NIT NO.:/ MDU-R/JAN/2017/001

TENDER DOCUMENT

NAME OF WORK: PROCUREMENT OF EQUIPMENT & SERVICES TO UPGRADE UNIVERSITY DIGITAL NETWORK

VIKAS

Last date submission of the filled Tender document: 15.02.2017 up to 2:30 pm. (The Tender document is to be submitted duly signed in blue/black ink on each page and stamped with official seal on each page)

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Maharshi Dayanand University, Rohtak

[Established in Act No. 25 of 1975 of the Haryana Legislative Assembly in 1976]

NAAC Accredited 'A' Grade

No. UCC/2017/ Dated : 25/01/2017

University Computer Center

Phone: 01262-393548 **E-mail: dir.ucc@mdurohtak.ac.in**

STANDARD BIDDING DOCUMENT FOR PURCHASE OF **Procurement Of Equipment & Services to Upgrade University Digital Network** ON BEHALF OF REGISTRAR, MAHARSHI DAYANAND UNIVERSITY, ROHTAK.

PART1: COMPLETE BIDDING DOCUMENT

Name of work: Procurement Of Equipment & Services to Upgrade University Digital Network .

PRESS NOTICE

M. D. UNIVERSITY, ROHTAK **Notice Inviting E-Tender**	
Name of work	PROCUREMENT OF EQUIPMENT & SERVICES TO UPGRADE UNIVERSITY DIGITAL NETWORK
E Service Fees+ Tender Doc. Fees	1000/- + 4,000/- =5,000/- (TO BE PAID ONLINE)
Earnest Money **Time Limit**	2% OF THE QUOTED RATE OF PROCUREMENT OF EQUIPMENT & SERVICES TO UPGRADE UNIVERSITY DIGITAL NETWORK 02 TO 03 WEEKS
Tenders to be received till: dated 15.02.2017 till 02:30 P.M	
(1) THE TENDERS WILL BE RECEIVED ONLY THROUGH E-TENDERING FOR FURTHER DETAILS VISIT WEBSITE HTTPS://HARYANAEPROCUREMENT.GOV.IN.	

REGISTRAR

The Bidders can download the tender documents from the Portal: https://haryanaeprocurement.gov.in.

1) Earnest Money and Document Fee Deposit have to be deposited through Online Mode Only.
2) Willing Contractors shall have to pay the e- service fees of Rs.1000/- through Online mode
3) However, the details of the EMD, Tender document Fee & E–Service Fee are required to be filled/provided scan copies at the time of online Bid Preparation Stage the Bidders are required to keep the EMD, Tender document fee & E- Service fee details ready beforehand. The contractual Agencies can submit their tender documents as per the date mentioned below:

KEY DATES

Sr. No.	M.D.U. Rohtak Stage	Contractor Stage	Start Date & Time	End Date & Time
1		Tender Document Download and Bid Preparation & Submission	**25-01-2017**	**dated 15.02.2017 till 02:30 P.M**
2		Pre Bid Date	**03.02.2017**	**03.02.2017**
3		Submission of Tender Fees and online EMD Fees	**25-01-2017**	**13-02-2017 till 4.00 PM**
4		Manual Submission of Specification of Item, Tender Document Fee, EMD, E-Service Fee etc. in University Computer Centre	**25-01-2017 From 9:00 AM**	**15-02-2017 Upto 2:30 PM**
5	Technical Opening/ Technical Evaluation/ Opening of Financial Bid		15-02-2017 at 3.00 PM FIANNCE DATE WILL DECIDED LATER ON	

Important Note:-

1) The bidders shall have to complete Bid Preparation & Submission" stage on scheduled date & time as mentioned above. If any bidder failed to complete his/her aforesaid stage in the stipulated online time schedule for this stage, his/her bid status will be considered as "bids not submitted".
2) Bidder must confirm & check his/her bid status after completion of his/her all activities for e-bidding.
3) Bidder can rework on his/her bids even after completion of "Bid Preparation & submission stage" (Bidder Stage), subject to the condition that the rework must take place before the stipulated time frame of the Bidder Stage.

DETAIL NOTICE INVITING TENDER

e-Tender is invited for purchase of below mentioned items in single stage two cover system i.e. Request for Technical Bid (online Bid under PQQ/ Technical Envelope) and Request for Financial Bid (comprising of price bid Proposal under online available Commercial Envelope).

Sr. No	Name of work	Appx. Cost (Rs. In lacs)	EMD to be deposited by Bidder	Tender Document Fee & eService Fee (Rs.)	Start Date & Time of Bid Preparation & Submission	Expiry Date & Time of Bid of EMD Submission	Expiry Date & Time of Bid Preparation & Submission
1.	**Procurement Of Equipment & Services to Upgrade University Digital Network in MDU, Rohtak.**	0	2% of the cost	Rs. 4000/-for Tender Document fee & Rs. 1000/- for e-Service fee	**25-01-2017**	**dated 15.02.2017 till 02:30 P.M**	**25-01-2017 From 9:00 AM** to **2:30 PM**

1. Detailed notice inviting tender/estimate drawing can be seen in the office of the undersigned during office hours.
2. Bidding documents available on website http://mdurohtak.haryanaeprocurement.gov.in
3. Newly enlisted contractors/societies/suppliers/manufactures should bring with them proof of their enlistment in appropriate class.
4. The bidders would submit bid through e-tendering only on the website i.e. http://haryanaeprocurement.gov.in

Under this process, the Pre-qualification/ Technical online bid Application as well as online Price Bid shall be invited at single stage under two covers i.e. PQQ/Technical & Commercial Envelope. Eligibility and qualification of the Applicant will be first examined based on the details submitted online under first cover (PQQ or Technical) with respect to eligibility and qualification criteria prescribed in this Tender document. The Price Bid under the second cover shall be opened for only those Applicants whose PQQ/ Technical Applications are responsive to eligibility and qualifications requirements as per Tender document.

1. The payment for Tender Document Fee and e-Service Fee shall be made by eligible bidders online directly through Debit Cards & Internet Banking Accounts and the payment for EMD can be made online directly through RTGS/NEFT or OTC Please refer to 'Online Payment Guideline' available at the Single e-Procurement portal of GoH (Govt. of Haryana) and also mentioned under the Tender Document.

2. Intending bidders will be mandatorily required to online sign-up (create user account) on the website https://haryanaeprocurement.gov.in to be eligible to participate in the e-Tender. The firm will be required to make online payment of 2% of the bid cost towards EMD fee in due course of time. The intended bidder fails to pay EMD fee under the stipulated time frame shall not be allow to submit his / her bids for the respective event / Tenders.

3. The interested bidders must remit the funds at least T+1 working day (Transaction day + One working Day) in advance i.e. on or before **13-02-2017 till 4.00 PM** and make payment via RTGS /NEFT or OTC to the beneficiary account number specified under the online generated challan. The intended bidder / Agency thereafter will be able to successfully verify their payment online, and submit their bids on or before the expiry date & time of the respective events/Tenders at https://haryanaeprocurement.gov.in.

The interested bidders shall have to pay mandatorily e-Service fee (under document fee – Non-refundable) of Rs.1000/- (Rupee One Thousand Only) online by using the service of secure electronic gateway. The secure electronic payments gateway is an online interface between bidders & online payment authorization networks.

The Payment for document fee/ e-Service fee can be made by eligible bidders online directly through Debit Cards & Internet Banking.

The Bidders can submit their tender documents (Online) as per the dates mentioned at Page no 3 of Document: -

Important Note:

1. The Applicants/bidders have to complete 'Application / Bid Preparation & Submission' stage on scheduled time as mentioned above. If any Applicant / bidder failed to complete his / her aforesaid stage in the stipulated online time schedule for this stage, his / her Application/bid status will be considered as 'Applications / bids not submitted'.
2. Applicant/Bidder must confirm & check his/her Application/bid status after completion of his/her all activities for e-bidding.
3. Applicant/Bidder can rework on his/her bids even after completion of 'Application/Bid Preparation & submission stage' (Application/Bidder Stage), subject to the condition that the rework must take place during the stipulated time frame of the Applicant/Bidder Stage.
4. In the first instance, the online payment details of tender document fee + e-Service and EMD & PQQ/Technical Envelope shall be opened. Henceforth financial bid quoted against each of the item by the shortlisted bidder/ Agency wherever required shall be opened online in the presence of such bidders/ Agency who either themselves or through their representatives choose to be present. The bidder can submit online their bids as per the dates mentioned in the schedule/Key Dates above.

The bids shall be submitted online in two separate envelopes:

Envelope 1: Technical Bid

The bidders shall upload the required eligibility & technical documents online in the Technical Bid.

Envelope 2: Commercial Bid

The bidders shall quote the prices in price bid format under Commercial Bid.

CONDITIONS: -

1. DNIT & prequalification criteria can be seen on any working day during office hours in office of the undersigned.
2. Conditional tenders will not be entertained & are liable to be rejected.
3. In case the day of opening of tenders happens to be holiday, the tenders will be opened on the next working day. The time and place of receipt of tenders and other conditions will remain unchanged.
4. The undersigned reserve the right to reject any tender or all the tenders without assigning any reasons.
5. The societies shall produce an attested copy of the resolution of the Co-operative department for the issuance of tenders.
6. The tender without earnest money/bid security will not be opened.
7. The Jurisdiction of court will be at **Rohtak**.
8. The tender of the bidder who does not satisfy the qualification criteria in the bid documents are liable to be rejected summarily without assigning any reason and no claim whatsoever on this account will be considered.
9. The bid for the work shall remain open for acceptance during the bid validity period to be reckoned from the last date of 'Manual submission of BS. If any bidder/tenders withdraws his bid/tender before the said period or makes any modifications in the terms and conditions of the bid, the earnest money shall stand forfeited. Bids shall be valid for 120 days from the date of bid closing i.e. from last date of manual submission of EMD. In case the last day to accept the tender happens to be holiday, validity to accept tender will be the next working day.

For & on behalf of Registrar, MDU, Rohtak

DIRECTOR UCC

M. D. University, Rohtak

INSTRUCTIONS TO BIDDER ON ELECTRONIC TENDERING SYSTEM

These conditions will over-rule the conditions stated in the tender documents, wherever relevant and applicable.

REGISTRATION OF BIDDERS ON E-PROCUREMENT PORTAL: -

All the bidders intending to participate in the tenders process online are required to get registered on the centralized e - Procurement Portal i.e. https://haryanaeprocurement.gov.in. Please visit the website for more details.

OBTAINING A DIGITAL CERTIFICATE:

1.1 The Bids submitted online should be encrypted and signed electronically with a Digital Certificate to establish the identity of the bidder bidding online. These Digital Certificates are issued by an Approved Certifying Authority, by the Controller of Certifying Authorities, Government of India.

1.2 A Digital Certificate is issued upon receipt of mandatory identity (i.e. Applicant's PAN Card) and Address proofs and verification form duly attested by the Bank Manager / Post Master / Gazetted Officer. Only upon the receipt of the required documents, a digital certificate can be issued. For more details, please visit the website – https://haryanaeprocurement.gov.in.

1.3 The bidders may obtain Class-II or III digital signature certificate from any Certifying Authority or Sub-Certifying Authority authorized by the Controller of Certifying Authorities or may obtain information and application format and documents required for the issue of digital certificate from:

M/s Nextenders (India) Pvt. Ltd.
O/o. DS&D Haryana,
SCO – 09, IInd Floor,
Sector – 16,
Panchkula – 134108
E-mail: chandigarh@nextenders.com
Help Desk: 1800-180-2097 (Toll Free Number)

1.4 The bidder must ensure that he/she comply by the online available important guidelines at the portal https://haryanaeprocurement.gov.in for Digital Signature Certificate (DSC) including the e-Token carrying DSCs.

1.5 Bid for a particular tender must be submitted online using the digital certificate (Encryption & Signing), which is used to encrypt and sign the data during the stage of bid preparation. In case, during the process of a particular tender, the user loses his digital certificate (due to virus attack, hardware problem, operating system or any other problem) he will not be able to submit the bid online. Hence, the users are advised **to keep a backup of the certificate** and also keep the copies at safe place under proper security (for its use in case of emergencies).

1.6 In case of online tendering, if the digital certificate issued to the authorized user of a firm is used for signing and submitting a bid, it will be considered equivalent to a no-objection certificate /power of attorney / lawful authorization to that User. The firm has to authorize a specific individual through an authorization certificate signed by all partners to use the digital certificate as

per Indian Information Technology Act 2000. Unless the certificates are revoked, it will be assumed to represent adequate authority of the user to bid on behalf of the firm in the department tenders as per Information Technology Act 2000.

1.7 The digital signature of this authorized user will be binding on the firm.

1.8 In case of any change in the authorization, it shall be the responsibility of management / partners of the firm to inform the certifying authority about the change and to obtain the digital signatures of the new person / user on behalf of the firm / company. The procedure for application of a digital certificate however will remain the same for the new user.

1.9 The same procedure holds true for the authorized users in a private/Public limited company. In this case, the authorization certificate will have to be signed by the directors of the company.

OPENING OF AN ELECTRONIC PAYMENT ACCOUNT:

For purchasing the tender documents online, bidders are required to pay the tender documents fees online using the electronic payments gateway service shall be integrated with the system very soon till then it will be submitted manually. For online payments guidelines, please refer to the Home page of the e-tendering Portal https://haryanaeprocurement.gov.in.

Pre-requisites for online *bidding*:

In order to operate on the electronic tender management system, a user's machine is required to be set up. A help file on system setup/Pre-requisite can be obtained from Nextenders (India) Pvt. Ltd. or downloaded from the home page of the website -https://haryanaeprocurement.gov.in.. The link for downloading required java applet & DC setup are also available on the Home page of the e-tendering Portal.

ONLINE VIEWING OF DETAILED NOTICE INVITING TENDERS:

The bidders can view the detailed N.I.T and the time schedule (Key Dates) for all the tenders floated through the single portal eProcurement system on the Home Page at https://haryanaeprocurement.gov.in.

DOWNLOAD OF TENDER DOCUMENTS:

The tender documents can be downloaded free of cost from the eProcurement portal https://haryanaeprocurement.gov.in

KEY DATES:

The bidders are strictly advised to follow dates and times as indicated in the online Notice Inviting Tenders. The date and time shall be binding on all bidders. All online activities are time tracked and the system enforces time locks that ensure that no activity or transaction can take place outside the start and end dates and the time of the stage as defined in the online Notice Inviting Tenders.

ONLINE PAYMENT OF TENDER DOCUMENT FEE, ESERVICE FEE , EMD FEES & BID PREPARATION & SUBMISSION (PQQ/ TECHNICAL & COMMERCIAL/PRICE BID):

i) Online Payment of Tender Document Fee + e-Service fee**:**

The online payment for Tender document fee, eService Fee & EMD can be done using the secure electronic

payment gateway. The Payment for Tender Document Fee and eService Fee shall be made by bidders/ Vendors online directly through Debit Cards & Internet Banking Accounts and the Payment for EMD shall be made online directly through RTGS / NEFT & OTC. The secure electronic payments gateway is an online interface between contractors and Debit card / online payment authorization networks.

ii) PREPARATION & SUBMISSION of online APPLICATIONS/BIDS**:**

Detailed Tender documents may be downloaded from e-procurement website (https://haryanaeprocurement.gov.in) and tender mandatorily be submitted online.

Scan copy of Documents to be submitted/uploaded for Prequalification or Technical bid under online PQQ/ Technical Envelope: The required documents (refer to DNIT) shall be prepared and scanned in different file formats (in PDF /JPEG/MS WORD format such that file size is not exceed more than 10 MB) and uploaded during the on-line submission of PQQ or Technical Envelope.

FINANCIAL or Price Bid PROPOSAL shall be submitted mandatorily online under Commercial Envelope and original not to be submitted manually)

ASSISTANCE TO THE BIDDERS: -

In case of any query regarding process of e-tenders and for undertaking training purpose, the intended bidder can also avail the following and can contact service provider as per below:

Office Timings of Help-desk support for Single e Procurement Portal of Government of Haryana-Technical Support Assistance will be available over telephone Monday to Friday (09:00 am. to 5:30 pm) & Training workshop will be conducted on every 1st, 2nd Friday (from 3:30 pm upto 6:00 pm) and 4th Saturday (from 11:30 am upto 3:00 pm) of each month.

All queries would require to be registered at our official email-chandigarh@nextenders.com for on- time support (Only those queries which are sent through email along with appropriate screenshots or error description will be considered as registered with the Help-desk)

IMPORTANT NOTE: -

(a) Any intending bidder can contact the helpdesk on or before prior to 4 hours of the scheduled closing date & time of respective e-Auction/ Tender event.

(b) For queries pertaining to e-Payment of EMD, please contact the helpdesk at least 2 business days prior to the closing date & time of e-Auction/Tender event.

(c) Help-desk support will remain closed during lunch break i.e. from 1:30 PM up to 2:15 PM on each working day.

SCHEDULE FOR TRAINING:

Training workshop will be held on 1st, 2nd Friday (from 3:30 pm upto 6:00 pm) and 4th Saturday (from 11: 30 am upto 3:00 pm) of each month at following addresses:		
Nextenders (India) Pvt. Ltd Municipal Corporation Faridabad, Near B.K. Chowk, Opp. B.K.Hospital, NIT, **Faridabad** Contact no.	Nextenders (India) Pvt. Ltd. Public Health Division No. 2 Hisar, Model Town Opp. N.D Gupta Hospital, **Hisar**	Nextenders (India) Pvt. Ltd., Nirman Sadan (PWD B&R), Plot No.- 01, Basement, Dakshin Marg, Sec- 33 A, **Chandigarh** -160020 **For Support- 1800-180-2097**,

Haryana eProcurement Help Desk Office will remain closed on Saturday (except 4th Saturday), Sunday and National Holidays

NOTE:- Bidders participating in online tenders shall check the validity of his/her Digital Signature Certificate before participating in the online Tenders at the portal https://haryanaeprocurement.gov.in.

For help manual please refer to the 'Home Page' of the e-Procurement website at https://haryanaeprocurement.gov.in, and click on the available link 'How to...?' to download the file.

GUIDELINE FOR ONLINE PAYMENTS IN E-TENDERING

Post registration, bidder shall proceed for bidding by using both his digital certificates (one each for encryption and signing). Bidder shall proceed to select the tender he is interested in. On the respective Department's page in the e-tendering portal, the Bidder would have following options to make payment for tender document & EMD:

i. Debit Card
ii. Net Banking
iii. RTGS/NEFT

OPERATIVE PROCEDURES FOR BIDDER PAYMENTS

A) DEBIT CARD

The procedure for paying through Debit Card will be as follows.

i. Bidder selects Debit Card option in e-Procurement portal.
ii. The e-Procurement portal displays the amount and the card charges to be paid by bidder. The portal also displays the total amount to be paid by the bidder.
iii. Bidder clicks on "Continue" button

iv. The e-Procurement portal takes the bidder to Debit Card payment gateway screen.

v. Bidder enters card credentials and confirms payment

vi. The gateway verifies the credentials and confirms with “successful” or “failure” message, which is confirmed back to eProcurement portal.

vii. The page is automatically routed back to e-Procurement portal

viii. The status of the payment is displayed as “successful” in e-Procurement portal. The e-Procurement portal also generates a receipt for all successful transactions. The bidder can take a print out of the same,

ix. The e-Procurement portal allows Bidder to process another payment attempt in case payments are not successful for previous attempt.

B) NET BANKING

The procedure for paying through Net Banking will be as follows.

i. Bidder selects Net Banking option in e-Procurement portal.

ii. The e-Procurement portal displays the amount to be paid by bidder.

iii. Bidder clicks on “Continue” button

iv. The e-Procurement portal takes the bidder to Net Banking payment gateway screen displaying list of Banks (v) Bidder chooses his / her Bank

v. The Net Banking gateway redirects Bidder to the Net Banking page of the selected Bank

vi. Bidder enters his account credentials and confirms payment

vii. The Bank verifies the credentials and confirms with “successful” or “failure” message to the Net Banking gateway which is confirmed back to e-Procurement portal.

viii. The page is automatically routed back to e-Procurement portal

ix. The status of the payment is displayed as “successful” in e-Procurement portal.

The e-Procurement portal also generates a receipt for all successful transactions. The bidder can take a print out of the same. (xi) The e-Procurement portal allows Bidder to process another payment attempt in case payments are not successful for previous attempt.

C) RTGS/ NEFT

The bidder shall have the option to make the EMD payment via RTGS/ NEFT. Using this module, bidder would be able to pay from their existing Bank account through RTGS/NEFT. This would offer a wide reach for more than 90,000 bank branches and would enable the bidder to make the payment from almost any bank branch across India.

I. Bidder shall log into the client e-procurement portal using user id and password as per existing process and selects the RTGS/NEFT payment option.

II. Upon doing so, the e-procurement portal shall generate a pre-filled challan. The challan will have all the details that is required by the bidder to make RTGS-NEFT payment. iii.

III. Each challan shall therefore include the following details that will be pre- populated:

- Beneficiary account no: (unique alphanumeric code for e-tendering)
- Beneficiary IFSC Code:
- Amount:
- Beneficiary bank branch:
- Beneficiary name:

iv. The Bidder shall be required to take a print of this challan and make the RTGS/NEFT on the basis of the details printed on the challan.

v. The bidder would remit the funds at least T + 1 day (Transaction + One day) in advance to the last day and make the payment via RTGS / NEFT to the beneficiary account number as mentioned in the challan.

vi. Post making the payment, the bidder would login to the e-Tendering portal and go to the payment page. On clicking the RTGS / NEFT mode of payment, there would be a link for real time validation. On clicking the same, system would do auto validation of the payment made.

