	2	No.					
B-03	Rack L3 Switch with universal PoE, passive High-Availability, scalability upto 700 ports with day-one delivery of 75% of ports at Floor level, each switch of 48 Port	18	Set					
B-04	Network Management Software for 'Single-Pane-of-Glass' monitoring/ management	1	Set					
B-05	Network Access Controller (NAC)	1	No.					
B-06	Rack Server for Backup and Patch server	2	No.					
	(C) SERVICES - PASSIVE WORK, PRO-RATA BASIS, ONE-TIME							
C-01	Installation of CAT-6 LAN cabling for 2,600 IP Points including all accessories, As per Structured Cabling Standards	10000	Mtrs					
C-02	Certificate for Pre & Post validation against Structured Cabling Standards from authorised agency	1	No.					
C-03	Preparation of vertical drop cabling on wall, two drop at every 14ft, surface finishing, concealed on wall with atleast 1cm depth	1500	Mtrs					
C-04	Preparation of horizontal cabling with building on ceiling, unitrust GI cable tray on ceiling fitted, enclosed tray	2960	Mtrs					
C-05	Installation of backbone underground armoured fiber cabling between buildings and along perimeter wall, minimum of 48 Core multimode fiber, hard land surface, trenched for atleast 1 Mtr, cable to run inside HDPE pipe, road crossing with GI pipes	2000	Mtrs					
C-06	Installation of backbone armoured fiber cabling intra-building on star topology, minimum of 06 Core multimode fiber, secured with unitrust GI cable tray, cable to run inside HDPE pipe	100	Mtrs					

Item ID	Description	Qty.	Unit	Make & Model	Unit Price (Rs.)	Total Excl. Tax (Rs.)	GST (Rs.)	Total Incl. Tax (Rs.)
C-07	Outdoor network enclosure with minimum of 10 A power availability along with required electrical accessories, forced ventilation, underground cabling, for campus perimeter armoured cable termination, IP 56 rated,	16	No.					
C-08	Indoor network racks, 24U, including power coated material, network patch panels, electrical cabling with accessories such as MCBs to provide 4 KVA for each rack, cabling to be concealed on vertical run on wall/ HDPE pipe on horizontal run along with ceiling	7	No.					
C-09	Casing & Capping on last mile within building rooms along with accessories	1500	Mtrs.					
C-10	Site survey by certified Civil Surveyer and provision of AutoCAD design diagram for Civil/ Electrical/ Network/ IT assets diagram	1	No.					
	(D) SUPPLY - IP TELEPHONES							
D-01	IP Phones with licenses compatible with existing IP Phone system in Chakra WAN, PoE enabled, Normal Users	100	No.					
D-02	IP Phones with licenses compatible with existing IP Phone system in Chakra WAN, PoE Enabled, Executive Users with Boss-Secretary & Consultative Call Forwarding features	25	No.					
D-03	PRI Gateway in HA	2	No.					
	(E) SERVICES - DESIGN, INSTALLATION & MAINTENANCE WITH ONSITE WARRANTY FOR 01 YEAR FROM GOLIVE, ONE-TIME PAYMENT							
E-01	Design, installation, project management, provisioning of onsite supervisor-01 No. till govlive+03 months, provision of Project tracking software for 02 Users, turn-key basis implementation, with 01 year all-inclusive warranty support, including onsite network support engineer-02 nos. and server/storage/ network phone support engineer-02 nos.	1	No.					
	(F) SUPPORT - ALL INCLUSIVE AMC FOR ACTIVE & PASSIVE, RECURRING PAYMENT ON QRLY BASIS							

Item ID	Description	Qty.	Unit	Make & Model	Unit Price (Rs.)	Total Excl. Tax (Rs.)	GST (Rs.)	Total Incl. Tax (Rs.)
F-01	Maintenance of passive components and cabling, onsite manpower-02 no., All-Inclusive for repair/ replace passive components as required, 01 Year AIAMC on post-completion of 01 year warranty, extendable for 02 years on yearly basis with terms and conditions	2	No.					
F-02	Maintenance of active components including ROBO racks, servers, storage, backup & recovery support, onsite L1 manpower-02 no. for servers/ storage/ network/ IP Phone. SI to provide L2 & L2 support from certified manpower/ consortium of OEM certified vendors, 01 Year AIAMC on post-completion of 01 year warranty, extendable for 02 years on yearly basis with terms and conditions	2	No.					
	Grand Total							

