

NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR

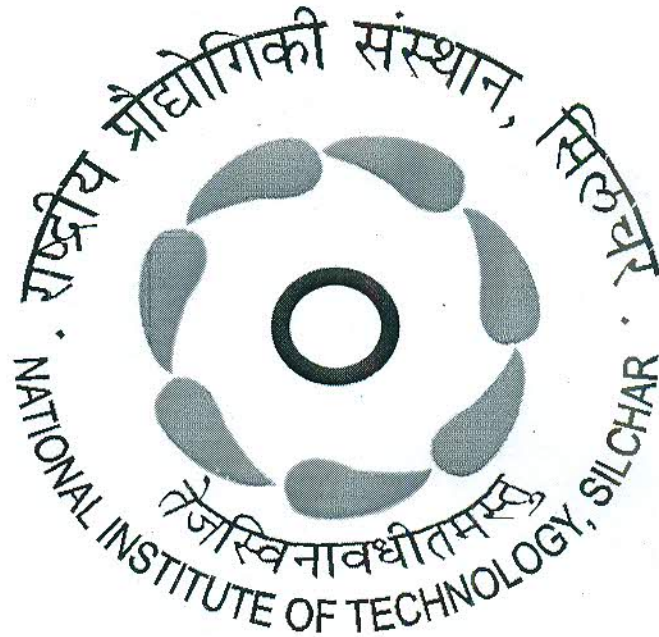
Silchar – 788 010 (ASSAM)

Tender Fee Rs.1, 000/-
Date- _13/10/2018

Tender Advt. No: NITS/PS-623/LAN & Wi-Fi/18-19

Notice Inviting Tender

For Supply & Installation and Commissioning of LAN & Wi-Fi at NIT Silchar



Pre-Bid Meeting:

31/10/2018 at 12:00 Noon

LAST DATE & TIME OF SUBMISSION OF TENDER:

16/11/2018 up-to 01:00 PM

DATE & TIME OF OPENING OF TENDER:

16/11/2018 at 03:30PM



**NATIONAL INSTITUTE OF TECHNOLOGY
SILCHAR 788 010**

Tel.No. Director: (03842) 224879

Fax: (03842) 224797

Notice Inviting Tender


Tender Advt. No: NITS/PS-623/LAN & Wi-Fi/18-19

Sealed Tender/Quotations are invited from reputed OEM/OEM Authorized Dealer for **Supply & Installation and Commissioning of LAN & Wi-Fi at NIT Silchar**. Tender documents are to be submitted along with **Earnest Money @ 5% of total bid value** in the form of DD in favour of Director, NIT Silchar payable at Silchar.

Tender document containing complete details, specifications, terms and conditions etc. can be obtained from "Purchase Section, NIT Silchar" or may be downloaded from our website [www.nits.ac.in.](http://www.nits.ac.in/) / <http://www.eprocure.com>. The cost of tender document (even if downloaded) is **Rs.1,000/- (Non-Refundable)** to be submitted in the form of DD in favour of Director, NIT Silchar. Payable at NIT Silchar.

The offer without EMD & Tender Fee shall be out rightly rejected and the Institute reserves the right not to purchase all or any of the items. The last date and time for submission of Tender documents will be **16/11/2018 up-to 01:00 PM** and tender will be opened on the same date at **03:30PM** at –

**Conference Room,
Administrative Building,
NIT Silchar, Assam.**


Registrar, NIT, Silchar
(rc)



**NATIONAL INSTITUTE OF TECHNOLOGY
SILCHAR 788 010**

Tel.No. Director: (03842) 224879

Fax: (03842) 224797_

Notice Inviting Tender

Sealed Tender/Quotations are invited from OEM/Manufacturer/OEM Authorized Dealer for supply, installation and commissioning of **LAN & Wi-Fi at at NIT Silchar** as per the specification given in tender document.

Essential Credential Criteria:

- The bidder should submit **Solvency certificate from the bank with min value of Rs. 5crores** for undergoing such large project. Copy of three years **audited** balance sheets/bank accounts and profit& loss account **up-to 31.03.2018** to be produced. The annual turnover in last 3 financial years will be considered as a parameter of evaluation of responsive bidding.
- The bidder should have supplied and installed similar items and services in Educational Institutions such as IITs, NITs and Central Universities during last five years. A copy of each such order or contract to be attached without any tampering.
- The bidder must have certified engineers of the respective OEMs quoted in the tender to ensure OEM warranty, quality installation, support and service to the institute. Photocopies of the certificate to be attached.