D) OVER-THE-COUNTER (OTC)

This solution shall allow the bidder having account with ICICI Bank, to make the payment from any CMS enabled Branch of ICICI Bank in India. Bidders can make the payment via cash (if amount is<= 49,999), ICICI Bank Cheque.

The procedure for paying through OTC mode is as follows:

i Bidder selects Over-the-Counter remittance option in e-Procurement portal.

ii The e-Procurement portal displays the amount to be paid. Bidder chooses the bank account no. for refund of the amount.

iii Bidder clicks on “Continue” button

iv (iv)The e-Procurement portal displays the details of payment. Bidders clicks on “print _challan” and prints the OTC challan.

v Bidder submits the OTC challan at the counter of any designated branch of ICICI Bank with

vi Cash / Demand Draft / ICICI Bank Cheque (Payment in cash is allowed upto Rs. 49,999/-)

vii ICICI Bank verifies the URN (format to be discussed and decided) and Amount with e-Procurement portal prior to accepting the payment

viii On successful verification from e-Procurement portal, ICICI Bank accepts the payment. In case of failure, ICICI Bank shall return back the OTC challan and payment to the Bidder.

ix ICICI Bank will commit the payment transaction (in case of successful verification from e-Procurement portal) and sends the Bank Transaction Number (I-Sure Reference Number) online against the URN and Amount.

x ICICI Bank will generate receipt for the payment transaction and issues the same to the Bidder.

xi The e-Procurement system updates the bank transaction number against the URN and Amount based on details sent by ICICI Bank online prior to generation of receipt.

xii The status of payment will be displayed as “verification successful” in e-Procurement portal, when the bidder clicks on verification option in the portal

xiii Bidder would be required to upload the scan copy of receipt as received from ICICI Bank as part of proof in Nex-tender portal before submitting the tender

IMPORTANT NOTES(DO'S/DON'T)

Sr no.	Scenario	Do's / Don'ts
1	**In the event of making Payment through NEFT/RTGS**	Do's • It is the bidder's responsibility to ensure that RTGS/NEFT payments are made to the exact details as mentioned in the challan which are: 1) Beneficiary account no: <client code> + <random number> 2) Beneficiary IFSC Code: As prescribed by ICICI Bank (this shall remain same across all tenders) • Amount: As mentioned on the challan. It is specific for every tender/transaction • Beneficiary bank branch: ICICI Bank Ltd, CMS • Beneficiary name: As per the challan • For every tender, details in the challan are different and specific to that tender only. Bidder should not make use of a challan for making payment for another tenders' EMD • It is advised that all the bidders make payment via RTGS/NEFT at least one day in advance to the last day of tender submission as certain amount of time is required for settlement and various parties are involved. The payment may not be available for the bidder validation. In such cases bidder may not be able to submit the tender • Bidder has to make only single payment against a challan as per the amount mentioned on the challan. • Bidder must do the payment before tender validity gets expired **Don'ts** • Bidder should not enter erroneous details while filling the NEFT/RTGS form at their bank. The following possibilities may arise: 1) Incorrect IFSC code mentioned: - Transaction would be rejected and the amount would be refunded back in to the bidders account 2) Incorrect Beneficiary account number mentioned (<client code> + <random number>): - a) In case, the beneficiary account number mentioned is incorrect the transaction would be rejected and the bid would not be accepted. 3) Incorrect Amount mentioned: The amount would be rejected if the amount mentioned in while making the payment is incorrect. Such cases will be captured as unreconciled transactions and will be auto-refunded directly to bidder's account. In the event of any discrepancy, payment would not be considered and bidder would not be allowed to bid/ participate. • Bidder is not supposed to use challan generated in one tender for payment against another tender since details in the challan are unique to the tender and bidder combination. • Bidder must not make multiple or split payments against a particular challan. Any split payment received against the same challan will be refunded back to the bidder.

		• Bidder would not be entitled to claim that he is deprived of participating in the tender because his funds are blocked with the division on account of incorrect payment made by the bidder
2	**In the event of making Payment through OTC**	**Do's** It is the bidder's responsibility to ensure that OTC payments are made to the exact details as mentioned in the challan which are: Beneficiary account no: <client code> + <random number> Amount: As mentioned on the challan It is specific for every tender/transaction Beneficiary name: As per the challan Bidder has to make only single payment against a challan as per the amount mentioned on the challan Bidder must do the payment before tender validity gets expired Bidder needs to mandatorily upload the scan copy of the payment receipt issued by ICICI Bank, in Nextender Portal before submitting the Tender
		Don'ts • If the bidding amount is greater than Rs49,999, then • Bidder should not make payment in cash. In this case, • Bidder should pay via Demand Draft/ICICI Bank Cheque • It is bidder's responsibility to ensure that Demand draft should be valid and should not have discrepancies such as signature not found, stale DD, mutilated, material alteration, favouring third party etc., In the event of Demand Draft returned by bidder's Bank on account of such discrepancies, ICICI Bank shall ensure that such communication is sent to the Client within 3 days from the date of rejection by the Bidder's Bank • For every tender, details in the challan are different and specific to that tender only. Bidder should not make use of a challan for making payment for another tenders' EMD

COVERING LETTER:

Format of letter to be submitted with the Tender for Procurement Of Equipment & Services to Upgrade University Digital Network, **University Computer Centre**, M.D. University, Rohtak- 124001.

TO,

Deputy Registrar
Purchase & Supply Branch
MD University
Rohtak – 124001 (Haryana)

SUB: PROCUREMENT OF EQUIPMENT & SERVICES TO UPGRADE UNIVERSITY DIGITAL NETWORK TO UNIVERSITY COMPUTER CENTRE ROHTAK.

Dear Sir,

1. This is with reference to your TENDER notice dated …….. I have examined the TENDER document and understood its contents. I hereby submit **Procurement Of Equipment & Services to Upgrade University Digital Network University Computer Centre**, M.D. University, Rohtak-124001,
2. The Bid is unconditional for the said Tender. This bid is valid for a period not less than 180 days.
3. It is acknowledged that the Authority will be relying on the information provided in the Tender and the documents accompanying such Tender for qualification of the bidders for the above subject items and we certify that all information provided in the Tender and in Annexures are true and correct; nothing has been misrepresented and omitted which renders such information misleading; and all documents accompanying the bid are true copies of their respective originals.
4. This statement is made for the express purpose of the above mentioned subject.
5. We shall make available to the Authority any additional information it may find necessary or require to supplement or authenticate the Qualification statement.
6. We acknowledge the right of the Authority to reject our bid without assigning any reason or otherwise and hereby relinquish, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.
7. It is declared that:
   a) We have examined the Tender document and have no reservations to the Tender document.
   b) We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in respect of any Bid or request for proposal issued by or any Agreement entered into with the
   Authority or any other public sector enterprise or any Government, Central, State or local.
8. It is understood that the University may cancel the Bidding Process at any time without incurring any liability to the University and that you are neither bound to invite the applicants to Bid for the items nor to accept any bid that you may receive.
9. It is understood that the University can use any evaluation scheme/evaluation metrics/weightage or take the help of any consultant, as required in selecting the successful

agency/agencies and we agree to abide by it.

10. It is certified that we have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the Services or which relates to a grave offence that outrages the moral sense of the community.
11. It is here by certified that the firm has not been debarred/blacklisted for any reason/period by any central/state Govt. department/University/PSU etc. if so particulars of the same may be furnished. Concealments of facts shall not only lead to cancellation of the order but may also warrant legal action. University may reject bids of firms which has been blacklisted at any time.
12. It is hereby affirmed that we are in compliance of/shall comply with the statutory requirements, as applicable.
13. We hereby irrevocably relinquish any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Authority in connection with the selection of bidders, selection of the Tenderer, or in connection with the selection/Bidding Process itself, in respect of the above mentioned items and the terms and implementation thereof.
14. We agree to undertake to abide by all the terms and conditions of the TENDER document.
15. We agree to undertake to be liable for all the obligations of the Tenderer under the Agreement. In witness thereof, we submit this application under and in accordance with the terms of the TENDER document.

Place:- …….

Date :……..

Yours faithfully,

(Signature, name and designation of the Tenderer/Authorized Signatory)

Official Seal

CHECK LIST FOR DOCUMENTS TO BE SUBMITTED ALONGWITH TECHNICAL BID

1. Processing Charge Rs. 4000/- through Demand Draft (Non-Refundable).
2. Bid document signed & stamped on each page.
3. A photocopy of the Authorization Certificate from OEMs.
4. Power of Attorney, as applicable, on company letter head.
5. Details of service support centers located in Delhi/NCR/Haryana.
6. EMD 2% of total Bid Amount.
7. Attested photocopies of Income **Tax and Sales Tax returns** for the last three Financial Years (2011-12, 2012-13, 2013-14).
8. Contact details of 5 customers, along with P.O. photocopy and/or installation report.
9. Financial Bid in separate sealed envelope.
10. A duly attested photo copy of the Firm Registration number and PAN Number.
11. Any other information that the bidder may like to submit in support of his capabilities and performance etc.

NOTE

1. In case of any queries on technical specifications, please refer the specifications mentioned in "Annexure A" only.
2. Delivery to be made at :

   UNIVERSITY COMPUTER CENTRE ROHTAK
   MD University
   Rohtak-124 001
   Haryana, India
3. VAT will be at concessional rates, as applicable to non-profit, own-use institutions.
4. Filled quotations may be personally submitted DIRECTOR UCC Branch Rohtak or sent through Registered Post or Courier addressed to:

   UNIVERSITY COMPUTER CENTRE ROHTAK
   MD University
   Rohtak-124 001
   Haryana, India
5. The decision of acceptance of the quotation will lie with the competent authority of University, who does not bind himself to accept the lowest quotation and who reserves the right to himself to reject or accept any or all quotations received, without assigning any reason.
6. The quotations are liable to be rejected if any of the above conditions are not fulfilled or if the bid is not accompanied with EMD and Processing Charge.
7. Number of items may vary, as required.
8. The University reserves the right to split the order among more than one Tenderers.
9. Financial Bid of the Tenderers who qualify in the Technical Bid shall be opened in presence of the authorized designated representatives and Tenderers who wish to be present there. The date of Financial Bid opening will be informed to the shortlisted bidders subsequently.
10. The University will be at liberty to involve any expert or consultant in evaluating the bid for completing the entire bid process.

SUBMISSION OF TENDER

SEALING AND MARKING OF TENDER:

1. The TENDER for **Procurement Of Equipment & Services to Upgrade University Digital Network** must be complete in all aspects and should contain requisite certificates, informative literature etc.
2. Tender Document can be downloaded from MD University Rohtak website (www.mdurohtak.ac.in).
3. This is a two part bid consisting of Technical Bid and Financial bid. The Technical and Financial bids should be sealed in separate envelopes and then both to be sealed together in one large envelope clearly superscribed on the envelope, "**Procurement Of Equipment & Services to Upgrade University Digital Network** ". The EMD shall be enclosed with the Technical Bid.

THE BID SHALL INCLUDE:

a. Forwarding letter by the Tenderer
b. All required documents
c. Tender processing charges (non-refundable)
d. Interest free EMD (Earnest Money Deposit) in the form of Demand Draft in favour of Finance Officer MD University Rohtak, payable at Rohtak, from a Nationalized Bank to be submitted with Technical Bid.
e. Technical Bid
f. Financial Bid

4. TENDER should be addressed to: -

UNIVERSITY COMPUTER CENTRE ROHTAK
MD University
Rohtak-124 001
Haryana, India

a. The TENDER should be submitted in the office of the DIRECTOR UCC Branch 3rd Floor Administrative Block MD university, Rohtak before 2.00 PM on 29.01.2015.
b. Tenders may be received through Post/courier/by hand. MDU Rohtak will not be responsible for any delay or misplace in postal receipt.

EXPENSES OF AGREEMENT:

All the expenses on the execution of the Agreement (if any) including cost of stamp or any other kind of expenditure incurred in the process of TENDER submission till final compliance shall be borne by the Tenderer.

DEADLINE FOR SUBMISSION OF BIDS:

TENDER must be received by the MD University Rohtak at the date, time and address specified in the TENDER notice/TENDER documents.

LATE BIDS:

Any TENDER received after the deadline specified for submission of TENDER shall be rejected without any further correspondence to the Tenderer.

TENDER OPENING

OPENING OF FINANCIAL BID:

Financial Bid (Tenders) of the Tenderers who qualify in the Technical Bid shall be opened in the presence of designated Authority and Tenderers who wish to be present there. The date of financial bid opening will be informed to the shortlisted bidders subsequently.

CLARIFICATION OF TENDER:

To assist in the examination, evaluation and comparison of Tender, University may at its discretion ask the Tenderers for a clarification on the Tender which is submitted by him. The request for clarification and the response shall be in writing.

EVALUATION OF TENDER:

University will be at liberty to involve any expert or consultant and use appropriate metrics and weightages in evaluating the bid for completing the entire bid process.

AWARD OF PURCHASE ORDER

Successful Tenderer shall be awarded the Purchase Order. If after accepting the Purchase Order, the agency fails to supply the items, EMD will be forfeited and the agency will be blacklisted, in addition to recourse to other penal measures. No grievance will be entertained in this regard.

6.1 University reserves the right to negotiate with eligible Tenderer before finalization of the Tender and/or contract.

6.2 University reserves the right at the time of award of Purchase Order to increase or decrease even obsolete the number of items without any change in terms and conditions.

6.3 The bidders must quote rates and other terms and conditions for all the equipment's/items failing which tender will be rejected. Total cost of the bid will be one of the important deciding factor while deciding the bid in favor or against any bidder.

NOTIFICATION OF AWARD

Prior to the expiration of the period of Tender validity, the University will inform the Tenderer appropriately that the Bid has been accepted and the Purchase Order has been awarded.

(Signature of Tenderer)

Official seal

TERMS AND CONDITIONS FOR PROCUREMENT OF EQUIPMENT & SERVICES TO UPGRADE UNIVERSITY DIGITAL NETWORK .

The* Procurement Of Equipment & Services to Upgrade University Digital Network** *as per* ***Annexure 'A' *are required to be purchased for this University. You are requested to kindly quote your rates for the same. The terms & conditions for quoting/tendering the rates given in enclosed page may also be kept in view and signed. Your tender will interalia be subject to the following conditions: -*

1. Every tender shall be accompanied by the e- tender fee of Rs.1000/- Online Payment, Rs.4,000/- as tender document fee & earnest money equal to 2% of the cost involved Online payment.
2. The sealed tender, complete in all respects, must reach the Office of the undersigned latest by 15-02-2017(date) by 2:30 p.m.(time). The same shall be opened on 15-02-2017 at 3:00 p.m. in the office of (DIRECTOR UCC). The quotes or their authorized representatives are allowed to attend the meeting of the Tender Opening Committee at their own costs.
3. The Tender received after due date and time or incomplete shall be rejected out rightly.
4. The following charges and terms may be spelt out in your offer clearly: -
   - ❖ F.O.R. Rohtak
   - ❖ Rates of VAT/Excise Duty (in percent), if any. Please note that the University does not issue Form 'C' or 'D'.
   - ❖ iii. Payment terms.
   - ❖ Delivery period.
   - ❖ Guarantee/Warranty period.
   - ❖ After-sales service.
   - ❖ Installation charges, if any.
   - ❖ Validity period of the tender.
   - ❖ Bank Draft charges, if any.
   - ❖ Misc. charges such as Packing & Forwarding charges, Insurance charges, etc., if any.
5. The packing, forwarding, freight, insurance charges etc. may be quantified in terms of amount. These charges will not be payable against such vague statement as "packing, forwarding, freight and insurance charges etc. extra".
6. Charges not mentioned in the tender shall not be paid.
7. FOR shall be M.D. University, Rohtak or Offices situated at Outstations as the case may be. The rates quoted Ex-Godown can be rejected.
8. The offer/rates must be valid for a period of at least three months from the date of opening of tender.
9. The authorized bidder must have a minimum annual turnover of Rs. 30.00 crores failing which the bid will be rejected. Proof of turn over may be appended with the bid.
10. The current price list duly authenticated by the Principals with dated signature and seal along with literature/pamphlets may be supplied along with the offer.
11. The quantity may increase or decrease or obsoleted without any notice. The University shall communicate the increase or decrease within 90 days of acceptance of tender.
12. The University is situated within the Municipal Limits. As such, Octroi, if any, shall be payable. In case, the material is supplied through a Transport Company by road, the Transport Company's charges, labour charges and octroi charges shall be borne by the supplier. It may be mentioned

specifically as to whether the material will be sent by rail or by road through a Transport Company.

13. The goods shall be supplied by the Supplier within the time limit specified in the supply order. The delivery period can be extended by the Director UCC with the approval of registrar only in exceptional cases on written request of the Supplier giving reasons/explaining circumstances due to which delivery period could not be adhered to. **In case, the material is not supplied within the delivery period, the supplier shall be liable to pay the University the compensation amount equivalent to 1% (one percent) of the cost of material per week or such other amount as the CPC/Asstt. Registrar (P & S) may decide till the supply remains incomplete, provided that the total amount of compensation shall not exceed 10% (ten percent) of the total amount of the cost of material supplied.** Appeal against these orders shall, however, lie with the Vice-Chancellor, M.D. University, Rohtak whose decision shall be final.
14. In case, the supplier/contractor fails to execute the supply order/contract on the rates, and terms and conditions as contained in the supply order within the stipulated period, they shall be liable to such action as blacklisting, debarring from having any business with this University, forfeiture of earnest money/security, besides any other action as may be deemed proper by the University.
15. As a general policy, the University tries to make 100% payment within 15 days of the receipt of material subject to proper installation, wherever applicable, and satisfaction of the Inspection Committee. No advance payment or payment against documents negotiated through Bank shall be made. However, Advance payment may be made against security for imported items to avil Custom Duty Exemption.
16. Though MDU has Import Duty, Excise Exemption Certificate but if the same is applicable, The University will make payment against receipt for the same. MDU will not pay any import handling charges
17. The acceptance of the material shall be subject to satisfactory report of this Office's Inspection Committee/Technical Committee/Experts Committee.
18. The samples of the material, if necessary and possible, shall be supplied with the tender. The unapproved samples shall be collected on receipt of information failing which the same shall be dispatched by Goods Carrier on your risk with the condition of **"Freight to Pay"**. Samples **costing less than** Rs. 100.00 shall not be returned to the **quotes**. However, if the **quotes** wish to take the same back, it can be collected at their own cost within a period of one month, failing which the samples will be disposed off.
19. The bidder should possess minimum 3 Years' experience in direct supply, installation, testing and commissioning of similar equipment/Software's and support to the Govt./Public Sector/Reputed Institutions for a minimum of 2 orders of equivalent Scale in last three years. Proof of direct dealership details i.e. OEM authorization letter/dealership certificate for supply along with Prime Customers contact details and photocopies of Purchase Order and/or installation report, to whom the similar Products Have Been supplied by the Tenderers, is required to be submitted along with the Technical Bid.
20. The vendor will also provide complete technical and operational training with no cost and the virtual lab/class will be provided the vendor at no extra cost for R&D before and after the commencement of project for at least 2 persons one time.
21. All the features present in the devices should come with all required licences from day 1.

22. All the ports should carry valid licences for enabling or disabling. No port constraint should be put as a hidden cost on MDU.
23. All Access Layers & Distribution switches should carry a warranty and support of 8x5 NBD.
24. All Core equipment's/switches should carry a warranty and support of 24x7.
25. All layer 2 switches should be manageable via GUI preferably over http/https.
26. The acceptance of the tender shall rest with the undersigned who does not bind himself to accept the lowest tender and reserves the right to reject any or all items of tender without assigning any reason therefore. The undersigned also reserves the right to accept tender in part i.e. any item or any quantity and to reject it for the rest.
27. The University is registered with the Department of Scientific & Industrial Research, Ministry of Science & Technology, New Delhi in terms of Govt. Notification No. 10/97- Central Excise dated 1 March, 1997 and Notification No. 51/96-Customs dated 23.7.1996 vide Registration No. TU/V/RG-CDE(244)/2015 dated September, 1,2015 up to 31-08-2020. Thus the University is exempted from payment of Custom Duty and Excise Duty. The consignee shall issue necessary certificates duly countersigned by the Registrar, M.D. University, Rohtak to avail of exemption.
28. It may be certified that you have not been debarred/ blacklisted for any reason/period by DGS&D, DS&D (Haryana) or any other Central/State Govt. Dept./University/PSU etc. If so, particulars of the same may be furnished. Concealment of facts shall not only lead to cancellation of the supply order, but may also warrant legal action.
29. In case, any other information/clarification is required, the undersigned may be contacted at Telephone No. 01262-393548 on any working day (Monday to Friday) during office hours (9 a.m. to 5.00 p.m.).
30. The successful bidder has to deposit a Performance Guarantee equal to 5% of annual cost of Software's, in the form of FDR/Bank Guarantee/TDR for the warranty period (3 years), in the name of Finance Officer MD University Rohtak. When Performance Guarantee/warranty is deposited, EMD will be returned subsequently.
31. The Financial Bid should be accompanied with an Earnest Money Deposit (EMD) of Rs. 2% of Bid Amount rounded to the nearest ten thousand through Online using E-tender Portal. EMD of unsuccessful bidder will be returned subsequently. No interest shall be paid on EMD.
32. The Firms registered with NSIC /NSME are exempted from Tender Fee and EMD, copy of the valid certificate must be uploaded with technical cover
33. After winning the order, if the vendor fails to deliver product and provides satisfactory Warranty, EMD will be forfeited and also the vendor will be blacklisted from participating in any future bid.
34. The Sub Committee reserves the right for negotiation thereafter if considered necessary.
35. No tender documents will be issued and rates are to be offered on Company's Letter Pad.
36. The rates should be quoted for required specifications. The technical specification of the equipment's required must accompany the tender. The decision of the University will be final with regard equipment's to be purchased.
37. The bidders must quote rates and other terms and conditions for all the equipment/items failing which tender will be rejected. Total cost of the bid will be one of the important deciding factor while deciding the bid in favour or against any bidder.
38. University reserves the right at the time of award of Work Order to increase or decrease or even delete the number of items without any change in terms and conditions.