(Grant total is, Rupees _____ only excluding taxes)

(Grant total is, Rupees _____ only including taxes)

Note:

- (a) **L1 shall be decided on QCBS basis (exclusive of taxes) as single package.**
- (b) Package-A includes all active components of Para-1(A), 1(B), 1(D), 1(E), 1(F) and Package-B includes Para-1(C) of above
- (c) Individual taxes need to be added as separate columns
- (d) Taxes mentioned in the format are indicative only, and vendor need to mention taxes as applicable at the time of bidding
- (e) Training is conducted at New Delhi for 10 candidates
- (f) Provide detailed line item for each 'Item ID' as required by the Coast Guard as per Annexure-1 of Appendix-H

(g) To qualify as COTS software, product should have 10 years of maturity, atleast 03 certified support partners in India each having atleast 02 current client each with minimum of Rs.2 Crore product value, product having atleast 25 current deployments, product to have dedicated support portal with datasheets/user manuals/ API manuals/admin manuals/ patches and published roadmap for next 05 years

(h) Warranty of software implementation should commence from final GoLive with acceptance of Coast Guard

(j) Detailed sizing and technical specifications as per **Annexure-i, Appendix-B of RFP.**

Annexure-1 to Appendix-'H'

Detailed breakdown Bill of Material/Services
(To be submitted in sealed cover separately)

Sl.	Item ID	Detailed Description of OEM items	Qty.	Unit	Make & Model with Part No.	Unit Price(Rs)	Total w/o Tax	GST	Total with Tax	Total
1	A-01		1	No.						
2	A-01		1	No.						
3	A-03	(Any other items as required)	0	No.	Make as applicable					

Note:-

- (a) 'Item ID' as per para-1 of Appendix-'H'
- (b) Line item should be as per OEM description along with respective 'Part No/ Code'
- (c) Sealed cover for Annexure-1 to Appendix-'H' to be handed-over to the Buyer as part on online bid submission. However, in case of discrepancies in price, online bid prices shall be considered as actual.

(Grant total is, Rupees _____ only excluding taxes)

(Grant total is, Rupees _____ only including taxes)

Note:

- (a) **L1 shall be decided on QCBS basis (exclusive of taxes) as single package.**
- (b) Package-A includes all active components of Para-1(A), 1(B), 1(D), 1(E), 1(F) and Package-B includes Para-1(C) of above
- (c) Individual taxes need to be added as separate columns
- (d) Taxes mentioned in the format are indicative only, and vendor need to mention taxes as applicable at the time of bidding
- (e) Training is conducted at New Delhi for 10 candidates
- (f) Provide detailed line item for each 'Item ID' as required by the Coast Guard as per Annexure-1 of Appendix-H
- (g) To qualify as COTS software, product should have 10 years of maturity, atleast 03 certified support partners in India each having atleast 02 current client each with

minimum of Rs.2 Crore product value, product having atleast 25 current deployments, product to have dedicated support portal with datasheets/user manuals/ API manuals/admin manuals/ patches and published roadmap for next 05 years

(h) Warranty of software implementation should commence from final GoLive with acceptance of Coast Guard

(j) Detailed sizing and technical specifications as per **Annexure-i, Appendix-B of RFP.**

Annexure-1 to Appendix-'H'

Detailed breakdown Bill of Material/Services
(To be submitted in sealed cover separately)

Sl.	Item ID	Detailed Description of OEM items	Qty.	Unit	Make & Model with Part No.	Unit Price(Rs)	Total w/o Tax	GST	Total with Tax	Total
1	A-01		1	No.						
2	A-01		1	No.						
3	A-03	<i>(Any other items as required)</i>	0	No.	<i>Make as applicable</i>					

Note:-

- (a) 'Item ID' as per para-1 of Appendix-'H'
- (b) Line item should be as per OEM description along with respective 'Part No/ Code'
- (c) Sealed cover for Annexure-1 to Appendix-'H' to be handed-over to the Buyer as part on online bid submission. However, in case of discrepancies in price, online bid prices shall be considered as actual.