General Eligibility Criteria for Passive OEM:

Sl. No.	Eligibility Criteria	Compliance with Document
1	OEM should have direct presence in India more than at-least 10 years.	
2	OEM should have members participating in International Standard Bodies like EIA/TIA, ISO/IEC or BICSI and product quoted should have certification from International Standard and product quoted should be certified from International Standard	
3	All offered components shall be from the same OEM	

4	OEM should be a member of Telecommunications Industry Association (TIA) Information and Communications Technology (ICT) Companies ICT Green Initiative to support energy efficient Environment.	
---	---	--

General Eligibility Criteria for Active OEM:

- All active components must have a **5(Five)** years comprehensive onsite replacement warranty from the OEM/ OEM authorized vendor.
- All Active components must be of same OEM.
- The OEM should have local Technical Assistant Centre (TAC) centre based in India for offering post sales technical support.

GENERAL TERMS & CONDITIONS AND INSTRUCTIONS TO THE BIDDERS:

1. The bidding agency should be reputed firm and having all necessary certificates, viz. CST/VAT/GST registration certificate, PAN for Income Tax, registration Sale Tax Clearance Certificate, Authorized Dealership/Distributorship certificate, etc. The photocopies of all the certificates should be attached with the tender.
2. The rate quoted must be in words & figures and F.O.R. destination National Institute of Technology, Silchar inclusive of packing, forwarding etc. Surcharge, insurance and any other charges if any must be indicated separately. Educational discount, if any should be indicated clearly. Tendered(s) may note that the Government of India exempts this Institute from paying excise duty on selected items. Necessary documents will be furnished if required on demand by the Tendered(s).
3. The bidder must have supplied similar item and service in IITs/NITs/Central Universities/etc. duly signed copy of all the relevant document must be attached along with the tender.
4. **All the ordered items must be supplied, installed and commissioned within 6-8 weeks from the date of placing the order to the supplier.**
5. The institute is registered with DSIR, GOI, Ministry of Science and Technology (Regd. No. TU/V/RG-CDE (431)/2011 dtd.07.02.2012, valid up to 31.08.2021) and is therefore exempted from custom duty and central excise duty in terms of Govt. of India notification.
6. **The Bidder shall have submit the Tender cost of Rs.1,000.00 and Earnest Money @ %5 in the form of DD in favour of Director, NIT Silchar, payable at Silchar. Tender document without Earnest Money and Tender cost shall be OUTRIGHTLY REJECTED.**
7. **Liquidated Damage for delayed in supply @ 0.5% per week or part of the week as pre-estimated damages not exceeding @ 10% of the contract value without any controversy / dispute of any sort whatsoever. Thereafter the order will be cancelled.**
8. Genuine Pricing: The bidding agency is to ensure that the quoted price for each particular item is not more than the price quoted to any other customer in India, particularly to IITs / NITs and any other Government Organizations.
9. The bidder must provide the specification, catalogue etc. of the bidding items properly. Test certificates from the manufacturer and warranty card must be provided with each and every item to be supplied.
10. The bidder must provide tender specific OEM Authorization for all the important product in the tender.
11. The bidder or OEM must have ISO certification or similar certificate for quality.

12. **Payment: 20% Payment shall be made only after receipt of the materials/articles in good condition as per specification and 40% payment after satisfactory installation, commissioning and testing of the instruments/Equipment's and rest 40% payment will be released in next five consecutive year @10% per year.**
13. Manufacturer's/Company's name, it's trademark should be mentioned in the tender and illustrative leaflets giving technical particulars, etc. should be attached in the tender.
14. Tenderer(s) registered with the State/Central Government must quote his registration numbers, if any, and submit a Xerox copy of registration along with the tender.
15. **The rate quoted must be in INR (Rs.) and must be both in words and figures.**
16. **Successful bidder shall give a performance guarantee in the form of Bank guarantee in favour of "The Director, NIT Silchar" Payable at Silchar amounts to 10% of the order value for a period of 5-years.**
17. Tenderer(s) will be required to furnish a list of clients serviced during the last 3(three) years or a list of such projects/supply handled in the last 3 (three) years. **Min turnover of the company should be Rs.5 corers for last consecutive 3 years.** Copy of Purchase Orders / Contracts shall be enclosed with the tender.
19. The Director, NIT Silchar reserves all the right to reject or accept any or all tender without assigning any reason thereof or cancel or withdraw the tender notice.
20. All legal disputes shall be under the jurisdiction of the Silchar Courts of Cachar District in the state of Assam.