39. The tender should be submitted only if the material is readily available in your stock or can be supplied within 45 days after the order is placed.
40. The dispute, if any, shall be subject to the jurisdiction of Courts at Rohtak. Any other jurisdiction mentioned in the tender or invoices of the manufacturers/distributors/ dealers/suppliers etc. shall be invalid and shall have no legal sanctity.
41. Terms and conditions printed on tender/Invoice of the firm, if any, shall not be binding on the University, except those mentioned specifically on the supply order, and your acceptance of the order shall be construed as your agreement to all the terms and conditions contained in the order.
42. No Consortium BID is allowed.
43. The Bidder should be doing Business in India for this particular OEM for atleast last 5 years.
44. The Bidder should be a company incorporated and registered in India Under the companies Act, 1956.
45. Bidder should be ISO 9001 Certified.

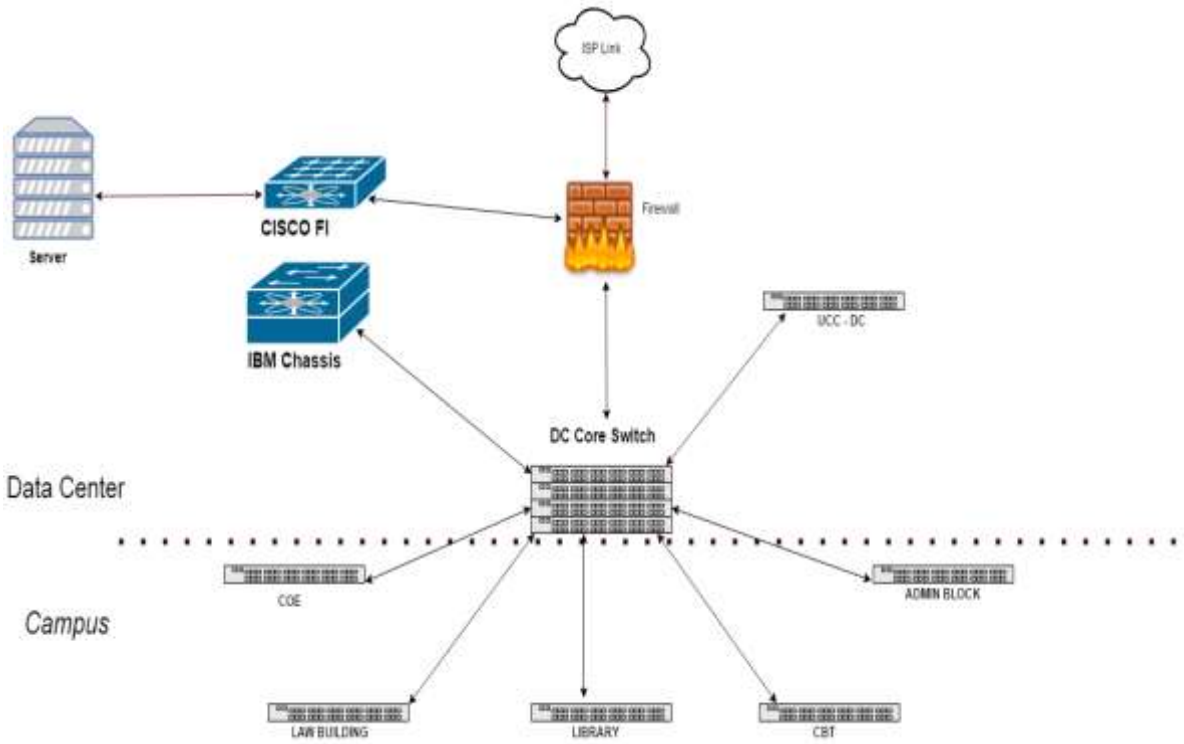
Signature _____

Name of the firm with seal/stamp _____ **M. D. University, Rohtak**

Affix Rubber Stamp of the firm

SOLUTION SCOPE

Network Diagram: -



Scope of Work (SoW)

- Blueprint of the jobs which will be carried out by the vendor needs to be pre-approved from UCC.
- Supply of all Active and Passive components as per BoQ at MDU campus, Rohtak.
- Installation, Configuration and Integration.
- Physical installation and powering of all Active and Passive as per MDU.
- Proper marking of cable, Safety Sign board/Route marker to be installed for cable laid underground and other miscellaneous work.
- Any structure, permanent or temporary, dismantled or destroyed during the execution of the work shall be refilled/remake or restore to its original condition by the contractor at his own cost.
- The required power points for the rack shall be provided by MDU.
- Configuration and Integration of all of Active and Passive components as per the approved implementation plan.

CORE SWITCH

Full Installation and Configuration Including

- Assembly of core switch i.e. installation of modules, power etc.
- Connection of Ethernet Cables on switch
- Configuring Username and Password on switch

- Configuring console, telnet access for switch
- Enable all the necessary features and feature-set
- Creation of VLAN
- Configuring IP Routing.
- Assign Interfaces to Specific VLAN's
- Configuring Trunk and Access ports
- Configuring Spanning Tree Port fast

DISTRIBUTION SWITCH

Full Installation and Configuration Including

- Termination of uplinks on Switch
- Configuring console, telnet access for switches
- Configuring Hostname, Banner for Switches
- Configuring Username and Password on Switches
- Configuring VLANs on switches
- Configuring Access, trunk Port on switches
- Configuring Management IP address for switches.
- Configuring Default route/Static route on switches.
- Configuring Inter VLAN routing if any

ACCESS SWITCHES

Full Installation and Configuration Including

- Connecting Uplinks on Switches
- Configuring console, telnet access for switches
- Configuring Hostname, Banner for Switches
- Configuring Username and Password on Switches
- Configuring VLANs on switches
- Configuring Access Port, trunk on switches
- Configuring Management IP address on switches

NMS

Full Installation and Configuration Including

- Uploading GIS/AutoCAD Map and brining all switches in that MAP
- Configuring Management IP address
- Adding License
- Adding devices to prime infrastructure
- Grouping Devices
- Setting up Network Monitoring
- The NMS should show both Physical and Logical View

Project Duration:

a. The entire work including Supply, Installation, Integration, Testing and Commissioning should be completed within **Three months** of releasing the work order.
b. The entire documentation and testing reports should be submitted within the project duration of **Three months**.

Scope of Acceptance testing and commissioning:

- After installation and configuration of each and every subsystem, integrating various systems and providing various services, tests shall be conducted for system performance as a whole.
- Commissioning shall mean end-to-end commissioning of the network with testing of live applications. Test parameters, commitments etc. shall be submitted along with implementation plan, which is shall be approved by MDU.
- Upon Self testing and Commissioning, the system shall be offered for inspection by MDU.
- The successful Bidder, along with MDU shall prepare an inspection and acceptance schedule with details of each activity

Scope of Documentation

- Providing original manuals of all hardware items supplied.
- Implementation plan, to be approved by MDU before initializing the installation and configuration activity.
- Test parameters, commitments etc. for acceptance testing to be enclosed along with Implementation plan.
- Documentation on Equipment/ rack layout plan and connectivity Diagram
- Technical write up of the network design and functioning, System and Network architecture diagram, Active and Passive components configuration details, Security implementation.
- As built network configuration details (port wise) with IP address, subnet, VLAN, port description, etc. for all active components.
- Operator manual for shutdown/start of the active resources.
- Any other Relevant Documentation

Support Technical Manpower

It is a responsibility of System Integrator (SI) to provide required to provide minimum three technical manpower to manage the total solution supplied and as per mentioned in scope document and to maintain the existing System. The scope of work covers provision of onsite technical staff in MDU from 08:00 a.m. to 06.00 p.m. (Monday to Saturday). If required, on Sundays (occasionally) and also after 06.00 p.m. on weekdays. The engineers deputed must have their own vehicles, mobile phones and necessary tools like cable tester, crimping / punching machine etc.

Any reported fault would be taken up by the support staff within 2 hour and a logbook shall be maintained in which all the records should be maintained and submit.

BOQ (CONSOLIDATED REQUIREMENT SHEET)

Proposed BoQ: as per specifications below

S. No.	Description	**Required Qty**
1.	Core Switch	1
i.	48-port 10 Gigabit SFP+ with 4-port 40 Gigabit Ethernet QSFP+ line card	2
2.	12-Port SFP+ 10G(4) Uplink Ports L3 Distribution Switch	2
3.	24-Port 1G SFP+ 10G(4) Uplink Ports L3	2
4.	24 Port Non PoE Layer-2/10g uplink Switch	2
5.	48 Port PoE 1G Switch Layer 2/Edge Switch	4
6.	24 Port PoE 1G Edge/L2 Switch	40
7.	48 Port Non PoE 1G Edge/L2 Switch	28
8.	24 Port Non PoE 1G Edge/L2 Switch	40
9.	Network Management Software	1
10.	Online UPS	
i.	1 KVA Online UPS rack mountable	25
ii.	2 KVA UPS	25
iii.	5 KVA Online UPS	2
11.	Passive Components	
i.	CAT-6 Patch Cords 2 Mtr (Siemon / Corning / Panduit / Molex / AMP)	500
ii.	CAT-6 Patch Cords 1 Mtr Approved Makes(Siemon / Corning / Panduit / Molex / Amp)	2000
iii.	Cat6 Patch Panel Loaded (Siemon / Corning / Panduit / Molex / Amp)	60
iv.	Racks	

(a)	Racks (36U, Cable manager) (APW / Rittal / Net Rack / Krone Type/ Panduit/Prasha/Comrack)	1
(b)	Racks (15 U, Cable manager) (APW / Rittal / Net Rack / Krone Type/ Panduit/Prasha/Comrack)	30
v.	Single Mode Outdoor OFC 8 core (Siemon / Corning / Panduit / Molex / Amp)	4000
vi.	Single Mode Outdoor OFC 12 core (Siemon / Corning / Panduit / Molex / Amp)	700
vii.	Single Mode Outdoor OFC 24 core (Siemon / Corning / Panduit / Molex / Amp)	4200
viii.	Optical Fiber LIU 24 Port UnLoaded (Siemon / Corning / Panduit / Molex / Amp)	34
ix.	Fiber Pigtails 1.5 Mtr. Single mode (Siemon / Corning / Panduit / Molex / Amp)	350
x.	Fiber Pigtails 1.5 Mtr. Multi mode (Siemon / Corning / Panduit / Molex / Amp)	60
xi.	Fiber Optic Patch Cords: (Siemon / Corning / Panduit / Molex / Amp)	
(a)	3 Mtrs Sc-LC Style Single Mode 50/125 Micron Duplex Patch Cord 3 Mtrs complete as required and as per specification	150
(b)	10 Mtrs LC-LC Style Single Mode 50/125 Micron Duplex Patch Cord 10 Mtrs complete as required and as per specification	50
(c)	5 Mtrs FC-SC Style Single Mode 50/125 Micron Duplex Patch Cord 5 Mtrs complete as required and as per specification	10
(d)	3 Mtrs SC-LC Style Multi Mode OM3 50/125 Micron Duplex Patch Cord 3 Mtrs complete as required and as per specification	150
xii.	UTP CAT-6 Cable (Siemon / Corning / Panduit / Molex / Amp)	100
xiii.	Information Outlet Single port(Siemon / Corning / Panduit / Molex / Amp)	1200
xiv.	Information Outlet Duplex (Siemon / Corning / Panduit / Molex / Amp)	200
xv.	CAT 6 Outside Plant Cable (Outdoor Application)	40
xvi.	HDPE PIPE	8000
xvii.	Concrete Chamber	50
xviii.	Route markers	100
xix.	Universal Joint Closure(UJC)	50
	SFP Modules	
12.	10G Base LR SFP+ Optic LC , SMF complete as per requirement and as per specification	30
13.	10G Base SR SFP+ Optic LC , MMF complete as per requirement and as per specification	30
14.	1 G Base LR SFP+ Optic LC , SMF complete as per requirement and as per specification	30

15.	1 G Base SR SFP+ Optic LC , MMF complete as per requirement and as per specification	30
Networking Job Works (rates to be Quoted per Mtr) - Complete Connectivity from switch to I/O Port with installation		
16.	Fiber Cable Laying through Conduit Pipe	
	a) Soft Digging(1.5 M depth)	
	b) Hard Digging/Moring/Chamber Installa	
	c) Etc.	
17.	UTP/STP Cabling through Conduit (including Conduit laying/fitting)	
	Underground Pipe laying with Cable with Material;	
	Outer PVC Pipe Laying with Cable with material On wall	

FIBER CABLE MEASUREMENT OF MDU ROHTAK				
SL NO	ORIGINATED FROM	DESTINATION	Core Type	LENGTH SINGLE MODE FIBRE in mtrs
1	ADMIN	SWIMMING POOL	12 Core	618
Total Fibre				618
2	COMUPUTER CENTRE	CBT	24 Core	340
3	COMPUTER CENTRE	GATE NO 6	24 Core	2090
4	COMPUTER CENTRE	CAMPUS SCHOOL	24 Core	1140
5	COMPUTER CENTRE	LAW	24 Core	540
Total Fibre				4110
6	BOYS HOSTEL MAIN GATE	DAULAGIRI RACK	6 Core	125
7	VINDHYA HOSTEL	SHIVALIK HOSTEL	6 Core	200
8	VISUAL ART	TRANSIT HOSTEL	6 Core	100
9	SWARAJ SADAN	IIM	6 Core	130
10	ADMIN	MINI AUDITORIUM	6 Core	175
11	ADMIN	PRESS	6 Core	190
12	Admin	Physical Education New Building	6 Core	300
13	CBT	Tagore	6 Core	400
14	CAMPUS SCHOOL	NEW FACILITY	6 Core	780
16	COMPUTER CENTRE	NEW VISUAL ART	6 Core	265
17	COMPUTER CENTRE	TRANSPORT OFFICE	6 Core	275
18	COMPUTER CENTRE	GATE NO 1	6 Core	200
19	COMPUTER CENTRE	GATE NO 2	6 Core	300
Total Fibre				**3440**

Technical Compliance Envelope

ANNEXURE-A

1) Core Switch

		Qty 1	
Sl. No	**Required Minimum Specification**	**Compliance (Yes/ No)**	**Vendor's Remarks**
	Physical		
A	**8 Slot Chassis**		
1	Modular, 8-slot, supports up to 8 line cards.		
2	L2 & L3 non-blocking Ethernet switch.		
3	30 terabits per second (Tbps) of backplane bandwidth.		
4	The switch supports modular line cards with 1, 10, 40, & 100 Gigabit Ethernet interfaces.		
5	The switch Supports up to 384 10 Gigabit Ethernet.		
6	288 40 Gigabit Ethernet ports in fully loaded chassis		
7	The proposed hardware/Software should support SDN/equivalent		
B	**Hardware & Software features**		
1	Maximum number of longest prefix match (LPM) routes 128,000		
2	Maximum number of IP host entries 88,000		
3	Maximum number of MAC address entries 160,000		
4	Number of multicast routes		
5	Number of multicast routes 8000 to 32,000 (without virtual Port Channel [Multi chassis ether channel])		
6	Number of multicast routes 4000 to 32,000 (with Multi chassis ether channel)		
7	Number of Interior Gateway Management Protocol (IGMP) snooping groups		

8	Number of IGMP snooping groups 8000 to 32,000 (without virtual Port Channel [Multi chassis ether channel])		
9	Number of IGMP snooping groups snooping groups 4000 to 32,000 (with Multi chassis ether channel)		
10	Number of ACL entries 5,000 to 60,000 egress		
11	Number of ACL entries 1,500 to 18,000 ingress		
12	Maximum number of VLANs 4096		
13	Maximum number of VRF instances 1000		
14	Maximum number of links in a PortChannel 32		
15	Maximum number of ECMP paths 64		
16	Maximum number of PortChannels 528		
17	Number of active Switched Port Analyzer (SPAN) sessions 4 to 32		
18	Maximum number of Rapid per-VLAN Spanning Tree (RPVST) instances 507		
19	Maximum number of Hot Standby Router Protocol (HSRP/VRRP) groups 490		
20	Maximum number of Multiple Spanning Tree (MST) instances 64		
C	**Layer 2 Features**		
1	4096 VLANs		
2	VXLAN support		
3	Reserved range remapping Private VLANs (PVLANs)*		
4	Isolated ports and promiscuous ports		
5	PVLAN on PortChannels and Multi chassis etherchannels		
6	Isolated ports		
7	Multi chassis etherchannel		
8	Spanning Tree Protocol		
9	IEEE 802.1w Rapid Spanning Tree (Rapid PVST+)		
10	IEEE 802.1s Multiple Spanning Tree (MST)		
11	Edge port and edge port trunk		

12	Extensions: Bridge Protocol Data Unit (BPDU) guard, BPDU filtering, bridge assurance, loop guard, and root guard		
13	VLAN Trunk Protocol (VTP) Versions 1 and 2 (v1 and v2): Transparent mode		
14	MAC addresses: Static		
15	Unicast and multicast		
16	IEEE 802.3x Flow Control		
17	IEEE 802.1AB Link Layer Discovery Protocol (LLDP)		
18	User-configurable interface maximum transmission unit (MTU) and jumbo frames		
19	Automatic medium-dependent-interface crossover (auto-MDIX)		
20	Unidirectional Link Detection (UDLD)		
D	**Layer 3 Features**		
	IPv4		
1	Static routes		
2	BGP, EIGRP, OSPFv2, and Intermediate System to Intermediate System (ISIS)		
3	VRF-Lite and VRF route leaking		
4	HSRPv1 and v2		
5	Virtual Router Redundancy Protocol (VRRP)		
6	Bidirectional Forwarding Detection (BFD)		
7	Dynamic Host Configuration Protocol (DHCP) relay		
	IPv6		
1	Static routes		
2	BGP and OSPFv3		
3	VRF-Lite and VRF route leaking		
4	HSRPv6		
5	VRRPv3		
6	DHCP relay		

7	BGP enhancements		
8	E-BGP next-hop is unchanged.		
9	IPv6 route updates over IPv4 peering.		
10	E-BGP scales to 1000 peers with BFD.		
11	64-way ECMP		
12	User-configurable MAC addresses (16) on routed interfaces		
E	**Multicast Features**		
1	IGMPv1, v2, and v3		
2	IGMP snooping		
3	Protocol-Independent Multicast (PIM) sparse mode (PIM-SM) and Any Source Multicast (ASM)		
4	Anycast Routing Protocol (Anycast RP)		
5	Multicast Source Discovery Protocol (MSDP)		
F	**Availability Features**		
1	Fault isolation per process		
2	ISSU		
3	Process patching		
4	Stateless process restart		
5	State full supervisor switchover		
6	Online insertion and removal (OIR) of modules without disruption of traffic		
G	**Comprehensive Monitoring Features**		
1	Online Diagnostics Capability		
2	Minimum, complete, bypass, on-demand, and health checks		
3	On-board fault logging (OBFL)		
4	Scripted event driven feature: Scheduler, monitor, and event manager		
5	Integrated packet capture and analysis with Wireshark		
6	Default SSD (chassis supervisor) for logging and data capture		

7	SPAN		
8	Source and destination on switch		
9	ERSPAN		
10	Source on switch and remote Line card module		
11	Ingress ACL filtering		
H	**Security Features**		
1	Ingress and egress ACLs using Layer 2, 3, and 4 fields		
2	Extended ACLs, MAC addresses, port ACL (PACL), VLAN ACL (VACL), and routed ACL (RACL)		
3	Flexible ACL carving		
4	ACL counters		
5	Storm control		
6	Broadcast, multicast, and unknown unicast		
7	User-configurable Control-Plane Policing (CoPP)		
8	Authentication, authorization, and accounting (AAA)		
9	Challenge Handshake Authentication Protocol (CHAP), Password Authentication Protocol (PAP), Microsoft MS-CHAP, and MS-CHAPv2		
10	Capability to disable role-based access control (RBAC) and use AAA server authentication		
11	RBAC integration to replace privilege levels		
12	Logging		
13	Test parameters		
14	VRF context support		
15	LDAP support		
16	RADIUS		
17	RBAC		
18	TACACS+		

I	Interface Types		
1	Layer 2 switch port		
2	Access and trunk (VLAN list and native VLAN tagged and untagged)		
3	Layer 3 routed		
4	Loopback interface		
5	Switched virtual interface (SVI)		
6	PortChannel		
7	Static mode		
8	IEEE 802.3ad LACP		
9	Load balancing		
10	Member link ping		
11	Minimum number of links		
J	**QOS Features**		
1	Up to 4 queues per port		
2	Modular QoS command-line interface (CLI; MQC)		
3	ACL-based classification		
4	Queuing		
5	Strict priority and strict priority remote Line card module		
6	Marking and classification		
7	Differentiated services code point (DSCP) on switch		
8	Class of service (CoS)		
9	Policing		
10	Ingress		
11	Explicit congestion notification (ECN)		
12	Weighted Random Early Detection (WRED)		
13	Priority flow control (PFC) support for up to 3 PFC classes		
K	**Device Management Features**		