Technical Solution for Secure Campus LAN

Note:

(a) Bidder should provide technical solution documentation in following format as part of Technical Bid. Subsequently should provide live demo and MS PowerPoint presentation to Coast Guard Technical Evaluation Committee (TEC))

Template format for technical solution Document. The Bidder should prepare document in following structure

Part-A: Introduction

- 1.0: Title of Technical Solution with Name of Project
- 2.0: Index
- 3.0: Executive Brief (Should be within single A4 size page)
- 4.0: User Requirement

Part-B: Design & Deployment architecture

- 5.0: Solution sizing including power/ heat calculation / active/ passive/ security components
- 5.1: Bill of material & purpose of each item
- 5.2: Overall deployment architecture diagram

Part-D: Project Planning & Execution

- 6.0: Project planning & monitoring
 - (a) Include Work Breakdown Structure (WBS), Resource Allocation etc using MS Project/ Oracle Primavera
 - (b) Overall timeline & Milestones

6.1: Manpower profile for the project as per following format. (Sample format only, Bidder to update as required)

Srl.	Activity	Onsite Manpower Qty	Onsite Manpower Certifications
(a)	Active Network configurations		
(b)	Passive network design		
(c)	Data rack design for ICG		
(d)			
(e)	<i>Include as required</i>		

Part-E: Deployment at site

7.0: Sample Site diagram and area of responsibility for Vendor and ICG

7.1: Scope of work for Vendor

7.2: List of pre-requisites from ICG

Part-F: Live POC Demo setup

8.0: Documentation of POC demo setup architecture layout, objective, test cases

Part-G: Documentation and presentation

9.0: Documentation on compliance to Datacenter standards, Business Continuity standards, Safety standards diagrams etc.

10.0: MS PowerPoint presentation for Technical Solution

DETAILS OF PRIME BIDDER & CONSORTIUM OF VENDORS PROFILE

1. Details of Prime Bidder and Consortium Vendors

Sl.	Vendor details (Indicate Prime Bidder)	Role in current project	Supporting Documents for profile, project experience, Certifications
(a)			
(b)			
(c)			

Note:-

(a) Prime vendor shall be responsible for entire project execution and project management. Prime Bidder must deliver atleast any of the 02 item/ services out of 03 item/ services of Secure Chat/ Secure Application Container/ IT infrastructure.

Prime Bidder & Consortium Member Profile (Fill-up provide separate sheet per vendor, in case of consortium)

Sl.	Profile	Details	Remarks
1.0	Company Name, Contact Person & Address		
1.1	Company turn-over with positive net worth	(a) 2015-16: Rs. _____ (b) 2016-17: Rs. _____ (c) 2017-18: Rs. _____	Positive net worth to be mentioned for past 03 years
1.2	Certifications	(a) CMMi-5: ___ Year (b) CMMi-3: ___ Year (c) ISO 27001: ___ Year (d) ISO 20000: ___ Year (e) ISO 9001: ___ Year	Any other certifications, if any. All certifications should be currently valid.

Sl.	Profile	Details	Remarks
1.3	Branch Offices	(a) Total: ___ Nos. of branches in India & Employees: __ Nos. (b) Total: __ Nos. of branches in Abroad & Employees	
1.4	Software project implemented in Central/ State/PSU organisations (Rs.25 Lakhs and more) in past 05 years	(a) Central Govt: ___ Nos. (b) State Govt: ___ Nos. (c) PSUs: ___ Nos. (d) Non-Govt/ Corp.: ___ Nos.	Indian/ Abroad projects be mentioned separately. Only relevant and key projects to be considered.
1.5	IT infrastructure & services project implemented in Central/ State/PSU organisations (Rs.25 Lakhs and more) in past 05 years	(a) Central Govt: ___ Nos. (b) State Govt: ___ Nos. (c) PSUs: ___ Nos. (d) Non-Govt/ Corp.: ___ Nos.	Indian/ Abroad projects be mentioned separately. Only relevant and key projects to be considered
2.0	Total manpower	(a) Software: _____ Nos. (b) ICT: ___ Nos. (c) India: ___ Nos. (d) Abroad: ___ Nos. (e) Total (b+c+d): __ Nos.	India/ abroad manpower be separately mentioned. Parent company be excluded. Software/ ICT manpower separately mentioned.
2.1	Business Analyst	(a) CBAP certified: ___ Nos. (b) Non-Certified: ___ Nos.	
2.2	Sr. Software Architect	(a) Total: ___ Nos.	(a) Minimum experience as architect for 05 projects (b) Minimum of 05 year experience (c) Experience on CASE tools to architect software systems (d) Experience on ALM software such as JIRA (e) Experience on Project mgmt. software