21. Bid Price

- a) The contract shall be for the full quantity as described above. Corrections, if, shall be made by crossing out, initialling dating and rewriting.
- b) The rate should be quoted in Indian Rupees inclusive of all taxes. If any extra taxes or levies to be paid, it should be clearly indicate.
- c) The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.

22. Each bidder should submit only one quotation and have to be quoted for all items.

23. Validity of Tenders/Quotations:

Tenders/Quotations shall remain valid for a period not less than **6 (Six) months** after the deadline date specified for submission of tender.

24. Packing

- a) The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and

exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, considering the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

- b) The supplier is to ensure "All Risk Transit Insurance" coverage till door delivery at NIT Silchar.
- c) The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements.

25. Evaluation of Quotations:

NIT Silchar will evaluate and compare the quotations determined to be substantially responsive i.e. which

- a) are properly signed; and
- b) Conform to the terms and conditions, and specifications.

26. Award of contract:

The NIT Silchar will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

- a) Notwithstanding the above, the Director, NIT Silchar reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time without assigning any reason.
 - b) The bidder whose bid is accepted will be notified of the award of contract by the NIT, Silchar prior to expiration of the quotation validity period. The terms of the accepted offer shall be incorporated in the purchase order.
27. All the certificates and documents stated in the above terms & conditions to be submitted invariably failing which the bid will be treated as non-responsive.

28. Past Experience:

Bidder should have experience of satisfactory completion of LAN and system integration involving LAN work for last 5 years. Bidder should have executed at least one order of similar work amounting not less than **02 Crores OR two order of amounting not less than 1.5 crore each** (as per our requirement or having better configuration) in any last three financial years (i.e. FY 2015-16, 2016-17, 2017-18) to any Govt/Semi- Govt/State Govt/ PSU/ Private sector corporate office Copy of Purchase Order along with Customer details (Ph. No. Address, e-Mail id etc) should be enclosed.

29. Warranty:

For Passive Components:

Owner seeks warranty for the installed cable plant from the OEM equipment supplier. Bidder shall ensure that the OEM norms for supply, installation, testing and documentation as specified by the OEM supplier shall be adhered to, provided those are in line with TIA / EIA standards and Owner requirement specifications. The warranty shall be provided by the OEM vendor to Owner and shall be administered in India. The duration of the **warranty shall be for a minimum of 25 years for passive components and shall cover the system performance, application assurance and the costs of the supply of components and installation to be signed by the OEM certified engineer of the firm.**

For Active Components:

All active components must have a 05(Five) year's comprehensive onsite warranty from the OEM/OEM authorized vendor with next business day response and support.

31. The bidder to submit the required documents as per format given in Annexure –A&B.

BID SYSTEM AND INSTRUCTIONS FOR SUBMISSION OF BIDS:

Instruction to Bidders:

1. "Two Bid" Systems will be followed for this tender. Two sealed envelopes, namely "Technical Bid" and "Price Bid" are to be put in one sealed envelope super-scribed with "Supply, Installation and Commissioning of LAN & Wi-Fi at NIT Silchar."

The Contents of "Technical Bid" envelop:

The Technical bid should be placed in a sealed cover. This envelope should be super-scribed

2. "Technical Bid" for "Supply, Installation and Commissioning of LAN & Wi-Fi at NIT Silchar."
3. The envelope containing the Technical Bid should also contain the EMD and cost of tender in the form of Demand Draft (DD) drawn in favour of The Director, NIT Silchar, and Payable at Silchar.
4. The Technical bid includes the associated supporting documents. Bill of material (without any price), indicating the compliance of technical specification should also be included.

The Contents of "Price Bid" envelop:

5. The "Price Bid" should be placed in a sealed cover super-scribed with Price Bid for "Supply, Installation and Commissioning of LAN & Wi-Fi at NIT Silchar."
6. Price should be indicated in the prescribed format in the Price Bid only. Any other format will lead to disqualification.
7. Each cover should also indicate clearly the name and address of the bidder.

3. It will be the sole discretion of NITS to accept or reject tenders in case of deviations, if any, from the technical specification.
4. Any misleading information, whether intentional or unintentional will lead to disqualification.