1	POAP		
2	Configuration rollback		
3	Configuration session manager		
4	FTP, SFTP, and TFTP client		
5	Network Time Protocol (NTP)		
6	Client, peer, server, ACL, and authentication		
7	Remote copy (RCP) and secure copy (SCP) client		
8	Remote monitor (RMON)		
9	Must support Proactive Diagnostics and Real-Time Alert feature; Automatically detects faults and generates a service request to the vendor engineering support centre and that is routed to designated call centre team for the specific Fault.		
10	Simple Network Management Protocol (SNMP) v1, v2, and v3		
11	Syslog		
12	Virtual terminal (vty)		
13	XML (Netconf)		
14	Secure Shell (SSH) v2 (client and server)		
15	Telnet (client and server)		
16	USB port		
17	100/1000-Gbps management port		
18	RS-232 serial console port		
19	Support for copy <file> start		
20	Locator LED (beacon) for line cards (chassis) and uplink modules (ToR)		
L	**Extensibility & Programmability Features**		
1	Linux tools		
2	Bash shell access		
3	Python shell		
M	**Standards Compliance**		

1	EEE 802.1D Bridging and Spanning Tree		
2	IEEE 802.1p QoS/CoS		
3	IEEE 802.1Q VLAN Tagging		
4	IEEE 802.1w Rapid Spanning Tree		
5	IEEE 802.1s Multiple Spanning Tree Protocol		
6	IEEE 802.1AB Link Layer Discovery Protocol		
7	IEEE 802.3ad Link Aggregation with LACP		
8	IEEE 802.3x Flow Control		
9	IEEE 802.3ab 1000BASE-T		
10	IEEE 802.3z Gigabit Ethernet		
11	IEEE 802.3ae 10 Gigabit Ethernet		
12	IEEE 802.3ba 40 Gigabit Ethernet		
13	RFC 2460 IPv6		
14	RFC 2461 Neighbor Discovery for IPv6		
15	RFC 2462 IPv6 Stateless Address Auto configuration		
16	RFC 2463 ICMPv6		
N	Line card Description		
1	Line module should have the 48-port 1 and 10 Gigabit Ethernet SFP+ with 4-port 40 Gigabit Ethernet QSFP+ line card.		
2	Port should have the at-least 10-MB buffer		
3	Line module should be designed for 10 and 40 Gigabit Ethernet access and aggregation switches		
4	Line rate for packets greater than 200 byte		
O	Gartner's report		
1	The OEM should be present in Gartner's leaders quadrant of unified access or DC core		

2) 12-PORT 10G SFP+ 10G(4) UPLINK PORTS L3

12-PORT SFP+ 10G(4) UPLINK PORTS L3 DISTRIBUTION SWITCH		Qty-2	
Sl. No	**Required Minimum Specification**	**Compliance (Yes/ No)**	**Vendor's Remarks**
A	**Switch Architecture**		
1	The Switch should have atleast 12 SFP+ Ethernet ports		
2	The Switch should support additional 4 x 10G Uplink ports.		
3	The Switch should support dual redundant power supplies.		
4	The Switch should also support 440W DC power supply.		
5	The Switch should be Stackable with 480Gbps stacking bandwidth from Day 1 with Stack Power capabilities.		
6	The Switch Architecture should be able to Stack atleast 4 Switches together.		
7	The Switch stack should be based on Distributed forwarding Architecture, where in each stack member forwards its own information on network.		
8	The Switch Stack Architecture should have centralized control and Management plane with Active Switch and all the information should be Synchronized with Standby Switch.		
9	The Switch should support Stateful Switchover (SSO) when switching over from Active to Standby switch in a Stack.		
10	The Switch Stack Architecture should be Plug & Play for attaching or removing any switch from the stack without any downtime.		
11	The Switch Stack Architecture should allow the end user to stack 24 Port Switch with 48 Port of the same model.		
12	The Switch should be based on a Modular OS Architecture capable of hosting applications.		
13	The Switch should have RJ45 & Mini USB Console Ports for Management		
14	The Switch should have USB 2.0 for OS Management (uploading, downloading & booting of OS and Configuration)		
15	The Switch should have Front to Back Airflow system.		

16	The Switch should have Multicore CPU Architecture.		
17	The Switch should have atleast 2GB of Flash for storing OS and other Logs.		
18	The Switch should have atleast 4GB of DRAM.		
19	The Switch should have atleast 1 10/100/1000 dedicated Ethernet Management Port		
20	The Switch should have atleast 3 fans and incase of failure of any one of those the other fans should automatically speed up. Fans should be field replaceable.		
21	The Switch should have power savings mechanism wherein it should reduce the power consumption on ports not being used.		
22	The switch should be Rack Mountable and should not take space more than 1RU.		
B	**Switch Performance**		
1	The Switch should have at least 320Gbps non-blocking switching bandwidth.		
2	The switch should have at least 227Mpps of forwarding rate.		
3	The Switch should have atleast 480Gbps Stack Bandwidth.		
4	The Switch should support atleast 32000 MAC Addresses		
5	The Switch should support atleast 24000 IPv4 routes		
6	The Switch should support atleast 4000 VLAN ID's & 1000 SVI's.		
8	The Switch support support 9198 bytes of Jumbo Frames		
C	**Layer 3 Features**		
1	The switch should support routing protocols such OSPF, BGPv4, IS-ISv4.		
2	The Switch should support IPv6 Routing capable protocols such as OSPFv3 in hardware.		
3	The Switch should support Policy Based Routing (PBR)		
4	The Switch should support IP Multicast and PIM, PIM Sparse Mode, PIM Dense Mode, PIM Sparse-dense Mode & Source-Specific Multicast for Wired Clients.		
5	The switch should support basic IP Unicast routing protocols (static, RIPv1 & RIPv2) should be supported.		
6	The switch should support IPv6 & IPv4 Policy Based Routing (PBR)		
D	**Layer 2 Features**		

1	The Switch should be able to discover (on both IPv4 & IPv6 Network) the neighbouring device giving the details about the platform, IP Address, Link connected through etc., thus helping in troubleshooting connectivity problems..		
2	The switch should support Detection of Unidirectional Links (in case of fibre cut) and to disable them to avoid problems such as spanning-tree loops.		
3	The switch should support centralized VLAN Management, VLANs created on the core switch should be propagated automatically.		
4	The switch should support 802.1d, 802.1s, 802.1w Spanning-Tree & its Enhancement for fast convergence.		
5	The switch should support 802.1q VLAN encapsulation.		
6	The switch should support 802.3ad (LACP) to combine multiple network links for increasing throughput and providing redundancy.		
E	**Network Security Features**		
1	The switch should have Port security to secure the access to an access or trunk port based on MAC address to limit the number of learned MAC addresses to deny MAC address flooding.		
2	The switch should support DHCP snooping to prevent malicious users from spoofing a DHCP server and sending out roughe addresses.		
3	The switch should support Dynamic ARP inspection (DAI) to ensure user integrity by preventing malicious users from exploiting the insecure nature of ARP.		
4	The switch should support IP source guard to prevent a malicious user from spoofing or taking over another user's IP address by creating a binding table between the client's IP and MAC address, port, and VLAN.		
5	The switch should support Unicast Reverse Path Forwarding (RPF) feature to mitigate problems caused by the introduction of malformed or forged (spoofed) IP source addresses into a network by discarding IP packets that lack a verifiable IP source address.		
6	The switch should support Bidirectional data support on the SPAN port to allow the intrusion detection system (IDS) to take action when an intruder is detected.		

7	The switch should support flexible & multiple authentication mechanism, including 802.1X, MAC authentication bypass, and web authentication using a single, consistent configuration.		
8	The switch shoud support RADIUS change of authorization and downloadable Access List for comprehensive policy management capabilities.		
9	The switch should support Private VLANs to restrict traffic between hosts in a common segment by segregating traffic at Layer 2, turning a broadcast segment into a nonbroadcast multiaccess like segment to provide security & isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic.		
10	The switch should support Multidomain authentication to allow an IP phone and a PC to authenticate on the same switch port while placing them on appropriate voice and data VLAN.		
11	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
12	The switch should support IGMP filtering to provide multicast authentication by filtering out nonsubscribers and limits the number of concurrent multicast streams available per port.		
13	The switch should support VLAN ACLs on all VLANs prevent unauthorized data flows from being bridged within VLANs.		
14	The switch should support IPv6 ACLs that can be applied to filter IPv6 traffic.		
15	The switch should support Port-based ACLs for Layer 2 interfaces to allow security policies to be applied on individual switch ports.		
16	The switch should support Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3) to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
17	The switch should support TACACS and RADIUS authentication to facilitate centralized control of the switch and restricts unauthorized users from altering the configuration.		
18	The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
19	The switch should support Bridge protocol data unit (BPDU) Guard to shut down Spanning Tree		

	PortFast-enabled interfaces when BPDUs are received to avoid accidental topology loops.		
20	The switch should support Spanning Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.		
21	The Switch should support IPv6 RA Guard, DHCPv6 guard, IPv6 Snooping to prevent any Man-in-middle attack.		
22	The Switch should support Dynamic VLAN, Downloadable ACLs, Multi-Auth VLAN Assignment, MAC Based Filtering & Web Authentication security mechanism.		
F	**Quality of Service (QoS) & Control**		
1	The Switch should support Advanced Modular QoS Policies		
2	The Switch should be capable of Downloading Downloadable Access List from network security engine based on user identity.		
3	The Switch should be capable of Queuing, Policing, Shaping and marking Wired Traffic based on Class of Service (CoS) or DSCP.		
4	The switch should support IP SLA feature set to verify services guarantee based on business critical IP Applications		
5	The switch should support Auto QoS for certain device types and enable egress queue configurations.		
6	The switch should support 802.1p CoS and DSCP Field classification using marking and reclassification on a per-packet basis by source and destination IP address, MAC address, or Layer 4 Transmission Control Protocol/User Datagram Protocol (TCP/UDP) port number.		
7	The switch should support Shaped round robin (SRR) scheduling to ensure differential prioritization of packet flows by intelligently servicing the ingress queues and egress queues. Weighted tail drop (WTD) to provide congestion avoidance at the ingress and egress queues before a disruption occurs. Strict priority queuing to ensure that the highest priority packets are serviced ahead of all other traffic.		
8	The Switch should support Rate limiting based on source and destination IP address, source and destination MAC address, Layer 4 TCP/UDP information, or any combination of these fields, using QoS ACLs (IP ACLs or MAC ACLs), class maps, and policy maps.		

9	The Switch should support Eight egress queues per port for wired traffic to enable differentiated management of different traffic types across the stack for wired traffic.		
G	**Standards & Compliance (Switch Should support all the mentioned Standards)**		
1	IEEE 802.1s		
2	IEEE 802.1w		
3	IEEE 802.1x		
4	IEEE 802.1x-Rev		
5	IEEE 802.3ad		
6	IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports		
7	IEEE 802.1D Spanning Tree Protocol		
8	IEEE 802.1p CoS Prioritization		
9	IEEE 802.1Q VLAN		
10	IEEE 802.3 10BASE-T specification		
11	IEEE 802.3u 100BASE-TX specification		
12	IEEE 802.3ab 1000BASE-T specification		
13	IEEE 802.3z 1000BASE-X specification		
14	RMON I and II standards		
15	SNMPv1, SNMPv2c, and SNMPv3		
H	**Safety & Compliance (Switch should support all of the mentioned standards)**		
1	FCC Part 15 (CFR 47) Class A		
2	ICES-003 Class A		
3	EN 55022 Class A		
4	CISPR 22 Class A		
5	AS/NZS 3548 Class A		
6	BSMI Class A (AC input models only)		
7	VCCI Class A		
8	EN 55024, EN300386, EN 50082-1, EN 61000-3-2, EN 61000-3-3		

9	EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN 61000-6-1		
10	UL 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1, IEC 60950-1, CCC, CE Marking		
11	UL 60950-1 Second Edition		
12	CAN/CSA-C22.2 No. 60950-1 Second Edition		
13	EN 60950-1 Second Edition		
14	IEC 60950-1 Second Edition		
16	NOM (obtained by partners and distributors)		
17	47CFR Part 15 (CFR 47) Class A (FCC Part 15 Class A)		
18	AS/NZS CISPR22 Class A		
19	CISPR22 Class A		
20	EN55022 Class A		
21	ICES003 Class A		
22	VCCI Class A		
23	EN61000-3-2		
24	EN61000-3-3		
25	KN22 Class A		
26	KCC		
27	CNS13438 Class A		
28	EN55024		
29	CISPR24		
30	KN24		
I	**Gartner's report**		
	The OEM should be present in Gartner's leaders quadrant of unified access or DC core		

3) 24-PORT 10G SFP+ 10G(4) UPLINK PORTS L3

24-PORT 1G SFP+ 10G(4) UPLINK PORTS L3			
Sr. No.	**Required Minimum Specification**	**Compliance**	**Vendor's**

		(Yes/ No)	Remarks
A	**Switch Architecture**		
1	The Switch should have atleast 24 SFP+ Ethernet ports		
2	The Switch should support additional 4 x 10G Uplink ports.		
3	The Switch should support dual redundant power supplies.		
4	The Switch should also support 440W DC power supply.		
5	The Switch should be Stackable with 480Gbps stacking bandwidth from Day 1 with Stack Power capabilities.		
6	The Switch Architecture should be able to Stack atleast 4 Switches together.		
7	The Switch stack should be based on Distributed forwarding Architecture, where in each stack member forwards its own information on network.		
8	The Switch Stack Architecture should have centralized control and Management plane with Active Switch and all the information should be Synchronized with Standby Switch.		
9	The Switch should support Stateful Switchover (SSO) when switching over from Active to Standby switch in a Stack.		
10	The Switch Stack Architecture should be Plug & Play for attaching or removing any switch from the stack without any downtime.		
11	The Switch Stack Architecture should allow the end user to stack 24 Port Switch with 48 Port of the same model.		
12	The Swich should be based on a Modular OS Architecture capable of hosting applications.		
13	The Switch should have RJ45 & Mini USB Console Ports for Management		
14	The Switch should have USB 2.0 for OS Management (uploading, downloading & booting of OS and Configuration)		
15	The Switch should have Front to Back Airflow system.		
16	The Switch should have Multicore CPU Architecture.		
17	The Switch should have atleast 2GB of Flash for storing OS and other Logs.		
18	The Switch should have atleast 4GB of DRAM.		

19	The Switch should have atleast 1 10/100/1000 dedicated Ethernet Management Port		
20	The Switch should have atleast 3 fans and incase of failure of any one of those the other fans should automatically speed up. Fans should be field replaceable.		
21	The Switch should have power savings mechanism wherein it should reduce the power consumption on ports not being used.		
22	The switch should be Rack Mountable and should not take space more than 1RU.		
B	**Switch Performance**		
1	The Switch should have atleast 640Gbps nonblocking switching bandwidth.		
2	The switch should have atleast 454Mpps of forwarding rate.		
3	The Switch should have atleast 480Gbps Stack Bandwidth.		
4	The Switch should support atleast 32000 MAC Addresses		
5	The Switch should support atleast 24000 IPv4 routes		
6	The Switch should support atleast 4000 VLAN ID's & 1000 SVI's.		
8	The Switch support support 9198 bytes of Jumbo Frames		
C	**Layer 3 Features**		
1	The switch should support routing protocols such OSPF, BGPv4, IS-ISv4.		
2	The Switch should support IPv6 Routing capable protocols such as OSPFv3 in hardware.		
3	The Switch should support Policy Based Routing (PBR)		
4	The Switch should support IP Multicast and PIM, PIM Sparse Mode, PIM Dense Mode, PIM Sparse-dense Mode & Source-Specific Multicast for Wired Clients.		
5	The switch should support basic IP Unicast routing protocols (static, RIPv1 & RIPv2) should be supported.		
6	The switch should support IPv6 & IPv4 Policy Based Routing (PBR)		
D	**Layer 2 Features**		
1	The Switch should be able to discover (on both IPv4 & IPv6 Network) the neighboring device giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems..		

2	The switch should support Detection of Unidirectional Links (in case of fiber cut) and to disable them to avoid problems such as spanning-tree loops.		
3	The switch should support centralized VLAN Management, VLANs created on the core switch should be propogated automatically.		
4	The switch should support 802.1d, 802.1s, 802.1w Spanning-Tree & itsEnhancement for fast convergence.		
5	The switch should support 802.1q VLAN encapsulation.		
6	The switch should support 802.3ad (LACP) to combine multiple network links for increasing throughput and providing redundancy.		
E	**Network Security Features**		
1	The switch should have Port security to secure the access to an access or trunk port based on MAC address to limit the number of learned MAC addresses to deny MAC address flooding.		
2	The switch should support DHCP snooping to prevent malicious users from spoofing a DHCP server and sending out roughe addresses.		
3	The switch should support Dynamic ARP inspection (DAI) to ensure user integrity by preventing malicious users from exploiting the insecure nature of ARP.		
4	The switch should support IP source guard to prevent a malicious user from spoofing or taking over another user's IP address by creating a binding table between the client's IP and MAC address, port, and VLAN.		
5	The switch should support Unicast Reverse Path Forwarding (RPF) feature to mitigate problems caused by the introduction of malformed or forged (spoofed) IP source addresses into a network by discarding IP packets that lack a verifiable IP source address.		
6	The switch should support Bidirectional data support on the SPAN port to allow the intrusion detection system (IDS) to take action when an intruder is detected.		
7	The switch should support flexible & multiple authentication mechanism, including 802.1X, MAC authentication bypass, and web authentication using a single, consistent configuration.		
8	The switch shoud support RADIUS change of authorization and downloadable Access List for		

	comprehensive policy management capabilities.		
9	The switch should support Private VLANs to restrict traffic between hosts in a common segment by segregating traffic at Layer 2, turning a broadcast segment into a nonbroadcast multiaccess like segment to provide security & isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic.		
10	The switch should support Multidomain authentication to allow an IP phone and a PC to authenticate on the same switch port while placing them on appropriate voice and data VLAN.		
11	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
12	The switch should support IGMP filtering to provide multicast authentication by filtering out nonsubscribers and limits the number of concurrent multicast streams available per port.		
13	The switch should support VLAN ACLs on all VLANs prevent unauthorized data flows from being bridged within VLANs.		
14	The switch should support IPv6 ACLs that can be applied to filter IPv6 traffic.		
15	The switch should support Port-based ACLs for Layer 2 interfaces to allow security policies to be applied on individual switch ports.		
16	The switch should support Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3) to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
17	The switch should support TACACS and RADIUS authentication to facilitate centralized control of the switch and restricts unauthorized users from altering the configuration.		
18	The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
19	The switch should support Bridge protocol data unit (BPDU) Guard to shut down Spanning Tree PortFast-enabled interfaces when BPDUs are received to avoid accidental topology loops.		
20	The switch should support Spanning Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.		