Sl.	Profile	Details	Remarks
2.3	Secure Chat Application Manpower	(a) Certified: ___ Nos. (b) Non-Certified: ___ Nos.	
2.4	Oracle Database Manpower	(a) OCP Certified, SQL/PLSQL: ___ Nos. (b) OCP Certified, DBA: ___ Nos. (c) Non-Certified: ___ Nos.	
2.5	Project Management Manpower	(a) PMP Certified: ___ Nos. (b) MS Project/PrimaVera Certified excluding PMP: ___ Nos. (b) Non-Certified: ___ Nos.	
2.6	Oracle ADF Developers	(a) ADF Certified: ___ Nos. (b) Non-Certified: ___ Nos.	
2.7	Java Developers	(a) Java Certified: ___ Nos. (b) Non-Certified: ___ Nos.	
2.8	Testers	(a) Certified Testers: ___ Nos. (b) Non-Certified: ___ Nos.	
2.9	GUI Designers	(a) Certified Designers: ___ Nos. (b) Non-Certified: ___ Nos.	
3.0	Development/ Support/ DevOps Tools	(a) CASE Tools: _____ (b) Source Code Server: _____ (c) GUI Testing: _____ (d) Unit Testing: _____ (e) ALM Software: _____ (f) ITIL Service Desk: _____ (g) Project Mgmt: _____ (h) Java IDE: _____	(a) Computer Aided Software Engineering Tools such as Rational Software Architect etc. (b) Source Code Server such as Git/Subversion/ Bit bucket (c) GUI testing such as 'Selenium' etc. (d) Application Lifecycle Management (ALM) such as Atlassian JIRA, Confluence, Bamboo, Jenkins etc. (e) ITIL Service Desk as duly certified by PinkVerify© such as JIRA Service Desk, BMC etc.

Sl.	Profile	Details	Remarks
			<p>(f) 'Project Management' software such as MS Project, Oracle PrimaVera etc.</p> <p>(g) Java IDE such as Eclipse, IntelliJ IDEA, JDeveloper etc.</p>
4.0	Demo application to exhibit skillset by vendor	<p>(a) Can you showcase a demo POC application during TEC to display your skillset on Analysis/Design/Development/Test/Deployment and Maintenance? <u>[Yes/No]</u>.</p> <p>If Yes, following characteristics need to be included on POC application.</p> <p>(a) CASE tools usage for OOAD of project</p> <p>(b) MS Project/ PrimaVera for project planning/ costing/ duration</p> <p>(c) GUI design patterns for web application/ desktop applications</p> <p>(d) DevOps based development</p> <p>(e) Agile planning</p> <p>(f) Complete project from User Requirement to Testing on Agile to be based on any of ALM software such as JIRA and all related documents should be available on Confluence or equivalent</p> <p>(g) Testing for Black-box/ White-box and automated GUI testing</p> <p>(h) SOA/Micro services based architecture, deployed on Docker Containers</p>	POC demo application document need to be submitted as part of Technical Bid and subsequently, during evaluation vendor need to provide live demo for given simple sample application.
6.0	Single point of Contact (SPOC-Business) for Coast Guard	<p>(a) Name: _____</p> <p>(b) Desig.: _____</p> <p>(c) Email: _____</p> <p>(d) Mobile: _____</p>	

Sl.	Profile	Details	Remarks
		(e) Office location: _____	
6.1	Single point of Contact (SPOC- Technical) for Coast Guard	(a) Name: _____ (b) Desig.: _____ (c) Email: _____ (d) Mobile: _____ (e) Office location: _____	
7.0	Any other information		Provide any other details as you may feel relevant to Coast Guard.

Note: India/ abroad manpower to be mentioned separately.

Instructions for Online Bid Submission:

1. The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.
2. More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.
3. **Registration**
 - (a) Bidders are required to enrol on the e-Procurement module of the Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>) by clicking on the link "**Online bidder Enrollment**" on the CPP Portal which is free of charge.
 - (b) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
 - (c) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
 - (d) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.
 - (e) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
 - (f) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.
4. **Searching for tender documents**
 - (a) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
 - (b) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
 - (c) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

5. **Preparation of bids**

- (a) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- (b) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents – including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- (c) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
- (d) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” or “Other Important Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

6. **Submission of bids**

- (a) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- (b) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- (c) Bidder has to select the payment option as “offline” to pay the EMD as applicable and enter details of the instrument.
- (d) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- (e) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.
- (f) The server time (which is displayed on the bidders’ dashboard) will be considered as the standard time for referencing the deadlines for submission of the

bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

(g) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

(h) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

(j) Upon the successful and timely submission of bids (ie after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

(k) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

7. **Assistance to bidders**

(a) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

(b) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk.

ABBREVIATIONS & TERMINOLOGY

1. **Abbreviations**

ABBREVIATION	ABBREVIATION DESCRIPTION
AD	: Active Directory
AHS	: Allied Health Services
AIAMC	: All Inclusive Annual Maintenance Contract
AMC	: Annual Maintenance Contract
ATS	: Annual Technical Support
Bidder	: Vendor who participated in tender issued by ICG
BPEL	: Business Process Execution Language
BPM	: Business process management
BPMN	: Business Process Model and Notation
Buyer	: Indian Coast Guard
CAL	: Client Access License
CDA(N)	: Controller of Defence Account (Navy)
CGHQ	: Coast Guard Headquarters, New Delhi
COTS	: Commercially-Off-The-Shelf software
CPC	: Central Pay Commission
CPMT	: ICG Cloud Provisioning and Maintenance Team
DISHA	: Digital Infrastructure Services for Hosting Applications.
EAD	: Enterprise-class Agile Development
EAI	: Enterprise Application Integration
EMM	: Enterprise Mobility Management #
EMS	: Electronic Mail System
GPON	: Gigabit Passive Optical Network
HA	: High-Availability
HQ.	: Headquarter
IC4	: ICG Cyber Command and Control Center
ICG	: Indian Coast Guard

ABBREVIATION	ABBREVIATION DESCRIPTION
IDC	: ICG Interim Data Center
IDR	: ICG Disaster Recovery Data Center
IPADS	: Integrated Pay And Disbursement System (IPADS)
IPD	: In Patient Department
ISP	: Internet Service Provider, who provide internet services
MAF	: Manufacture Authorisation Form
MAM	: Mobile Application Management #
MDM	: Mobile Device Management #
NAS	: Network Access Storage
NETRA	: ICG Network of Tatrakshak Applications framework
NOC	: Network Operations Center
OEM	: Original Equipment Manufacturer
OPD	: Out Patient Department
OU	: Organisation Unit (OU) in ICG Active Directory
PCDA(N)	: Principle Controller of Defence Accounts (Navy)
QCBS	: Quality and Cost Base Selection
RHQ	: Coast Guard Regional Headquarters
RWD	: Responsive Web Design
SaaS	: Software as a Service
SAN	: Storage Area Network
SDOT	: ICG Software Development and Overseeing Team
SI	: System Integrator
SIMHA	: ICG Secured Integrated Management for Hosting Applications (SIMHA). ICG specific framework is based on Oracle Middleware stack.
SOC	: Security Operations Center
SOW	: Scope of Work
TSP	: Telecom Service Provider
UEM	: Unified Endpoint Management #

2. **General Terminology**

TERMINOLOGY	TERMINOLOGY DESCRIPTION
AHS	: Allied Health Services. It includes Laboratories, Pharmacies, Imaging, Therapies, Social and Psychological Support services etc, that provide both diagnostic and therapeutic support to both the OPD and IPD patients
ATS	: Annual Technical Support, provided by OEM for patches, upgrades, remote support etc.
Bidder	: Vendor who participated in tender issued by ICG
Buyer	: Indian Coast Guard
CDA(CG)	: Controller of Defence Account (Coast Guard)
CGHQ	: Coast Guard Headquarters, New Delhi
COTS	: Commercially-Off-The-Shelf software. To qualify as COTS software, product should have 10 years of maturity, atleast 03 certified support partners in India each having atleast 01 current client, product having atleast 10 current deployments, product to have dedicated support portal with datasheets/user manuals/ API manuals/admin manuals/ patches and published roadmap for next 05 years.
CPMT	: ICG Cloud Provisioning and Maintenance Team. It is responsible to provide all required IT infrastructure including compute/storage/network/security and IT middleware platform including SIMHA in support of most if the ICG software applications
DISHA	: Digital Infrastructure Services for Hosting Applications. A project of Coast Guard to deploy managed IT infrastructure.
EMS	: Electronic Mail System
HA	: High-Availability. A configuration to provide maximum availability of IT infrastructure & services.
IC4	: ICG Cyber Command and Control Center. It monitors and manages all aspects of ICG IT Operations including NOC, SOC, Cloud, Application Support and Service Desks. IC4 to operate 24x7x365.
In-Rack/Row Cooling	: An in-rack/row cooling system cools down the servers placed within closed in-rack/ in-row cabinets, providing microclimate within rack, having separate hot/ cold aisle containment at in-rack/ in-row level.
IPD	: In Patient Department. In includes areas of the hospital where patients are accommodated after being admitted, based on doctors/specialist's assessment, from the Emergency Services, Ambulatory Care, and Clinical/Specialty Outpatient Departments due to their presenting and emerging medical condition(s). Inpatients typically require a higher level of care and intensity of treatment, such as need for surgery, intensive medical, surgical or infection management, special observation and/or isolation, sustained therapy, or extensive testing.
ISP	: Internet Service Provider, who provide internet services