21	The Switch should support IPv6 RA Guard, DHCPv6 guard, IPv6 Snooping to prevent any Man-in-middle attack.		
22	The Switch should support Dynamic VLAN, Downloadable ACLs, Multi-Auth VLAN Assignment, MAC Based Filtering & Web Authentication security mechanism.		
F	**Quality of Service (QoS) & Control**		
1	The Switch should support Advanced Modular QoS Policies		
2	The Switch should be capable of Downloading Downloadable Access List from network security engine based on user identity.		
3	The Switch should be capable of Queuing, Policing, Shaping and marking Wired Traffic based on Class of Service (CoS) or DSCP.		
4	The switch should support IP SLA feature set to verify services guarantee based on business critical IP Applications		
5	The switch should support Auto QoS for certain device types and enable egress queue configurations.		
6	The switch should support 802.1p CoS and DSCP Field classification using marking and reclassification on a per-packet basis by source and destination IP address, MAC address, or Layer 4 Transmission Control Protocol/User Datagram Protocol (TCP/UDP) port number.		
7	The switch should support Shaped round robin (SRR) scheduling to ensure differential prioritization of packet flows by intelligently servicing the ingress queues and egress queues. Weighted tail drop (WTD) to provide congestion avoidance at the ingress and egress queues before a disruption occurs. Strict priority queuing to ensure that the highest priority packets are serviced ahead of all other traffic.		
8	The Switch should support Rate limiting based on source and destination IP address, source and destination MAC address, Layer 4 TCP/UDP information, or any combination of these fields, using QoS ACLs (IP ACLs or MAC ACLs), class maps, and policy maps.		
9	The Switch should support Eight egress queues per port for wired traffic to enable differentiated management of different traffic types across the stack for wired traffic.		
G	**Standards & Compliance (Switch Should support all the mentioned Standards)**		

1	IEEE 802.1s		
2	IEEE 802.1w		
3	IEEE 802.1x		
4	IEEE 802.1x-Rev		
5	IEEE 802.3ad		
6	IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports		
7	IEEE 802.1D Spanning Tree Protocol		
8	IEEE 802.1p CoS Prioritization		
9	IEEE 802.1Q VLAN		
10	IEEE 802.3 10BASE-T specification		
11	IEEE 802.3u 100BASE-TX specification		
12	IEEE 802.3ab 1000BASE-T specification		
13	IEEE 802.3z 1000BASE-X specification		
14	RMON I and II standards		
15	SNMPv1, SNMPv2c, and SNMPv3		
H	**Safety & Compliance (Switch should support all of the mentioned standards)**		
1	FCC Part 15 (CFR 47) Class A		
2	ICES-003 Class A		
3	EN 55022 Class A		
4	CISPR 22 Class A		
5	AS/NZS 3548 Class A		
6	BSMI Class A (AC input models only)		
7	VCCI Class A		
8	EN 55024, EN300386, EN 50082-1, EN 61000-3-2, EN 61000-3-3		
9	EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN 61000-6-1		
10	UL 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1, IEC 60950-1, CCC, CE Marking		
11	UL 60950-1 Second Edition		

12	CAN/CSA-C22.2 No. 60950-1 Second Edition		
13	EN 60950-1 Second Edition		
14	IEC 60950-1 Second Edition		
15	GOST		
16	NOM (obtained by partners and distributors)		
17	47CFR Part 15 (CFR 47) Class A (FCC Part 15 Class A)		
18	AS/NZS CISPR22 Class A		
19	CISPR22 Class A		
20	EN55022 Class A		
21	ICES003 Class A		
22	VCCI Class A		
23	EN61000-3-2		
24	EN61000-3-3		
25	KN22 Class A		
26	KCC		
27	CNS13438 Class A		
28	EN55024		
29	CISPR24		
30	KN24		
	Gartner's report		
1	The OEM should be present in Gartner's leaders quadrant of unified access or DC core		

4) 24 PORT NON POE LAYER-2/10G UPLINK SWITCH

24 PORT NON POE LAYER-2/10G UPLINK SWITCH			
Sr. No	**Specifications**	**Compliance (Yes/ No)**	**Vendor's Remarks**

A	**General Features**		
1	The switch should support a minimum of 24 nos. 10/100/1000 Ethernet Ports		
2	The switch should support a minimum of 2 SFP+ Uplinks		
3	The switch should support 2x10G SFP+ modules		
4	The switch should support 2x1G SFP modules		
5	The switch should support a min of 26 Ports		
6	The switch should support MTBF of 569520 hours		
B	**Performance and Scalability**		
1	The switch should support Forwarding bandwidth of 108 Gbps		
2	The switch should support Full-duplex Switching bandwidth of 216 Gbps		
3	The switch should support 64-Byte Packet Forwarding Rate of 95.2 Mpps		
4	The switch should support a Dual Core CPU		
5	The switch should support 128 MB of Flash memory		
6	The switch should support 512 MB of DRAM		
7	The switch should support 1023 VLANs		
8	The switch should support 4096 VLAN IDs		
9	The switch should support Jumbo frames of 9216 bytes		
10	The switch should support Maximum transmission unit (MTU) of 9198 bytes		
11	The switch should support 16000 Unicast MAC addresses		
C	**Dimension**		
1	The Switch should be 1RU		
2	The switch should support Operating temperature up to 5000 ft (1500 m) -5º to 45ºC		
3	The switch should support Operating relative humidity 10% to 95% noncondensing		
D	**Stacking**		
1	The switch should support Stacking		
2	Stacking should enable all switches to function as a single unit		
3	The switch should support an optional Stacking Port		

4	Stacking module should be Hot-swappable		
5	Stacking should support a minimum of 2 or more Switches		
6	Stacking should support a maximum of 8 Switches		
7	Stacking should support 80 Gbps of throughput		
8	Stacking should support single IP address management for the group of switches		
9	Stacking should support single configuration		
10	Stacking should support simplified switch upgrade		
11	Stacking should support automatic upgrade when the master switch receives a new software version		
12	Stacking should support stacking cable length of 3m		
13	Stacking should support QoS to be configured across the entire stack		
E	**Power Supply**		
1	The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC		
2	The switch should support an External Redundant Power Supply		
F	**Standards**		
1	The switch should support IEEE 802.1D Spanning Tree Protocol		
2	The switch should support IEEE 802.1p		
3	The switch should support IEEE 802.1Q Trunking		
4	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)		
5	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)		
6	The switch should support IEEE 802.1x		
7	The switch should support IEEE 802.1ab (LLDP)		
8	The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
9	The switch should support IEEE 802.3ah (100BASE-X single/multimode fiber only)		
10	The switch should support IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports		

11	The switch should support IEEE 802.3 10BASE-T specification		
12	The switch should support IEEE 802.3u 100BASE-TX specification		
13	The switch should support IEEE 802.3ab 1000BASE-T specification		
14	The switch should support IEEE 802.3z 1000BASE-X specification		
15	The switch should support RMON I and II standards		
16	The switch should support SNMP v1, v2c, and v3		
G	**RFC compliance**		
1	The switch should support RFC 768 - UDP		
2	The switch should support RFC 783 - TFTP		
3	The switch should support RFC 791 - IP		
4	The switch should support RFC 792 - ICMP		
5	The switch should support RFC 793 - TCP		
6	The switch should support RFC 826 - ARP		
7	The switch should support RFC 854 - Telnet		
8	The switch should support RFC 951 - Bootstrap Protocol (BOOTP)		
9	The switch should support RFC 959 - FTP		
10	The switch should support RFC 1112 - IP Multicast and IGMP		
11	The switch should support RFC 1157 - SNMP v1		
12	The switch should support RFC 1166 - IP Addresses		
13	The switch should support RFC 1256 - Internet Control Message Protocol (ICMP) Router Discovery		
14	The switch should support RFC 1305 - NTP for accurate and consistent timestamp		
15	The switch should support RFC 1492 - TACACS+		
16	The switch should support RFC 1493 - Bridge MIB		
17	The switch should support RFC 1542 - BOOTP extensions		
18	The switch should support RFC 1643 - Ethernet Interface MIB		
19	The switch should support RFC 1757 - RMON (history, statistics, alarms, and events)		

20	The switch should support RFC 1901 - SNMP v2C		
21	The switch should support RFC 1902-1907 - SNMP v2		
22	The switch should support RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6		
23	The switch should support FRC 2068 - HTTP		
24	The switch should support RFC 2131 - DHCP		
25	The switch should support RFC 2138 - RADIUS		
26	The switch should support RFC 2233 - IF MIB v3		
27	The switch should support RFC 2373 - IPv6 Aggregatable Addrs		
28	The switch should support RFC 2460 - IPv6		
29	The switch should support RFC 2461 - IPv6 Neighbor Discovery		
30	The switch should support RFC 2462 - IPv6 Autoconfiguration		
31	The switch should support RFC 2463 - ICMP IPv6		
32	The switch should support RFC 2474 - Differentiated Services (DiffServ) Precedence		
33	The switch should support RFC 2597 - Assured Forwarding		
34	The switch should support RFC 2598 - Expedited Forwarding		
35	The switch should support RFC 2571 - SNMP Management		
36	The switch should support RFC 3046 - DHCP Relay Agent Information Option		
37	The switch should support RFC 3376 - IGMP v3		
38	The switch should support RFC 3580 - 802.1X RADIUS		
H	**Layer-2 Features**		
1	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors		
2	The switch should support IEEE 802.1Q VLAN encapsulation		
3	The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically		
4	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence		

5	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability		
6	The switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.		
7	The switch should support IGMP filtering		
8	The switch should support discovery of the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
9	The switch should support Per-port broadcaststorm control to prevent faulty end stations from degrading overall systems performance		
10	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance		
11	The switch should support Per-port unicast storm control to prevent faulty end stations from degrading overall systems performance		
12	The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN		
13	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth		
14	The switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.		
15	The switch should support Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.		
16	The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.		

17	The switch should support IGMP v1, v2 Snooping		
18	The switch should support IGMP v3 Snooping		
19	The switch should support IGMP v1, v2 Filtering		
20	The switch should support IGMP Snooping Timer		
21	The switch should support IGMP Throttling		
22	The switch should support IGMP Querier		
23	The switch should support Configurable IGMP Leave Timer		
24	The switch should support MVR (Multicast VLAN Registration)		
I	**L3 Features**		
1	The switch should support Inter-VLAN routing		
2	The switch should support IPv4 unicast Static Routing		
3	The switch should support 16 IPv4 Static routes		
J	**Smart Operations**		
1	The switch should support configuration of the Software image and switch configuration without user intervention		
2	The switch should support automatic configuration as devices connect to the switch port		
3	The switch should support diagnostic commands to debug issues		
4	The switch should support system health checks within the switch		
5	The switch should support Online Diagnostics		
K	**Quality of Service (QoS) & Control**		
1	The switch should support 4 egress queues per port to enable differentiated management		
2	The switch should support scheduling techniques for Qos		
3	The switch should support Weighted tail drop (WTD) to provide congestion avoidance		
4	The switch should support Standard 802.1p CoS field classification		
5	The switch should support Differentiated services code point (DSCP) field classification		
6	The switch should support Control- and Data-plane QoS ACLs		
7	The switch should support Strict priority queuing mechanisms		

8	The switch should support Rate Limitting function to guarantee bandwidth		
9	The switch should support rate limiting based on source and destination IP address		
10	The switch should support rate limiting based on source and destination MAC address		
11	The switch should support rate limiting based on Layer 4 TCP and UDP information		
12	The switch should support availability of up to 256 aggregate or individual polices per port.		
L	**Management**		
1	The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.		
2	The switch should support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis		
3	The switch should support Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination.		
4	The switch should support Trivial File Transfer Protocol (TFTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
5	The switch should support SNMP v1, v2c, and v3 of-band management.		
6	The switch should support Telnet interface support for comprehensive in-band management of-band management.		
7	The switch should support CLI-based management, GUI based Management console to provide detailed out-of-band management.		
8	The switch should support Serial Console Port		
9	The switch should support USB Console Port		
10	The switch should support SNMPv1, SNMPv2c, and SNMPv3, http, https		
M	**Miscellaneous**		
1	The switch should support greener practices		
2	The switch should support solutions that monitors and conserves energy with customized policies		
3	The switch should support reduction of greenhouse gas (GHG) emissions		
4	The switch should support an increase in energy cost savings		

5	The switch should support sustainable business behaviour		
6	The switch should support Efficient switch operation		
7	The switch should support Intelligent power management		
8	The switch should support measuring of energy between itself and endpoints		
9	The switch should support control of energy between itself and endpoints		
10	The switch should support discovery of manageable devices for Energy measurement		
11	The switch should support monitoring of power consumption of endpoints		
12	The switch should support taking of action based on business rules to reduce power consumption		
N	**Network security features.**		
1	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
2	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.		
3	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
4	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
5	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
6	The switch should support Port security to secure the access to an access or trunk port based on MAC address.		
7	The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
8	The switch should support Private VLAN		
O	**DHCP Features**		
1	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addressesDHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.		

2	The switch should support DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.		
3	The switch should support DHCP Option 82 data Insertion		
4	The switch should support DHCP Option 82 Pass Through		
5	The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID		
6	The switch should support DHCP Snooping Statistics and SYSLOG		
P	**IPv6 Features**		
1	The switch should be on the approved list of IPv6 Ready Logo phase II - Host		
2	The switch should support IPv6 unicast Static Routing		
3	The switch should support 16 IPv6 Static routes		
4	The switch should support IPv6 MLDv1 & v2 Snooping		
5	The switch should support IPv6 Host support for IPv6 Addressing		
6	The switch should support IPv6 Host support for IPv6 Option processing		
7	The switch should support IPv6 Host support for IPv6 Fragmentation		
8	The switch should support IPv6 Host support for IPv6 ICMPv6		
9	The switch should support IPv6 Host support for IPv6 TCP/UDP over IPv6		
10	The switch should support IPv6 Host support for IPv6 Ping		
11	The switch should support IPv6 Host support for IPv6 Traceroute		
12	The switch should support IPv6 Host support for IPv6 VTY		
13	The switch should support IPv6 Host support for IPv6 SSH		
14	The switch should support IPv6 Host support for IPv6 TFTP,		
15	The switch should support IPv6 Host support for IPv6 SNMP for IPv6 objects		
16	The switch should support IPv6 Port Access Control Lists		
17	The switch should support IPv6 Router Access Control Lists		
18	The switch should support HTTP, HTTP(s) over IPv6		
19	The switch should support SNMP over IPv6		
20	The switch should support SysLog over IPv6		

21	The switch should support IPv6 Stateless Auto Config		
22	The switch should support DHCP based Auto Config (Auto Install) and Image download		
23	The switch should support IPv6 QoS		
24	The switch should support RFC4292/RFC4293 MIBs for IPv6 traffic		
25	The switch should support SCP/SSH over IPv6		
26	The switch should support Radius over IPv6		
27	The switch should support TACACS+ over IPv6		
28	The switch should support NTPv4 over IPv6		
29	The switch should support IPv6 First-Hop Security		
30	The switch should support IPv6 First Hop Security: RA Guard		
31	The switch should support IPv6 First Hop Security: DHCPv6 Guard		
32	The switch should support IPv6 First Hop Security: IPv6 Binding Integrity Guard		
Q	**Gartner's report**		
1	The OEM should be present in Gartner's leaders quadrant of unified access or DC core		

5) 48 PORT POE 1G EDGE/L2 SWITCH

48 Port PoE 1G Switch Layer 2/Edge Switch			
Sl. No	**Required Minimum Specification**	**Compliance (Yes/ No)**	**Vendor's Remarks**
A	**General Features**		
1.	The switch should support a minimum of 48 nos. 10/100/1000 Ethernet Ports		
2.	The switch should support a minimum of 4 SFP Uplinks		
3.	The switch should support 4x1G SFP modules		
4.	The switch should support a total of 52 Ports		
5.	The switch should support MTBF of 276870 hours		
B	**Performance and Scalability**		
1.	The switch should support Forwarding bandwidth of 108 Gbps		
2.	The switch should support Full-duplex Switching bandwidth of 216 Gbps		
3.	The switch should support 64-Byte Packet Forwarding Rate of 107.1 Mpps		
4.	The switch should support a Dual Core CPU		
5.	The switch should support 128 MB of Flash memory		
6.	The switch should support 512 MB of DRAM		
7.	The switch should support 1023 VLANs		
8.	The switch should support 4096 VLAN IDs		
9.	The switch should support Jumbo frames of 9216 bytes		
10.	The switch should support Maximum transmission unit (MTU) of 9198 bytes		
11.	The switch should support 16000 Unicast MAC addresses		
C	**Dimension**		
1.	The Switch should be 1RU		

2.	The switch should support Operating temperature up to 5000 ft (1500 m) -5º to 45ºC		
3.	The switch should support Operating relative humidity 10% to 95% noncondensing		
D	**Stacking**		
1.	The switch should support Stacking		
2.	Stacking should enable all switches to function as a single unit		
3.	The switch should support an optional Stacking Port		
4.	Stacking module should be Hot-swappable		
5.	Stacking should support a minimum of 2 or more Switches		
6.	Stacking should support a maximum of 8 Switches		
7.	Stacking should support 80 Gbps of throughput		
8.	Stacking should support single IP address management for the group of switches		
9.	Stacking should support single configuration		
10.	Stacking should support simplified switch upgrade		
11.	Stacking should support automatic upgrade when the master switch receives a new software version		
12.	Stacking should support stacking cable length of 3m		
13.	Stacking should support QoS to be configured across the entire stack		
E	**PoE & PoE+**		
1.	The switch should support PoE (IEEE 802.3af)		
2.	The switch should support PoE+ (IEEE 802.3at)		
3.	The switch should support flexible power allocation across all ports		
4.	The switch should have 370W of Available PoE Power		
5.	The switch should support 24 ports up to 15.4W		
6.	The switch should support 12 ports up to 30W		
7.	The switch should support Per port power consumption to specify maximum power setting on an individual port		
8.	The switch should support Per port PoE power sensing to measure actual power being drawn		

9.	The switch should support protocol to allow switch to negotiate a more granular power setting of IEEE classiffied devices		
10.	The switch should support a PoE MIB to get visibility into power usage		
11.	The switch should support a PoE MIB to set different power-level thresholds		
F	**Power Supply**		
1.	The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC		
2.	The switch should support an External Redundant Power Supply		
G	**Standards**		
1.	The switch should support IEEE 802.1D Spanning Tree Protocol		
2.	The switch should support IEEE 802.1p		
3.	The switch should support IEEE 802.1Q Trunking		
4.	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)		
5.	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)		
6.	The switch should support IEEE 802.1x		
7.	The switch should support IEEE 802.1ab (LLDP)		
8.	The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
9.	The switch should support IEEE 802.3af Power over Ethernet		
10.	The switch should support IEEE 802.3af Power Classification		
11.	The switch should support IEEE 802.3at Power over Ethernet +		
12.	The switch should support IEEE 802.3ah (100BASE-X single/multimode fiber only)		
13.	The switch should support IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports		
14.	The switch should support IEEE 802.3 10BASE-T specification		
15.	The switch should support IEEE 802.3u 100BASE-TX specification		
16.	The switch should support IEEE 802.3ab 1000BASE-T specification		
17.	The switch should support IEEE 802.3z 1000BASE-X specification		
18.	The switch should support RMON I and II standards		

19.	The switch should support SNMP v1, v2c, and v3		
H	**RFC compliance**		
20.	The switch should support RFC 768 – UDP		
21.	The switch should support RFC 783 – TFTP		
22.	The switch should support RFC 791 – IP		
23.	The switch should support RFC 792 – ICMP		
24.	The switch should support RFC 793 – TCP		
25.	The switch should support RFC 826 – ARP		
26.	The switch should support RFC 854 - Telnet		
27.	The switch should support RFC 951 - Bootstrap Protocol (BOOTP)		
28.	The switch should support RFC 959 – FTP		
29.	The switch should support RFC 1112 - IP Multicast and IGMP		
30.	The switch should support RFC 1157 - SNMP v1		
31.	The switch should support RFC 1166 - IP Addresses		
32.	The switch should support RFC 1256 - Internet Control Message Protocol (ICMP) Router Discovery		
33.	The switch should support RFC 1305 - NTP for accurate and consistent timestamp		
34.	The switch should support RFC 1492 - TACACS+		
35.	The switch should support RFC 1493 - Bridge MIB		
36.	The switch should support RFC 1542 - BOOTP extensions		
37.	The switch should support RFC 1643 - Ethernet Interface MIB		
38.	The switch should support RFC 1757 - RMON (history, statistics, alarms, and events)		
39.	The switch should support RFC 1901 - SNMP v2C		
40.	The switch should support RFC 1902-1907 - SNMP v2		
41.	The switch should support RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6		
42.	The switch should support FRC 2068 - HTTP		
43.	The switch should support RFC 2131 - DHCP		
44.	The switch should support RFC 2138 - RADIUS		

45.	The switch should support RFC 2233 - IF MIB v3		
46.	The switch should support RFC 2373 - IPv6 Aggregatable Addrs		
47.	The switch should support RFC 2460 - IPv6		
48.	The switch should support RFC 2461 - IPv6 Neighbor Discovery		
49.	The switch should support RFC 2462 - IPv6 Autoconfiguration		
50.	The switch should support RFC 2463 - ICMP IPv6		
51.	The switch should support RFC 2474 - Differentiated Services (DiffServ) Precedence		
52.	The switch should support RFC 2597 - Assured Forwarding		
53.	The switch should support RFC 2598 - Expedited Forwarding		
54.	The switch should support RFC 2571 - SNMP Management		
55.	The switch should support RFC 3046 - DHCP Relay Agent Information Option		
56.	The switch should support RFC 3376 - IGMP v3		
57.	The switch should support RFC 3580 - 802.1X RADIUS		
I	**Layer-2 Features**		
1.	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors		
2.	The switch should support IEEE 802.1Q VLAN encapsulation		
3.	The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically		
4.	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence		
5.	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability		
6.	The switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.		
7.	The switch should support IGMP filtering		
8.	The switch should support discovery of the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting		

	connectivity problems.		
9.	The switch should support Per-port broadcaststorm control to prevent faulty end stations from degrading overall systems performance		
10.	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance		
11.	The switch should support Per-port unicast storm control to prevent faulty end stations from degrading overall systems performance		
12.	The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN		
13.	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth		
14.	The switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.		
15.	The switch should support Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.		
16.	The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.		
17.	The switch should support IGMP v1, v2 Snooping		
18.	The switch should support IGMP v3 Snooping		
19.	The switch should support IGMP v1, v2 Filtering		
20.	The switch should support IGMP Snooping Timer		
21.	The switch should support IGMP Throttling		
22.	The switch should support IGMP Querier		
23.	The switch should support Configurable IGMP Leave Timer		
24.	The switch should support MVR (Multicast VLAN Registration)		

J	**L3 Features**		
1.	The switch should support Inter-VLAN routing		
2.	The switch should support IPv4 unicast Static Routing		
3.	The switch should support 16 IPv4 Static routes		
K	**Smart Operations**		
1.	The switch should support configuration of the Software image and switch configuration without user intervention		
2.	The switch should support automatic configuration as devices connect to the switch port		
3.	The switch should support diagnostic commands to debug issues		
4.	The switch should support system health checks within the switch		
5.	The switch should support Online Diagnostics		
L	**Quality of Service (QoS) & Control**		
1.	The switch should support 4 egress queues per port to enable differentiated management		
2.	The switch should support scheduling techniques for Qos		
3.	The switch should support Weighted tail drop (WTD) to provide congestion avoidance		
4.	The switch should support Standard 802.1p CoS field classification		
5.	The switch should support Differentiated services code point (DSCP) field classification		
6.	The switch should support Control- and Data-plane QoS ACLs		
7.	The switch should support Strict priority queuing mechanisms		
8.	The switch should support Rate Limitting function to guarantee bandwidth		
9.	The switch should support rate limiting based on source and destination IP address		
10.	The switch should support rate limiting based on source and destination MAC address		
11.	The switch should support rate limiting based on Layer 4 TCP and UDP information		
12.	The switch should support availability of up to 256 aggregate or individual polices per port.		
M	**Management**		
1.	The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.		

2.	The switch should support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis		
3.	The switch should support Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination.		
4.	The switch should support Trivial File Transfer Protocol (TFTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
5.	The switch should support SNMP v1, v2c, and v3 of-band management.		
6.	The switch should support Telnet interface support for comprehensive in-band management of-band management.		
7.	The switch should support CLI-based management console to provide detailed out-of-band management.		
8.	The switch should support Serial Console Port		
9.	The switch should support USB Console Port		
10.	The switch should support SNMPv1, SNMPv2c, and SNMPv3		
N	**Miscellaneous**		
1.	The switch should support greener practices.		
2.	The switch should support solutions that monitors and conserves energy with customized policies.		
3.	The switch should support reduction of greenhouse gas (GhG) emissions.		
4.	The switch should support an increase in energy cost savings.		
5.	The switch should support sustainable business behaviour.		
6.	The switch should support Efficient switch operation.		
7.	The switch should support Intelligent power management.		
8.	The switch should support measuring of energy between itself and endpoints.		
9.	The switch should support control of energy between itself and endpoints.		
10.	The switch should support discovery of manageable devices for Energy measurement.		
11.	The switch should support support monitoring of power consumption of endpoints.		
12.	The switch should support taking of action based on business rules to reduce power consumption.		

O	Network security features		
1.	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
2.	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.		
3.	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
4.	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
5.	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
6.	The switch should support Port security to secure the access to an access or trunk port based on MAC address.		
7.	The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
8.	The switch should support Private VLAN		
P	**DHCP Features**		
1.	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addressesDHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.		
2.	The switch should support DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.		
3.	The switch should support DHCP Option 82 data Insertion		
4.	The switch should support DHCP Option 82 Pass Through		
5.	The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID		
6.	The switch should support DHCP Snooping Statistics and SYSLOG		
Q	**IPv6 Features**		

1.	The switch should be on the approved list of IPv6 Ready Logo phase II - Host		
2.	The switch should support IPv6 unicast Static Routing		
3.	The switch should support 16 IPv6 Static routes		
4.	The switch should support IPv6 MLDv1 & v2 Snooping		
5.	The switch should support IPv6 Host support for IPv6 Addressing		
6.	The switch should support IPv6 Host support for IPv6 Option processing		
7.	The switch should support IPv6 Host support for IPv6 Fragmentation		
8.	The switch should support IPv6 Host support for IPv6 ICMPv6		
9.	The switch should support IPv6 Host support for IPv6 TCP/UDP over IPv6		
10.	The switch should support IPv6 Host support for IPv6 Ping		
11.	The switch should support IPv6 Host support for IPv6 Traceroute		
12.	The switch should support IPv6 Host support for IPv6 VTY		
13.	The switch should support IPv6 Host support for IPv6 SSH		
14.	The switch should support IPv6 Host support for IPv6 TFTP,		
15.	The switch should support IPv6 Host support for IPv6 SNMP for IPv6 objects		
16.	The switch should support IPv6 Port Access Control Lists		
17.	The switch should support IPv6 Router Access Control Lists		
18.	The switch should support HTTP, HTTP(s) over IPv6		
19.	The switch should support SNMP over IPv6		
20.	The switch should support SysLog over IPv6		
21.	The switch should support IPv6 Stateless Auto Config		
22.	The switch should support DHCP based Auto Config (Auto Install) and Image download		
23.	The switch should support IPv6 QoS		
24.	The switch should support RFC4292/RFC4293 MIBs for IPv6 traffic		
25.	The switch should support SCP/SSH over IPv6		
26.	The switch should support Radius over IPv6		
27.	The switch should support TACACS+ over IPv6		

28.	The switch should support NTPv4 over IPv6		
29.	The switch should support IPv6 First-Hop Security		
30.	The switch should support IPv6 First Hop Security: RA Guard		
31.	The switch should support IPv6 First Hop Security: DHCPv6 Guard		
32.	The switch should support IPv6 First Hop Security: IPv6 Binding Integrity Guard		
R	**Gartner's report**		
1.	The OEM should be present in Gartner's leaders quadrant of unified access or DC core		

6) 24 PORT POE 1G EDGE/L2 SWITCH

24 Port PoE Edge 1G Switch			
Sl. No	**Specifications**	**Compliance (Yes/ No)**	**Vendor's Remarks**
A	**General Features**		
1	The switch should support a minimum of 24 nos. 10/100/1000 Ethernet Ports	Yes	
2	The switch should support a minimum of 4 SFP Uplinks	Yes	
3	The switch should support 4x1G SFP modules	Yes	
4	The switch should support a total of 28 Ports	Yes	
5	The switch should support MTBF of 324280 hours	Yes	
B	**Performance and Scalability**		
1	The switch should support Forwarding bandwidth of 108 Gbps	Yes	
2	The switch should support Full-duplex Switching bandwidth of 216 Gbps	Yes	
3	The switch should support 64-Byte Packet Forwarding Rate of 71.4 Mpps	Yes	
4	The switch should support a Dual Core CPU	Yes	
5	The switch should support 128 MB of Flash memory	Yes	
6	The switch should support 512 MB of DRAM	Yes	
7	The switch should support 1023 VLANs	Yes	
8	The switch should support 4096 VLAN IDs	Yes	
9	The switch should support Jumbo frames of 9216 bytes	Yes	
10	The switch should support Maximum transmission unit (MTU) of 9198 bytes	Yes	
11	The switch should support 16000 Unicast MAC addresses	Yes	
C	**Dimension**		
1	The Switch should be 1RU	Yes	
2	The switch should support Operating temperature up to 5000 ft (1500 m) -5º to 45ºC	Yes	
3	The switch should support Operating relative humidity 10% to 95% noncondensing	Yes	
D	**Stacking**		

1	The switch should support Stacking	Yes	
2	Stacking should enable all switches to function as a single unit	Yes	
3	The switch should support an optional Stacking Port	Yes	
4	Stacking module should be Hot-swappable	Yes	
5	Stacking should support a minimum of 2 or more Switches	Yes	
6	Stacking should support a maximum of 8 Switches	Yes	
7	Stacking should support 80 Gbps of throughput	Yes	
8	Stacking should support single IP address management for the group of switches	Yes	
9	Stacking should support single configuration	Yes	
10	Stacking should support simplified switch upgrade	Yes	
11	Stacking should support automatic upgrade when the master switch receives a new software version	Yes	
12	Stacking should support stacking cable length of 3m	Yes	
13	Stacking should support QoS to be configured across the entire stack	Yes	
E	**PoE & PoE+**		
1	The switch should support PoE (IEEE 802.3af)	Yes	
2	The switch should support PoE+ (IEEE 802.3at)	Yes	
3	The switch should support flexible power allocation across all ports	Yes	
4	The switch should have 370W of Available PoE Power	Yes	
5	The switch should support 24 ports up to 15.4W	Yes	
6	The switch should support 12 ports up to 30W	Yes	
7	The switch should support Per port power consumption to specify maximum power setting on an individual port	Yes	
8	The switch should support Per port PoE power sensing to measure actual power being drawn	Yes	
9	The switch should support protocol to allow switch to negotiate a more granular power setting of IEEE classiffied devices	Yes	
10	The switch should support a PoE MIB to get visibility into power usage	Yes	
11	The switch should support a PoE MIB to set different power-level thresholds	Yes	

F	**Power Supply**		
1	The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC	Yes	
2	The switch should support an External Redundant Power Supply	Yes	
G	**Standards**		
1	The switch should support IEEE 802.1D Spanning Tree Protocol	Yes	
2	The switch should support IEEE 802.1p	Yes	
3	The switch should support IEEE 802.1Q Trunking	Yes	
4	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)	Yes	
5	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)	Yes	
6	The switch should support IEEE 802.1x	Yes	
7	The switch should support IEEE 802.1ab (LLDP)	Yes	
8	The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)	Yes	
9	The switch should support IEEE 802.3af Power over Ethernet	Yes	
10	The switch should support IEEE 802.3af Power Classification	Yes	
11	The switch should support IEEE 802.3at Power over Ethernet +	Yes	
12	The switch should support IEEE 802.3ah (100BASE-X single/multimode fiber only)	Yes	
13	The switch should support IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports	Yes	
14	The switch should support IEEE 802.3 10BASE-T specification	Yes	
15	The switch should support IEEE 802.3u 100BASE-TX specification	yes	
16	The switch should support IEEE 802.3ab 1000BASE-T specification	yes	
17	The switch should support IEEE 802.3z 1000BASE-X specification	yes	
18	The switch should support RMON I and II standards	yes	
19	The switch should support SNMP v1, v2c, and v3	yes	
H	**RFC compliance**		
1	The switch should support RFC 768 – UDP	yes	
2	The switch should support RFC 783 – TFTP	yes	
3	The switch should support RFC 791 – IP	yes	

4	The switch should support RFC 792 – ICMP	yes	
5	The switch should support RFC 793 – TCP	yes	
6	The switch should support RFC 826 – ARP	yes	
7	The switch should support RFC 854 – Telnet	yes	
8	The switch should support RFC 951 - Bootstrap Protocol (BOOTP)	yes	
9	The switch should support RFC 959 – FTP	yes	
10	The switch should support RFC 1112 - IP Multicast and IGMP	yes	
11	The switch should support RFC 1157 - SNMP v1	yes	
12	The switch should support RFC 1166 - IP Addresses	yes	
13	The switch should support RFC 1256 - Internet Control Message Protocol (ICMP) Router Discovery	yes	
14	The switch should support RFC 1305 - NTP for accurate and consistent timestamp	yes	
15	The switch should support RFC 1492 - TACACS+	yes	
16	The switch should support RFC 1493 - Bridge MIB	yes	
17	The switch should support RFC 1542 - BOOTP extensions	yes	
18	The switch should support RFC 1643 - Ethernet Interface MIB	yes	
19	The switch should support RFC 1757 - RMON (history, statistics, alarms, and events)	yes	
20	The switch should support RFC 1901 - SNMP v2C	yes	
21	The switch should support RFC 1902-1907 - SNMP v2	yes	
22	The switch should support RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6	yes	
23	The switch should support FRC 2068 – HTTP	yes	
24	The switch should support RFC 2131 – DHCP	yes	
25	The switch should support RFC 2138 – RADIUS	yes	
26	The switch should support RFC 2233 - IF MIB v3	yes	
27	The switch should support RFC 2373 - IPv6 Aggregatable Addrs	yes	
28	The switch should support RFC 2460 - IPv6	yes	
29	The switch should support RFC 2461 - IPv6 Neighbor Discovery	yes	
30	The switch should support RFC 2462 - IPv6 Autoconfiguration	yes	

31	The switch should support RFC 2463 - ICMP IPv6	yes	
32	The switch should support RFC 2474 - Differentiated Services (DiffServ) Precedence	yes	
33	The switch should support RFC 2597 - Assured Forwarding	yes	
34	The switch should support RFC 2598 - Expedited Forwarding	yes	
35	The switch should support RFC 2571 - SNMP Management	yes	
36	The switch should support RFC 3046 - DHCP Relay Agent Information Option	yes	
37	The switch should support RFC 3376 - IGMP v3	yes	
38	The switch should support RFC 3580 - 802.1X RADIUS	yes	
I	**Layer-2 Features**		
1	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors	yes	
2	The switch should support IEEE 802.1Q VLAN encapsulation	yes	
3	The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically	yes	
4	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence	yes	
5	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability	yes	
6	The switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.	yes	
7	The switch should support IGMP filtering	yes	
8	The switch should support discovery of the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.	yes	
9	The switch should support Per-port broadcaststorm control to prevent faulty end stations from degrading overall systems performance	yes	
10	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance	yes	

11	The switch should support Per-port unicast storm control to prevent faulty end stations from degrading overall systems performance	yes	
12	The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN	yes	
13	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth	yes	
14	The switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.	yes	
15	The switch should support Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.	yes	
16	The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.	yes	
17	The switch should support IGMP v1, v2 Snooping	yes	
18	The switch should support IGMP v3 Snooping	yes	
19	The switch should support IGMP v1, v2 Filtering	yes	
20	The switch should support IGMP Snooping Timer	yes	
21	The switch should support IGMP Throttling	yes	
22	The switch should support IGMP Querier	yes	
23	The switch should support Configurable IGMP Leave Timer	yes	
24	The switch should support MVR (Multicast VLAN Registration)	yes	
J	**L3 Features**		
1	The switch should support Inter-VLAN routing	yes	
2	The switch should support IPv4 unicast Static Routing	yes	
3	The switch should support 16 IPv4 Static routes	yes	
K	**Smart Operations**	yes	

1	The switch should support configuration of the Software image and switch configuration without user intervention	yes	
2	The switch should support automatic configuration as devices connect to the switch port	yes	
3	The switch should support diagnostic commands to debug issues	yes	
4	The switch should support system health checks within the switch	yes	
5	The switch should support Online Diagnostics	yes	
L	**Quality of Service (QoS) & Control**		
1	The switch should support 8 egress queues per port to enable differentiated management	yes	
2	The switch should support scheduling techniques for Qos	yes	
3	The switch should support Weighted tail drop (WTD) to provide congestion avoidance	yes	
4	The switch should support Standard 802.1p CoS field classification	yes	
5	The switch should support Differentiated services code point (DSCP) field classification	yes	
6	The switch should support Control- and Data-plane QoS ACLs	yes	
7	The switch should support Strict priority queuing mechanisms	yes	
8	The switch should support Rate Limitting function to guarantee bandwidth	yes	
9	The switch should support rate limiting based on source and destination IP address	yes	
10	The switch should support rate limiting based on source and destination MAC address	yes	
11	The switch should support rate limiting based on Layer 4 TCP and UDP information	yes	
12	The switch should support availability of up to 256 aggregate or individual polices per port.	yes	
M	**Management**		
1	The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.	yes	
2	The switch should support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis	yes	
3	The switch should support Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination.	yes	

4	The switch should support Trivial File Transfer Protocol (TFTP) to reduce the cost of administering software upgrades by downloading from a centralized location.	yes	
5	The switch should support SNMP v1, v2c, and v3 of-band management.	yes	
6	The switch should support Telnet interface support for comprehensive in-band managementof-band management.	yes	
7	The switch should support CLI-based management console to provide detailed out-of-band management.	yes	
8	The switch should support Serial Console Port	yes	
9	The switch should support USB Console Port	yes	
10	The switch should support SNMPv1, SNMPv2c, and SNMPv3	yes	
N	**Miscellaneous**		
1	The switch should support greener practices	yes	
2	The switch should support solutions that monitors and conserves energy with customized policies	yes	
3	The switch should support reduction of greenhouse gas (GhG) emissions	yes	
4	The switch should support an increase in energy cost savings	yes	
5	The switch should support sustainable business behavior	yes	
6	The switch should support Efficient switch operation	yes	
7	The switch should support Intelligent power management	yes	
8	The switch should support measuring of energy between itself and endpoints	yes	
9	The switch should support control of energy between itself and endpoints	yes	
10	The switch should support discovery of manageable devices for Energy measurement	yes	
11	The switch should support support monitoring of power consumption of endpoints	yes	
12	The switch should support taking of action based on business rules to reduce power consumption	yes	
O	**Network security features**		
1	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.	yes	
2	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.	yes	

3	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.	yes	
4	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.	yes	
5	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.	yes	
6	The switch should support Port security to secure the access to an access or trunk port based on MAC address.	yes	
7	The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.	yes	
8	The switch should support Private VLAN	yes	
P	**DHCP Features**		
1	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addressesDHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.	yes	
2	The switch should support DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.	yes	
3	The switch should support DHCP Option 82 data Insertion	yes	
4	The switch should support DHCP Option 82 Pass Through	yes	
5	The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID	yes	
6	The switch should support DHCP Snooping Statistics and SYSLOG	yes	
Q	**IPv6 Features**		
1	The switch should be on the approved list of IPv6 Ready Logo phase II - Host	yes	
2	The switch should support IPv6 unicast Static Routing	yes	
3	The switch should support 16 IPv6 Static routes	yes	
4	The switch should support IPv6 MLDv1 & v2 Snooping	yes	
5	The switch should support IPv6 Host support for IPv6 Addressing	yes	

6	The switch should support IPv6 Host support for IPv6 Option processing	yes	
7	The switch should support IPv6 Host support for IPv6 Fragmentation	yes	
8	The switch should support IPv6 Host support for IPv6 ICMPv6	yes	
9	The switch should support IPv6 Host support for IPv6 TCP/UDP over IPv6	yes	
10	The switch should support IPv6 Host support for IPv6 Ping	yes	
11	The switch should support IPv6 Host support for IPv6 Traceroute	yes	
12	The switch should support IPv6 Host support for IPv6 VTY	yes	
13	The switch should support IPv6 Host support for IPv6 SSH	yes	
14	The switch should support IPv6 Host support for IPv6 TFTP,	yes	
15	The switch should support IPv6 Host support for IPv6 SNMP for IPv6 objects	yes	
16	The switch should support IPv6 Port Access Control Lists	yes	
17	The switch should support IPv6 Router Access Control Lists	yes	
18	The switch should support HTTP, HTTP(s) over IPv6	yes	
19	The switch should support SNMP over IPv6	yes	
20	The switch should support SysLog over IPv6	yes	
21	The switch should support IPv6 Stateless Auto Config	yes	
22	The switch should support DHCP based Auto Config (Auto Install) and Image download	yes	
23	The switch should support IPv6 QoS	yes	
24	The switch should support RFC4292/RFC4293 MIBs for IPv6 traffic	yes	
25	The switch should support SCP/SSH over IPv6	yes	
26	The switch should support Radius over IPv6	yes	
27	The switch should support TACACS+ over IPv6	yes	
28	The switch should support NTPv4 over IPv6	yes	
29	The switch should support IPv6 First-Hop Security	yes	
30	The switch should support IPv6 First Hop Security: RA Guard	yes	
31	The switch should support IPv6 First Hop Security: DHCPv6 Guard	yes	
32	The switch should support IPv6 First Hop Security: IPv6 Binding Integrity Guard	yes	

R	Gartner's report		
1	The OEM should be present in Gartner's leader’s quadrant of unified access or DC core	yes	

7) 48 PORT NON POE 1G EDGE/L2 SWITCH

Sr. No	Description	Compliance (Yes/ No)	Vendor's Remarks
A	**General Features**		
1	The switch should support a minimum of 48 nos. 10/100/1000 Ethernet Ports		
2	The switch should support a minimum of 4 SFP Uplinks		
3	The switch should support 4x1G SFP modules		
4	The switch should support a total of 52 Ports		
5	The switch should support MTBF of 442,690 hours		
B	**Performance and Scalability**		
1	The switch should support Forwarding bandwidth of 108 Gbps		
2	The switch should support Full-duplex Switching bandwidth of 216 Gbps		
3	The switch should support 64-Byte Packet Forwarding Rate of 107.1 Mpps		
4	The switch should support a Dual Core CPU		
5	The switch should support 128 MB of Flash memory		
6	The switch should support 512 MB of DRAM		
7	The switch should support 1023 VLANs		
8	The switch should support 4096 VLAN IDs		
9	The switch should support Jumbo frames of 9216 bytes		
10	The switch should support Maximum transmission unit (MTU) of 9198 bytes		
11	The switch should support 16000 Unicast MAC addresses		
C	**Dimension**		
1	The Switch should be 1RU		
2	The switch should support Operating temperature up to 5000 ft (1500 m) -5º to 45ºC		
3	The switch should support Operating relative humidity 10% to 95% noncondensing		
D	**Stacking**		
1	The switch should support Stacking		

2	Stacking should enable all switches to function as a single unit		
3	The switch should support an optional Stacking Port		
4	Stacking module should be Hot-swappable		
5	Stacking should support a minimum of 2 or more Switches		
6	Stacking should support a maximum of 8 Switches		
7	Stacking should support 80 Gbps of throughput		
8	Stacking should support single IP address management for the group of switches		
9	Stacking should support single configuration		
10	Stacking should support simplified switch upgrade		
11	Stacking should support automatic upgrade when the master switch receives a new software version		
12	Stacking should support stacking cable length of 3m		
13	Stacking should support QoS to be configured across the entire stack		
E	**Power Supply**		
1	The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC		
2	The switch should support an External Redundant Power Supply		
F	**Standards**		
1	The switch should support IEEE 802.1D Spanning Tree Protocol		
2	The switch should support IEEE 802.1p		
3	The switch should support IEEE 802.1Q Trunking		
4	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)		
5	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)		
6	The switch should support IEEE 802.1x		
7	The switch should support IEEE 802.1ab (LLDP)		
8	The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
9	The switch should support IEEE 802.3ah (100BASE-X single/multimode fiber only)		
10	The switch should support IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports		
11	The switch should support IEEE 802.3 10BASE-T specification		

12	The switch should support IEEE 802.3u 100BASE-TX specification		
13	The switch should support IEEE 802.3ab 1000BASE-T specification		
14	The switch should support IEEE 802.3z 1000BASE-X specification		
15	The switch should support RMON I and II standards		
16	The switch should support SNMP v1, v2c, and v3		
G	**RFC compliance**		
1	The switch should support RFC 768 - UDP		
2	The switch should support RFC 783 - TFTP		
3	The switch should support RFC 791 - IP		
4	The switch should support RFC 792 - ICMP		
5	The switch should support RFC 793 - TCP		
6	The switch should support RFC 826 - ARP		
7	The switch should support RFC 854 - Telnet		
8	The switch should support RFC 951 - Bootstrap Protocol (BOOTP)		
9	The switch should support RFC 959 - FTP		
10	The switch should support RFC 1112 - IP Multicast and IGMP		
11	The switch should support RFC 1157 - SNMP v1		
12	The switch should support RFC 1166 - IP Addresses		
13	The switch should support RFC 1256 - Internet Control Message Protocol (ICMP) Router Discovery		
14	The switch should support RFC 1305 - NTP for accurate and consistent timestamp		
15	The switch should support RFC 1492 - TACACS+		
16	The switch should support RFC 1493 - Bridge MIB		
17	The switch should support RFC 1542 - BOOTP extensions		
18	The switch should support RFC 1643 - Ethernet Interface MIB		
19	The switch should support RFC 1757 - RMON (history, statistics, alarms, and events)		
20	The switch should support RFC 1901 - SNMP v2C		
21	The switch should support RFC 1902-1907 - SNMP v2		