TERMINOLOGY	TERMINOLOGY DESCRIPTION
NETRA	: ICG Network of Tatrakshak Applications framework. Mother IT Framework provide end-to-end IT automation in ICG. It envisages five core domains including ERP for cradle-to-grave asset lifecycle of Acquisition/Maintenance/Logistics/Finance/HR, Non-ERP for office automation, IT infrastructure, Information Security and ICG Dashboard to provide high-level executive view.
OPD	: Out Patient Department. Caters to a population of patients who only need a consultation with a doctor/specialist and/or obtain ongoing medical treatment or services as a result of an earlier visit. Patients arrive, complete their appointment, and then leave the Outpatient Clinic or Department.
OU	: Organisation Unit (OU) in ICG Active Directory. Usually individual ICG units are to be considered as OU, which contain Users/Computers and managed as single unit. ICG SaaS enabled applications shall provide multi-tenancy at OU level which can be aggregated at various ICG admin authority levels. Typical OU within ICG context are ICG units such as ICGS Chennai, Admin Authority OUs are DHQ at State level, RHQ at Regional level, CGC at Western/Eastern Seaboard level and ICG level
PCDA(N)	: Principle Controller of Defence Accounts (Navy). Defence accounting office for Indian Navy & Indian Coast Guard located at Mumbai.
QCBS	: The method of selection is Quality and Cost Base Selection (QCBS). The weights given to the Technical and Commercial Bids are: Technical = 70% and Commercial = 30%
SaaS	: Software as a Service. ICG SaaS enabled applications should support multi-tenancy at OU level and shall be aggregated at various ICG admin authority levels. Typical OU within ICG context are ICG units such as ICGS Chennai, Admin Authority OUs are DHQ at State level, RHQ at Regional level, CGC at Western/Eastern Seaboard level and ICG level
SDOT	: ICG Software Development and Overseeing Team. Nodal institution under Directorate of IT, CGHQ responsible for overall software development to ensure compliance to ICG standards. SDOT shall act as Single-Point-of-Contact (SPOC) for all software projects.
Seller	: Vendor who participated in tender and issued supply/ work order by ICG
SI	: System Integrator. Bidder who is issued with work order to implement involving multifaceted implementations/provisioning of turn-key projects at ICG
SIMHA	: ICG unified middleware software platform standard framework Secured Integrated Management for Hosting Applications (SIMHA). It includes common Oracle middleware and database components of Enterprise Portal, API manager, BI Server, Enterprise Service Bus (ESB) Server, BPM, Case Management, DMS Server, RMS Server, J2EE Application Server and Oracle Database with Golden Gate replication, ADE, Label Security, Data Vault. All applications other than ERP should be built on SIMHA as per ICG NETRA Framework standards.

TERMINOLOGY	TERMINOLOGY DESCRIPTION
SOC	: Security Operations Center. Monitors & manages all information security aspects of ICG. It is implemented as part of IC4.
TSP	: Telecom Service Provider, who provide various telecom related services including MPLS, Leased Line & VSAT

3. **Payroll Terminologies & Abbreviations**

ABBREVIATION	ABBREVIATION DESCRIPTION
Payroll	: An Organisations' financial list of the salaries, wages, bonuses, net pay, and deductions of their employees
Salary	: Fixed amount per pay period
Wage	: Variable amount of pay usually by hour/day worked
Retro pay	: Compensation related to a previous pay period. You give retro pay later than when the initial pay took effect
Back pay	: Pay that is owed for past work or services rendered as the result of some sort of payroll or bookkeeping error or delay in processing
	:
	:
	:
	:
	:

(Note: All abbreviations & terminology are within context of Coast Guard unless otherwise explicitly mentioned)