22	The switch should support RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6		
23	The switch should support FRC 2068 - HTTP		
24	The switch should support RFC 2131 - DHCP		
25	The switch should support RFC 2138 - RADIUS		
26	The switch should support RFC 2233 - IF MIB v3		
27	The switch should support RFC 2373 - IPv6 Aggregatable Addrs		
28	The switch should support RFC 2460 - IPv6		
29	The switch should support RFC 2461 - IPv6 Neighbor Discovery		
30	The switch should support RFC 2462 - IPv6 Autoconfiguration		
31	The switch should support RFC 2463 - ICMP IPv6		
32	The switch should support RFC 2474 - Differentiated Services (DiffServ) Precedence		
33	The switch should support RFC 2597 - Assured Forwarding		
34	The switch should support RFC 2598 - Expedited Forwarding		
35	The switch should support RFC 2571 - SNMP Management		
36	The switch should support RFC 3046 - DHCP Relay Agent Information Option		
37	The switch should support RFC 3376 - IGMP v3		
38	The switch should support RFC 3580 - 802.1X RADIUS		
H	**Layer-2 Features**		
1	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors		
2	The switch should support IEEE 802.1Q VLAN encapsulation		
3	The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically		
4	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence		
5	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability		

6	The switch should support Spanning-tree root guard to prevent other edge switches becoming the root bridge.		
7	The switch should support IGMP filtering		
8	The switch should support discovery of the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
9	The switch should support Per-port broadcaststorm control to prevent faulty end stations from degrading overall systems performance		
10	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance		
11	The switch should support Per-port unicast storm control to prevent faulty end stations from degrading overall systems performance		
12	The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN		
13	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth		
14	The switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.		
15	The switch should support Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.		
16	The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.		
17	The switch should support IGMP v1, v2 Snooping		
18	The switch should support IGMP v3 Snooping		
19	The switch should support IGMP v1, v2 Filtering		
20	The switch should support IGMP Snooping Timer		

21	The switch should support IGMP Throttling		
22	The switch should support IGMP Querier		
23	The switch should support Configurable IGMP Leave Timer		
24	The switch should support MVR (Multicast VLAN Registration)		
I	**L3 Features**		
1	The switch should support Inter-VLAN routing		
2	The switch should support IPv4 unicast Static Routing		
3	The switch should support 16 IPv4 Static routes		
J	**Smart Operations**		
1	The switch should support configuration of the Software image and switch configuration without user intervention		
2	The switch should support automatic configuration as devices connect to the switch port		
3	The switch should support diagnostic commands to debug issues		
4	The switch should support system health checks within the switch		
5	The switch should support Online Diagnostics		
K	**Quality of Service (QoS) & Control**		
1	The switch should support 4 egress queues per port to enable differentiated management		
2	The switch should support scheduling techniques for Qos		
3	The switch should support Weighted tail drop (WTD) to provide congestion avoidance		
4	The switch should support Standard 802.1p CoS field classification		
5	The switch should support Differentiated services code point (DSCP) field classification		
6	The switch should support Control- and Data-plane QoS ACLs		
7	The switch should support Strict priority queuing mechanisms		
8	The switch should support Rate Limitting function to guarantee bandwidth		
9	The switch should support rate limiting based on source and destination IP address		
10	The switch should support rate limiting based on source and destination MAC address		
11	The switch should support rate limiting based on Layer 4 TCP and UDP information		

12	The switch should support availability of up to 256 aggregate or individual polices per port.		
L	**Management**		
1	The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.		
2	The switch should support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis		
3	The switch should support Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination.		
4	The switch should support Trivial File Transfer Protocol (TFTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
5	The switch should support SNMP v1, v2c, and v3 of-band management.		
6	The switch should support Telnet interface support for comprehensive in-band managementof-band management.		
7	The switch should support CLI-based management console to provide detailed out-of-band management.		
8	The switch should support Serial Console Port		
9	The switch should support USB Console Port		
10	The switch should support SNMPv1, SNMPv2c, and SNMPv3		
M	**Miscellaneous**		
1	The switch should support greener practices		
2	The switch should support solutions that monitors and conserves energy with customized policies		
3	The switch should support reduction of greenhouse gas (GhG) emissions		
4	The switch should support an increase in energy cost savings		
5	The switch should support sustainable business behavior		
6	The switch should support Efficient switch operation		
7	The switch should support Intelligent power management		
8	The switch should support measuring of energy between itself and endpoints		
9	The switch should support control of energy between itself and endpoints		
10	The switch should support discovery of manageable devices for Energy measurement		

11	The switch should support support monitoring of power consumption of endpoints		
12	The switch should support taking of action based on business rules to reduce power consumption		
N	**Network security features**		
1	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
2	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.		
3	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
4	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
5	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
6	The switch should support Port security to secure the access to an access or trunk port based on MAC address.		
7	The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
8	The switch should support Private VLAN		
O	**DHCP Features**		
1	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addressesDHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.		
2	The switch should support DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.		
3	The switch should support DHCP Option 82 data Insertion		
4	The switch should support DHCP Option 82 Pass Through		
5	The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID		
6	The switch should support DHCP Snooping Statistics and SYSLOG		
P	**IPv6 Features**		

1	The switch should be on the approved list of IPv6 Ready Logo phase II - Host		
2	The switch should support IPv6 unicast Static Routing		
3	The switch should support 16 IPv6 Static routes		
4	The switch should support IPv6 MLDv1 & v2 Snooping		
5	The switch should support IPv6 Host support for IPv6 Addressing		
6	The switch should support IPv6 Host support for IPv6 Option processing		
7	The switch should support IPv6 Host support for IPv6 Fragmentation		
8	The switch should support IPv6 Host support for IPv6 ICMPv6		
9	The switch should support IPv6 Host support for IPv6 TCP/UDP over IPv6		
10	The switch should support IPv6 Host support for IPv6 Ping		
11	The switch should support IPv6 Host support for IPv6 Traceroute		
12	The switch should support IPv6 Host support for IPv6 VTY		
13	The switch should support IPv6 Host support for IPv6 SSH		
14	The switch should support IPv6 Host support for IPv6 TFTP,		
15	The switch should support IPv6 Host support for IPv6 SNMP for IPv6 objects		
16	The switch should support IPv6 Port Access Control Lists		
17	The switch should support IPv6 Router Access Control Lists		
18	The switch should support HTTP, HTTP(s) over IPv6		
19	The switch should support SNMP over IPv6		
20	The switch should support SysLog over IPv6		
21	The switch should support IPv6 Stateless Auto Config		
22	The switch should support DHCP based Auto Config (Auto Install) and Image download		
23	The switch should support IPv6 QoS		
24	The switch should support RFC4292/RFC4293 MIBs for IPv6 traffic		
25	The switch should support SCP/SSH over IPv6		
26	The switch should support Radius over IPv6		
27	The switch should support TACACS+ over IPv6		

28	The switch should support NTPv4 over IPv6		
29	The switch should support IPv6 First-Hop Security		
30	The switch should support IPv6 First Hop Security: RA Guard		
31	The switch should support IPv6 First Hop Security: DHCPv6 Guard		
32	The switch should support IPv6 First Hop Security: IPv6 Binding Integrity Guard		
Q	**Gartner's report**		
1	The OEM should be present in Gartner's leaders quadrant of unified access or DC core		

8) 24 PORT NON POE 1G EDGE/L2 SWITCH

Sr. No	Specifications	Compliance (Yes/ No)	Vendor's Remarks
A	**General Features**		
1	The switch should support a minimum of 24 nos. 10/100/1000 Ethernet Ports		
2	The switch should support a minimum of 4 SFP Uplinks		
3	The switch should support 4x1G SFP modules		
4	The switch should support a total of 28 Ports		
5	The switch should support MTBF of 564,910 hours		
B	**Performance and Scalability**		
1	The switch should support Forwarding bandwidth of 108 Gbps		
2	The switch should support Full-duplex Switching bandwidth of 216 Gbps		
3	The switch should support 64-Byte Packet Forwarding Rate of 71.4 Mpps		
4	The switch should support a Dual Core CPU		
5	The switch should support 128 MB of Flash memory		
6	The switch should support 512 MB of DRAM		
7	The switch should support 1023 VLANs		
8	The switch should support 4096 VLAN IDs		
9	The switch should support Jumbo frames of 9216 bytes		
10	The switch should support Maximum transmission unit (MTU) of 9198 bytes		
11	The switch should support 16000 Unicast MAC addresses		
C	**Dimension**		
1	The Switch should be 1RU		
2	The switch should support Operating temperature up to 5000 ft (1500 m) -5º to 45ºC		
3	The switch should support Operating relative humidity 10% to 95% noncondensing		
D	**Stacking**		
1	The switch should support Stacking		

2	Stacking should enable all switches to function as a single unit		
3	The switch should support an optional Stacking Port		
4	Stacking module should be Hot-swappable		
5	Stacking should support a minimum of 2 or more Switches		
6	Stacking should support a maximum of 8 Switches		
7	Stacking should support 80 Gbps of throughput		
8	Stacking should support single IP address management for the group of switches		
9	Stacking should support single configuration		
10	Stacking should support simplified switch upgrade		
11	Stacking should support automatic upgrade when the master switch receives a new software version		
12	Stacking should support stacking cable length of 3m		
13	Stacking should support QoS to be configured across the entire stack		
E	**Power Supply**		
1	The switch should support an auto-ranging power supply with input voltages between 100 and 240V AC		
2	The switch should support an External Redundant Power Supply		
F	**Standards**		
1	The switch should support IEEE 802.1D Spanning Tree Protocol		
2	The switch should support IEEE 802.1p		
3	The switch should support IEEE 802.1Q Trunking		
4	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)		
5	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)		
6	The switch should support IEEE 802.1x		
7	The switch should support IEEE 802.1ab (LLDP)		
8	The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)		
9	The switch should support IEEE 802.3ah (100BASE-X single/multimode fiber only)		
10	The switch should support IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports		
11	The switch should support IEEE 802.3 10BASE-T specification		

12	The switch should support IEEE 802.3u 100BASE-TX specification		
13	The switch should support IEEE 802.3ab 1000BASE-T specification		
14	The switch should support IEEE 802.3z 1000BASE-X specification		
15	The switch should support RMON I and II standards		
16	The switch should support SNMP v1, v2c, and v3		
G	**RFC compliance**		
1	The switch should support RFC 768 - UDP		
2	The switch should support RFC 783 - TFTP		
3	The switch should support RFC 791 - IP		
4	The switch should support RFC 792 - ICMP		
5	The switch should support RFC 793 - TCP		
6	The switch should support RFC 826 - ARP		
7	The switch should support RFC 854 - Telnet		
8	The switch should support RFC 951 - Bootstrap Protocol (BOOTP)		
9	The switch should support RFC 959 - FTP		
10	The switch should support RFC 1112 - IP Multicast and IGMP		
11	The switch should support RFC 1157 - SNMP v1		
12	The switch should support RFC 1166 - IP Addresses		
13	The switch should support RFC 1256 - Internet Control Message Protocol (ICMP) Router Discovery		
14	The switch should support RFC 1305 - NTP for accurate and consistent timestamp		
15	The switch should support RFC 1492 - TACACS+		
16	The switch should support RFC 1493 - Bridge MIB		
17	The switch should support RFC 1542 - BOOTP extensions		
18	The switch should support RFC 1643 - Ethernet Interface MIB		
19	The switch should support RFC 1757 - RMON (history, statistics, alarms, and events)		
20	The switch should support RFC 1901 - SNMP v2C		
21	The switch should support RFC 1902-1907 - SNMP v2		

22	The switch should support RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6		
23	The switch should support FRC 2068 - HTTP		
24	The switch should support RFC 2131 - DHCP		
25	The switch should support RFC 2138 - RADIUS		
26	The switch should support RFC 2233 - IF MIB v3		
27	The switch should support RFC 2373 - IPv6 Aggregatable Addrs		
28	The switch should support RFC 2460 - IPv6		
29	The switch should support RFC 2461 - IPv6 Neighbor Discovery		
30	The switch should support RFC 2462 - IPv6 Autoconfiguration		
31	The switch should support RFC 2463 - ICMP IPv6		
32	The switch should support RFC 2474 - Differentiated Services (DiffServ) Precedence		
33	The switch should support RFC 2597 - Assured Forwarding		
34	The switch should support RFC 2598 - Expedited Forwarding		
35	The switch should support RFC 2571 - SNMP Management		
36	The switch should support RFC 3046 - DHCP Relay Agent Information Option		
37	The switch should support RFC 3376 - IGMP v3		
38	The switch should support RFC 3580 - 802.1X RADIUS		
H	**Layer-2 Features**		
1	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors		
2	The switch should support IEEE 802.1Q VLAN encapsulation		
3	The switch should support Centralized VLAN Management. VLANs created on the Core Switches should be propagated automatically		
4	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence		
5	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability		

6	The switch should support Spanning-tree root guard to prevent other edge swicthes becoming the root bridge.		
7	The switch should support IGMP filtering		
8	The switch should support discovery of the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
9	The switch should support Per-port broadcaststorm control to prevent faulty end stations from degrading overall systems performance		
10	The switch should support Per-port multicast storm control to prevent faulty end stations from degrading overall systems performance		
11	The switch should support Per-port unicast storm control to prevent faulty end stations from degrading overall systems performance		
12	The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN		
13	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth		
14	The switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.		
15	The switch should support Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.		
16	The switch should support Local Proxy Address Resolution Protocol (ARP) working in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.		
17	The switch should support IGMP v1, v2 Snooping		
18	The switch should support IGMP v3 Snooping		
19	The switch should support IGMP v1, v2 Filtering		
20	The switch should support IGMP Snooping Timer		

21	The switch should support IGMP Throttling		
22	The switch should support IGMP Querier		
23	The switch should support Configurable IGMP Leave Timer		
24	The switch should support MVR (Multicast VLAN Registration)		
I	**L3 Features**		
1	The switch should support Inter-VLAN routing		
2	The switch should support IPv4 unicast Static Routing		
3	The switch should support 16 IPv4 Static routes		
J	**Smart Operations**		
1	The switch should support configuration of the Software image and switch configuration without user intervention		
2	The switch should support automatic configuration as devices connect to the switch port		
3	The switch should support diagnostic commands to debug issues		
4	The switch should support system health checks within the switch		
5	The switch should support Online Diagnostics		
K	**Quality of Service (QoS) & Control**		
1	The switch should support 4 egress queues per port to enable differentiated management		
2	The switch should support scheduling techniques for Qos		
3	The switch should support Weighted tail drop (WTD) to provide congestion avoidance		
4	The switch should support Standard 802.1p CoS field classification		
5	The switch should support Differentiated services code point (DSCP) field classification		
6	The switch should support Control- and Data-plane QoS ACLs		
7	The switch should support Strict priority queuing mechanisms		
8	The switch should support Rate Limitting function to guarantee bandwidth		
9	The switch should support rate limiting based on source and destination IP address		
10	The switch should support rate limiting based on source and destination MAC address		
11	The switch should support rate limiting based on Layer 4 TCP and UDP information		

12	The switch should support availability of up to 256 aggregate or individual polices per port.		
L	**Management**		
1	The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.		
2	The switch should support four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis		
3	The switch should support Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination.		
4	The switch should support Trivial File Transfer Protocol (TFTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
5	The switch should support SNMP v1, v2c, and v3 of-band management.		
6	The switch should support Telnet interface support for comprehensive in-band managementof-band management.		
7	The switch should support CLI-based management console to provide detailed out-of-band management.		
8	The switch should support Serial Console Port		
9	The switch should support USB Console Port		
10	The switch should support SNMPv1, SNMPv2c, and SNMPv3		
M	**Miscellaneous**		
1	The switch should support greener practices		
2	The switch should support solutions that monitors and conserves energy with customized policies		
3	The switch should support reduction of greenhouse gas (GhG) emissions		
4	The switch should support an increase in energy cost savings		
5	The switch should support sustainable business behavior		
6	The switch should support Efficient switch operation		
7	The switch should support Intelligent power management		
8	The switch should support measuring of energy between itself and endpoints		
9	The switch should support control of energy between itself and endpoints		
10	The switch should support discovery of manageable devices for Energy measurement		

11	The switch should support support monitoring of power consumption of endpoints		
12	The switch should support taking of action based on business rules to reduce power consumption		
N	**Network security features**		
1	The switch should support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
2	The switch should support Port-based ACLs for Layer 2 interfaces to allow application of security policies on individual switch ports.		
3	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.		
4	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
5	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.		
6	The switch should support Port security to secure the access to an access or trunk port based on MAC address.		
7	The switch should support Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
8	The switch should support Private VLAN		
O	**DHCP Features**		
1	The switch should support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addressesDHCP binding database, and to rate-limit the amount of DHCP traffic that enters a switch port.		
2	The switch should support DHCP Interface Tracker (Option 82) feature to augment a host IP address request with the switch port ID.		
3	The switch should support DHCP Option 82 data Insertion		
4	The switch should support DHCP Option 82 Pass Through		
5	The switch should support DHCP Option 82 - Configurable Remote ID and Circuit ID		
6	The switch should support DHCP Snooping Statistics and SYSLOG		
P	**IPv6 Features**		

1	The switch should be on the approved list of IPv6 Ready Logo phase II - Host		
2	The switch should support IPv6 unicast Static Routing		
3	The switch should support 16 IPv6 Static routes		
4	The switch should support IPv6 MLDv1 & v2 Snooping		
5	The switch should support IPv6 Host support for IPv6 Addressing		
6	The switch should support IPv6 Host support for IPv6 Option processing		
7	The switch should support IPv6 Host support for IPv6 Fragmentation		
8	The switch should support IPv6 Host support for IPv6 ICMPv6		
9	The switch should support IPv6 Host support for IPv6 TCP/UDP over IPv6		
10	The switch should support IPv6 Host support for IPv6 Ping		
11	The switch should support IPv6 Host support for IPv6 Traceroute		
12	The switch should support IPv6 Host support for IPv6 VTY		
13	The switch should support IPv6 Host support for IPv6 SSH		
14	The switch should support IPv6 Host support for IPv6 TFTP,		
15	The switch should support IPv6 Host support for IPv6 SNMP for IPv6 objects		
16	The switch should support IPv6 Port Access Control Lists		
17	The switch should support IPv6 Router Access Control Lists		
18	The switch should support HTTP, HTTP(s) over IPv6		
19	The switch should support SNMP over IPv6		
20	The switch should support SysLog over IPv6		
21	The switch should support IPv6 Stateless Auto Config		
22	The switch should support DHCP based Auto Config (Auto Install) and Image download		
23	The switch should support IPv6 QoS		
24	The switch should support RFC4292/RFC4293 MIBs for IPv6 traffic		
25	The switch should support SCP/SSH over IPv6		
26	The switch should support Radius over IPv6		
27	The switch should support TACACS+ over IPv6		

28	The switch should support NTPv4 over IPv6		
29	The switch should support IPv6 First-Hop Security		
30	The switch should support IPv6 First Hop Security: RA Guard		
31	The switch should support IPv6 First Hop Security: DHCPv6 Guard		
32	The switch should support IPv6 First Hop Security: IPv6 Binding Integrity Guard		
Q	**Gartner's report**		
1	The OEM should be present in Gartner's leaders quadrant of unified access or DC core		

9) NETWORK MANAGEMENT SOFTWARE:

Sr. No.	Required Minimum Specification	Compliance Yes/No	Remark
1	The network management platform shall provide a single integrated solution for comprehensive lifecycle management of the wired/wireless access, campus, and branch networks, and rich visibility into end-user connectivity and application performance assurance issues.		
2	The platform shall support as many as 1500 devices currently (including existing and new devices) and should be scalable to fifteen thousand devices through virtual or physical appliances in future.		
3	The platform shall deliver application-level visibility through the normalization and correlation of rich performance instrumentation data to help ensure application delivery and an optimal end-user experience.		
4	The management utility shall have deep integration with the secure access mechanism like 802.1x authentication, posture and profiling to provide visibility across security and policy-related problems, presenting a complete view of client access issues with a clear path to solving them.		
5	The utility shall simplify and automate many of the day-to-day tasks associated with maintaining and managing the end-to-end network infrastructure from a single pane of glass thereby reducing the need for multiple tools, and lowering operating expenses and training costs.		
6	The platform would deliver all of the existing wireless capabilities for RF management, user access visibility, reporting, and troubleshooting along with wired lifecycle functions such as discovery, inventory, configuration and image management, automated deployment, compliance reporting, integrated best practices, and reporting.		
7	The platform shall be based on lifecycle processes that would align with the product functionality clearly describing the phases like design, deploy, operate, report and administer.		
8	The design functionality shall facilitate creation of templates used for monitoring key network resources, devices, and attributes. Default templates and best practice designs are provided for quick out-of-the-box implementation automating the work required to use OEM validated designs and best practices.		
9	The management infrastructure shall provide continuous compliance and auditing capabilities to help IT organizations monitor and assess their network and device configuration for out-of-policy configuration, discrepancies, and security and risk vulnerabilities.		

10	The platform shall offer unified alarm displays with detailed forensics provide actionable information and the ability to automatically open service requests with the OEM's Technical Assistance Centre.		
11	The platform should have flexible virtual machine and physical appliance solution that would provide cost-effective, easy-to-install options for small to global enterprise-class networks.		
12	The management utility shall have Role-based access control provides flexibility to segment the network into one or more virtual domains controlled by a single Infrastructure platform. These Virtual domains shall help deploy both large, multisite networks and managed services.		

10) ONLINE UPS

1 & 2 KVA Online UPS rack mountable			
Sr.No	**Item Specifications/(Approved Makes)**	**Compliance Yes/No**	Remarks
1	Technology :True on-Line UPS with double conversion Microprocessor/DSP based technology and Generator compatible		
2	Diagnostic Indications: Fully Automatic control for Battery low, Auto restart, Auto recovery from mains, under voltage and Over voltage trip, Automatic return from bypass on recovery from overload requires no manual attention. Ready status and Fault diagnostics with LED/LCD display.		
3	UPS Should be rack mount with standard back up		
4	UPS Should give backup of minimum 30 minute on full load		
5	The Battery of UPS should be eject able from UPS when needs to be replaced/changed		
6	The UPS should include network card for management via GUI.		

5 & 10 KVA Online UPS			
Sr.No	**Item Specifications/(Approved Makes)**	**Compliance Yes/No**	Remarks
1	ISO 9001 & 14001, C E, EN 50091 for Safety & EMC CERTIFIED		
2	DSP Controlled Double Conversion online technology using IGBT		
3	Isolation Required		
4	INPUT VOLTAGE RANGE: 160-280V AC Single Phase		
5	OUTPUT VOLTAGE: 230 VAC, Single Phase with Pure Sine Wave		
6	Output Frequency: 50 HZ+/- 0.05 Hz		

7	Efficiency: > 92%		
8	Power Factor> 0.8 Lagging		
9	DC BUS Voltage36V for 1 KVA & 96V for 2 KVA		
10	Emergency generator compatibility		
11	Emergency Power Off		
12	UPS should start automatically after Power Restore (Even without Battery)		
13	software for auto shutdown & network monitoring compatible with all most all the operating systems		
14	WEB SNMP MANAGEMENT card for manageability over WEB and in network		
15	Operating Environment 0-50°C		
16	Humidity 95% Max non-condensing		
17	Indications :Mains ON, Load On batteries, Battery Low, Inverter Overload, Load on Mains, Battery Boost, Battery Level Graph, Load Level Graph		
18	Digital Metering available for: Output Voltage, Battery Voltage, Output Current, Output Frequency, etc.		
19	Protections Metering : Battery Over Voltage, Battery Under Voltage, Output AC Over Voltage, Output Overload / Short Circuit		
20	Alarm Audible Alarm		
21	Transient Recovery Within 3 cycles		
22	Emergency Power-Off (EPO)		
23	Inbuilt manual by pass		
24	Cold start on battery power.		
25	Lighting and surge protection		
26	Noise Level at 1 m Distance < 55 dB		
27	Output wave form Pure Sine wave Output less than 3% THD		
28	Crest Factor 4:01:00 AM		
29	Overload 110% for 10 minutes, 200% for 5 Cycles		

30	Voltage Regulation ± 1%		

11) PASSIVE SPECIFICATIONS

Sr.No	Item Specifications/ (Approved Makes)	Compliance Yes/No	Remarks
	I.) CAT-6 PATCH CORDS 2 MTR		
i.	CAT-6 PATCH CORDS 2 MTR (SIEMON / CORNING / PANDUIT / MOLEX / AMP)		
A	Category 6 Patch Cords shall be factory terminated with modular plugs featuring a tangle- free latch design and clear strain-relief boots to support easy moves, adds and changes. Each patch cord shall be 100% performance tested at the factory to meet TIA/EIA-568-C.2 Category 6 and ISO 11801 2nd Edition Class E channel requirements at frequencies up to 250 MHz. OUTER SHEATH LSZH		
b	**FCC compliance:** Meets ANSI/TIA-968-A; contacts plated with 50 microinches of gold		
c	**IEC compliance:** Meets IEC 60603-7		
d	**PoE compliance:** Meets requirements of IEEE 802.3af and IEEE 802.3at for PoE applications		
e	**UL rated:** UL 1863 approved		
f	**RoHS compliance:** Compliant		
g	The patch cords shall come in standard lengths of 1& 2 mtr and four standard colors of Blue, Green, Red, and Yellow.		
h	**Quality Control: Individual Component should have individual QC No. to provide lifetime traceability.**		
	II.) CAT-6 PATCH CORDS 1 MTR		
ii.	**CAT-6 Patch Cords 1 Mtr Approved Makes(Siemon / Corning / Panduit / Molex / Amp)**		
a	Category 6 Patch Cords shall be factory terminated with modular plugs featuring a tangle- free latch design and clear strain-relief boots to support easy moves, adds and changes. Each patch cord shall be 100% performance tested at the factory to meet TIA/EIA-568-C.2 Category 6 and ISO 11801 2nd Edition Class E channel requirements at frequencies up to 250 MHz. OUTER SHEATH LSZH		
b	**FCC compliance:** Meets ANSI/TIA-968-A; contacts plated with 50 microinches of gold		

c	**IEC compliance:** Meets IEC 60603-7		
d	**PoE compliance:** Meets requirements of IEEE 802.3af and IEEE 802.3at for PoE applications		
e	**UL rated:** UL 1863 approved		
f	**RoHS compliance:** Compliant		
g	The patch cords shall come in standard lengths of 1& 2 mtr and four standard colors of Blue, Green, Red, and Yellow.		
h	**Quality Control: Individual Component should have individual QC No. to provide lifetime traceability.**		

III.) CAT6 PATCH PANEL 24 PORT

iii.	**Cat6 Patch Panel (Siemon / Corning / Panduit / Molex / Amp) 24 port**		
a	Punch down patch panels shall be metal design and mount to standard racks and cabinets. Punchdown modules shall meet Category 6/Class E performance levels and terminate unshielded twisted 4-pair, 22-26 AWG, 100 ohm cable. Patch panels shall be available in standard density 24 port configurations. Patch panels include pre-numbered labels with writable surface on back. Additional numbering engraved in the front and back of the panel.I/O should be individually replaceable and should have rear cable management shelf		
b	**Category 6/Class E channel performance:** Meets all TIA/EIA-568-C.2 Category 6 and ISO 11801 2nd Edition Class E channel requirements at swept frequencies up to 250 MHz		
c	**FCC compliance:** Meets ANS/TIA-968-A; contacts plated with 50 microinches of gold		
d	**IEC compliance:** Meets IEC 60603-7		
e	**PoE compliance:** Meets requirements of IEEE 802.3af and IEEE 802.3at for PoE applications		
f	**UL rated:** UL 1863 approved		
g	**RoHS compliance:** Compliant		
h	**Mounting options:** Mounts to standard EIA 19" racks		
i	**Quality Control:** Individual Component should have individual QC No. to provide lifetime traceability.		

IV.) RACKS (36U, 15 U, CABLE MANAGER) (APW / RITTAL / NET RACK / KRONE TYPE/ PANDUIT/PRASHA/COMRACK)

iv.	**Racks (36U, 15 U, Cable manager) (APW / Rittal / Net Rack / Krone Type/ Panduit/Prasha/Comrack)**		
a	Single Section Unit		
b	Rigid frame that can be fixed to the wall		
c	Adjustable 19 rails in the front and rear		
d	Top and bottom cable entry facility		
e	Front section with glass door and lock		
f	Maximum load rating of 100 kgs(for 36 U)		
g	600mm wide x 500mm deep		
h	Maximum load rating of 20 kgs(for 15 U)		
i	Adjustable 19‖ Rails at the front only j.		
k.	Width x Depth : 600mm x 500mm		
l.	Power strip with 6 socket maximum of 2u		
m.	With fan tray and two fans		
n.	Minimum 2 Duct type cable manager with Rack		

V.) SINGLE MODE OUTDOOR OFC 8 CORE (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

v.	**Single Mode Outdoor OFC 8 core (Siemon / Corning / Panduit / Molex / Amp)**		
a	Should be ISO.IEC 11801 - 2nd Edition and ITU-T REC G 652D		
b	Tube Identification : Single tube/Multi-tube		
c	Fibre protection(Tube) : Polybutylene Terephthalate (PBT)		
d	Water Blocking : Thixotropic Gel (Tube) and Petroleum Jelly (Interstices)		
e	Core Wrapping : Polyethylene Terephthalate		
f	Armouring : Corrugated Steel Tape Armour (ECCS Tape)		
g	Peripheral Strength Member: Two Steel wires/Two FRP rods/FRP Central Strength member		
h	Sheath : UV Stabilized Polyethylene (HDPE)		

i	Minimum. Tensile Strength-Short Term : 1500N or better		
j	Minimum Cores 8 or more		

VI.) SINGLE MODE OUTDOOR OFC 12 CORE (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

vi.	**Single Mode Outdoor OFC 8 core (Siemon / Corning / Panduit / Molex / Amp)**		
a	Should be ISO.IEC 11801 - 2nd Edition and ITU-T REC G 652D		
b	Tube Idenification : Single tube/Multitube		
c	Fibre protection(Tube) : Polybutylene Terephthalate (PBT)		
d	Water Blocking : Thixotropic Gel (Tube) and Petroleum Jelly (Interstices)		
e	Core Wrapping : Polyethylene Terephthalate		
f	Armouring : Corrugated Steel Tape Armour (ECCS Tape)		
g	Peripheral Strength Member: Two Steel wires/Two FRP rods/FRP Central Strength member		
h	Sheath : UV Stabilized Polyethylene (HDPE)		
i	Minimum. Tensile Strength-Short Term : 1500N or better		
j	Minimum Cores 12 or more		

VII.) SINGLE MODE OUTDOOR OFC 24 CORE (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

vii.	**Single Mode Outdoor OFC 24 core (Siemon / Corning / Panduit / Molex / Amp)**		
a	Should be ISO.IEC 11801 - 2nd Edition and ITU-T REC G 652D		
b	Tube Idenification : Multitube		
c	Fibre protection(Tube) : Polybutylene Terephthalate (PBT)		
d	Water Blocking : Thixotropic Gel (Tube) and Petroleum Jelly (Interstices)		
e	Core Wrapping : Polyethylene Terephthalate		
f	Armouring : Corrugated Steel Tape Armour (ECCS Tape)		
g	Peripheral Strength Member: FRP Central Strength member		

h	Sheath : UV Stabilized Polyethylene (HDPE)		
i	Minimum. Tensile Strength-Short Term : 3500 Newton or Better		
j	Minimum Cores 24 or more		

VIII.) OPTICAL FIBER LIU 24 PORT UNLOADED (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

viii.		**Optical Fiber LIU 24 Port UnLoaded (Siemon / Corning / Panduit / Molex / Amp)**		
a		Have sufficient slots to accommodate 24 LC Ports in any form Single/duplex/Quad/6 Pak adaptor Plate		
b		Should have fibre management provision inside		
c		Have earthing lugs and other accessories.		
d		Provide self-adhesive, clear label holders for labelling		
e		Should be both rack mountable as well as wall mountable 1U		
f		Should have Separate Splice holder for minimum 24 Fibre cores		
g		Should be made of Cold Rolled Steel		
h		Blank Plates/Blanks to be included for filling vacant ports		

IX.) FIBER PIGTAILS 1.5 MTR. SINGLE MODE (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

ix.		**Fiber Pigtails 1.5 Mtr. Single Mode (Siemon / Corning / Panduit / Molex / Amp)**		
a		Precision ferrule endface geometry LC type		
b		Factory polished, tested and serialized.		
c		Buffer Diameter: 900um tight buffer		
d		Minimum bend radius: install: 30 mm		
e		Retention Strength: 100N		
f		Cable: 900um Tight Buffered		
g		Bidder to Provide equivalent SM LC adaptors in form of Singlex/Duplex/Quad adaptors		

X.) FIBER PIGTAILS 1.5 MTR. MULTI MODE OM3 (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

x.		**Fiber Pigtails 1.5 Mtr. Multimode OM3 (Siemon / Corning / Panduit / Molex / Amp)**		
a		Precision ferrule endface geometry LC type		
b		Factory polished, tested and serialized.		
c		Buffer Diameter: 900um tight buffer		
d		Minimum bend radius: install: 30 mm		
e		Retention Strength: 100N		
f		Cable: 900um Tight Buffered		
g		Bidder to Provide equivalent MM LC adaptors in form of Singlex/Duplex/Quad adaptors		

XI.) FIBER OPTIC PATCH CORDS: (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

xi.		**Fiber Optic Patch Cords: (Siemon / Corning / Panduit / Molex / Amp)**		
a		All optical fiber patch leads shall comprise of Single mode 9/125µm OS2 fiber LC -LC		
b		Jacket should be LSZH sheath		
c		Connector: Zirconia ceramic ferrule		
d		Cable: 9/125, SM Strength member: Aramid Yarn		

XII.) UTP CAT-6 CABLE (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

xii.		**UTP CAT-6 Cable (Siemon / Corning / Panduit / Molex / Amp)**		
a		Category 6 Unshielded Twisted Pair 100Ohm cable shall be compliant with EIA/TIA 568-C.2		
b		Should be 4 pair, 23 AWG		
c		Cable should be CM rated		
d		Cable Should Have Internal cross separator		
e		Jacket: LSZH (Low smoke zero halogen)		
f		Should ETL verified		
k		**Quality Control:** Individual Component should have individual QC No. to provide lifetime traceability		

XIII.) INFORMATION OUTLET SINGLE OUTLET FACEPLATE AND GANGBOX CAT6 (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

xiii.		**Information Outlet (Siemon / Corning / Panduit / Molex / Amp)**		
A		Category 6, EIA/TIA 568-C.2		
B		All information outlets for 22-24 AWG copper		
C		Should be UL Listed and ETL verified		
D		**Quality Control:** Individual Component should have individual QC No. to provide lifetime traceability		

XIV.) INFORMATION OUTLET DUPLEX WITH FACEPLATE AND GANGBOX CAT6 (SIEMON / CORNING / PANDUIT / MOLEX / AMP)

xiv.		**Information Outlet (Siemon / Corning / Panduit / Molex / Amp)**		
A		Category 6, EIA/TIA 568-C.2		
B		All information outlets for 22-24 AWG copper		
C		Should be UL Listed and ETL verified		
D		**Quality Control:** Individual Component should have individual QC No. to provide lifetime traceability		

XV.) CAT 6 OUTSIDE PLANT CABLE (OUTDOOR APPLICATION)

xv.		**CAT 6 Outside Plant Cable (Outdoor Application)**		
h		TYPE: 4 pair CAT 6 UTP Cable outdoor cable with Two Jackets Primary and secondary Low Smoke Zero Halogen		
i		CONDUCTORS Wire gauge: 23 AWG solid copper		
j		CROSS FILLER Star cross fillers to separate the individual pairs		
k		OPERATING TEMPERATURE: -40 Deg C to + 70 Deg C		

XVI.) HDPE PIPE

xvi.		HDPE pipe should be permanently lubricated type with coefficient of friction between the pipe and OFC to the level of 0.06. The Specifications will be as under: Size 40/33 mm, (OD=40+0.4mm), Wall		

		thickness=3.5mm, PE rating=80, PN rating 10.		

XVII.) CONCRETE CHAMBER

xvii.		Square Shaped Concrete Chamber with Cover lid and a radius from centre 700 MM with 1.2 mtrs Depth The Cover lid should have a cleared graving or endorsing as engraved		

XVIII.) ROUTE MARKERS

xviii.		Concrete Coloured Graved Route Markers after every 300 metres and on every corner		

XIX.) UNIVERSAL JOINT CLOSURE(UJC)

xix.		Universal Joint Closure(UJC)		

TECHNICAL ENVELOPE

List of Technical Documents:

Sr. No.	**Description**	**Bidders Response (Yes/No)**	**Remarks**
1.	ISO 9001 and ISO 27001 Certified Copies		
2.	Registration proof of incorporation in companies act		
3.	Copy of PAN Card		
4.	Copy of latest Income Tax Return (last Three years) i.e. 2013-14, 2014-15, 2015-16		
5.	Prime Customers Details as per Page no 26, Point no 19		
6.	Online Receipts of Payment		
7.	Declaration of validity of rates as per Page 19, Point no 8.		
8.	OEM Authorization Letter/ MAF's		
9.	Product Brochures/technical Compliances Sheet as per Annexure A(Only Color Print out may be submitted)		
10.	Certificate of not Debarred/blacklisted as page no 21 point no 22		
11.	Proof of Turnover for last 3 years		

NOTE:

All the technical Documents should be uploaded on the e-tender portal and a copy of same in coloured printout state should also be submitted at the time of tender submission in well hard binding manner. The non-submission/poor management of documents may lead to disqualification as well.

FINANCIAL ENVELOPE

Commercial Performa with three year warranty			**With three years warranty**			**Warranty & support cost for 4th and 5th year**		
S. No.	Description	**Required Qty**	**Product Model No/Part no Quoted**	**Per Unit Rate including all taxes (applicable)**	**Total Rate including all taxes (applicable)**	**Per Unit per year Warranty Rate including all taxes (applicable)**	**Total Rate including all taxes (applicable) for next two years**	**Remarks if any**
1.	Core Switch	1						
i.	48-port 10 Gigabit SFP+ with 4-port 40 Gigabit Ethernet QSFP+ line card	2						
2.	12-Port SFP+ 10G(4) Uplink Ports L3 Distribution Switch	2						

3.	24-Port 1G SFP+ 10G(4) Uplink Ports L3	2						
4.	24 Port Non PoE Layer-2/10g uplink Switch	2						
5.	48 Port PoE 1G Switch Layer 2/Edge Switch	4						
6.	24 Port PoE 1G Edge/L2 Switch	40						
7.	48 Port Non PoE 1G Edge/L2 Switch	28						
8.	24 Port Non PoE 1G Edge/L2 Switch	40						
9.	Network Management Software	1						
10.	Online UPS							
i.	1 KVA Online UPS rack mountable	25						
ii.	2 KVA UPS	25						
iii.	5 KVA Online UPS	2						
11.	Passive Components							
i.	CAT-6 Patch Cords 2 Mtr (Siemon / Corning / Panduit / Molex / AMP)	500						

ii.	CAT-6 Patch Cords 1 Mtr Approved Makes(Siemon / Corning / Panduit / Molex / Amp)	2000						
iii.	Cat6 Patch Panel Loaded (Siemon / Corning / Panduit / Molex / Amp)	60						
iv.	Racks							
(c)	Racks (36U, Cable manager) (APW / Rittal / Net Rack / Krone Type/ Panduit/Prasha/Comrack)	1						
(d)	Racks (15 U, Cable manager) (APW / Rittal / Net Rack / Krone Type/ Panduit/Prasha/Comrack)	30						
v.	Single Mode Outdoor OFC 8 core (Siemon / Corning / Panduit / Molex / Amp)	4000						
vi.	Single Mode Outdoor OFC 12 core (Siemon / Corning / Panduit / Molex / Amp)	700						
vii.	Single Mode Outdoor OFC 24 core (Siemon / Corning / Panduit / Molex / Amp)	4200						
viii.	Optical Fiber LIU 24 Port UnLoaded (Siemon / Corning / Panduit / Molex / Amp)	34						
ix.	Fiber Pigtails 1.5 Mtr. Single mode (Siemon / Corning / Panduit / Molex / Amp)	350						
x.	Fiber Pigtails 1.5 Mtr. Multi mode (Siemon / Corning / Panduit / Molex / Amp)	60						
xi.	Fiber Optic Patch Cords: (Siemon / Corning / Panduit / Molex / Amp)							
(a)	3 Mtrs Sc-LC Style Single Mode 50/125 Micron Duplex Patch Cord 3 Mtrs	150						

	complete as required and as per specification							
(b)	10 Mtrs LC-LC Style Single Mode 50/125 Micron Duplex Patch Cord 10 Mtrs complete as required and as per specification	50						
(c)	5 Mtrs FC-SC Style Single Mode 50/125 Micron Duplex Patch Cord 5 Mtrs complete as required and as per specification	10						
(d)	3 Mtrs SC-LC Style Multi Mode OM3 50/125 Micron Duplex Patch Cord 3 Mtrs complete as required and as per specification	150						
xii.	UTP CAT-6 Cable (Siemon / Corning / Panduit / Molex / Amp)	100						
xiii.	Information Outlet Single port(Siemon / Corning / Panduit / Molex / Amp)	1200						
xiv.	Information Outlet Duplex (Siemon / Corning / Panduit / Molex / Amp)	200						
xv.	CAT 6 Outside Plant Cable (Outdoor Application)	40						
xvi.	HDPE PIPE	8000						

xvii.	Concrete Chamber	50						
xviii.	Route markers	100						
xix.	Universal Joint Closure(UJC)	50						
	SFP Modules							
12.	10G Base LR SFP+ Optic LC , SMF complete as per requirement and as per specification	30						
13.	10G Base SR SFP+ Optic LC , MMF complete as per requirement and as per specification	30						
14.	1 G Base LR SFP+ Optic LC , SMF complete as per requirement and as per specification	30						
15.	1 G Base SR SFP+ Optic LC , MMF complete as per requirement and as per specification	30						
Networking Job Works (rates to be Quoted per Mtr) - Complete Connectivity from switch to I/O Port with installation								
16.	Fiber Cable Laying through Conduit Pipe							
	a) Soft Digging(1.5 M depth)							
	b) Hard Digging/Moring/Chamber Installa							

	c) Etc.							
17.	UTP/STP Cabling through Conduit (including Conduit laying/fitting)							
	Underground Pipe laying with Cable with Material;							
	Outer PVC Pipe Laying with Cable with material On wall							
18	Network Engineer/Assistant on site for a duration of warranty /AMC by the firm for Facility management/onsite warranty & Maintenance							

All the Financial Documents should be uploaded on the e-tender portal and a copy of same in coloured printout state should also be submitted at the time of tender submission in well hard binding manner. The non-submission/poor management of documents may lead to disqualification as well. Any extra term & conditions may please be mentioned at the time of submission of financial and technical bids