Registrar, NIT, Silchar

(i/c)

Service Part:**PRE – BID Document**

Sr. No.	Requirement	Details of Certification Enclosed YES/NO
1.	EMD @5% of the total bid value	
2.	Latest Manufacturer's Authorization Letter/OEM/Dealer	
3	Order Copies of Last 3 financial Years 2015-2016, 2016-2017 & 2017-2018 duly certified, indicating details of Order Value executed.(Enclose Proof)	
4	Product Literature / Information Brochure	
5	Preferably Vender / OEM should have ISO 9000 or similar Certification for Quality	
6	Certificate of Incorporations	
7	Registration Certificate	
8	Company Profile	
9	Customer List / Client List	
10	PAN	
11	VAT/CST/GST Registration Certificate & Tax Clearance Certificate	
12	Methodology of Warranty Support	
13	Brief History of the Company/ Firm with credentials if any	

Note: - Bidders/Vendors which do not fulfil any or all the above conditions or incomplete in any respect are liable to be rejected.

Signature of Bidder / Vendor with Seal: -

Address: -

Name of Bidder / Vendor:-

Date:-

NATIONAL INSTITUTE OF TECHNOLOGY**SILCHAR 788 010**

Tel.No. Director: (03842) 224879

Fax: (03842) 224797

Tender Advt. No: NITS/PS-623/LAN & Wi-Fi/18-19

Details of items:

Sr. No	Item Description	UoM	Specification of the bidders with make, model and part no. etc.
1	I/O Box (complete set)	Number	
2	48-port Patch Panel	Number	
3	24-port Patch Panel	Number	
4	UTP Patch Cord	Number	
5	UTP Cable	Number	
6	Copper Module	Number	
7	6 Port LIU (Fully loaded)	Number	
8	12 Port LIU (Fully loaded)	Number	
9	FO Patch Cord	Number	
10	FO Module	Number	
11	Indoor FO cable	Meter	
12	Outdoor FO cable (6-core)	Meter	
13	6U Rack	Number	
14	15U Rack	Number	
15	12 Port Switch	Number	
16	24 Port Switch	Number	
17	48 Port Switch	Number	
18	Wireless AP	Number	
19	Wireless Controller	Number	
20	Patch Panel Installation	Number	
21	Rack Installation	Number	
22	FO termination	Number	
23	Casing-caping for UTP	Meter	
24	UTP Cable laying	Meter	

25	I/O Fitting & termination	Number	
26	Indoor FO laying	Meter	
27	Outdoor FO Cable laying (with HDPE)	Meter	
28	Existing network audit & documentation	Job	

TECHNICAL SPECIFICATION

A. 6 Fiber SM Outdoor armored Cable/ (4 or 6) core SM indoor Fibre, G652.D

Sr No.	Specifications	Requirement
1	Cable Type	06F MULTITUBE OUTDOOR ARMOURED OPTICAL FIBER CABLE - DRY
2	Fiber Type	Single Mode, 9/125/250 micron primary coated buffers, OS2 (ITU T G652.d)
3	Armour (for outdoor only)	Electrolytically Chrome-Coated Steel (ECCS) Armor of min. 0.15 mm thickness
4	Cable Construction Type	BELLCORE GR 20 / IEC 794-1
5	Attenuation	@ 1310nm <=0.34 db/Km MAX
		@1550nm <=0.22 db/Km MAX
		@ 1380-1386nm <= 0.31db/Km
6	Cut Off Wave length (nm)	<1260
7	Point Discontinuity (db)	<= 0.1
8	Chromatic Dispersion @ 1310nm (ps/nm x Km)	<=3.5
9	Chromatic Dispersion @ 1550nm (ps/nm x Km)	<=18
10	Core/Mode-Field (um)	9
11	Clad Diameter (um)	125
12	Coat Diameter	250
13	Loose tube material	PBTP Loose tubes dry. 1 nos containing fiber cores and 5 nos filler tubes arranged around a central FRP rod (for outdoor).
14	Loose Tube Color	Blue
15	Loose tube diameter (Nominal)	2.4 mm
16	Loose tube filling	Water swellable threads
17	Fiber Identification	BLUE, ORANGE, GREEN, BROWN, GRAY & WHITE
17	Jacket material	FR HDPE outer jacket
18	Jacket thickness	2 mm Min.
19	Strength members	Water Swellable tape at the periphery of the multiple loose tube arrangement. Water swellable yarns arranged between tubes.
		Central FRP rod strength member around which the loose tubes should be arranged symmetrically
20	Tensile Force	2500 N
21	Cable Weight	150 Kg/Km
22	Cable Outer Diameter	<= 13.2 mm

B. Fiber Management Shelf, LC type Rackmount, 1U

Sr No.	Specifications	Requirement
1	Fiber Management shelf	1U 19" rack mountable
		The fiber management shelf series should be ideal for high density front patching applications.
		Should have Compact design and high density capacity to deliver carrier class fiber management to central offices, Pops, FTTx, mobile systems and LANs.
		High Density:
		1U: 6 / 12 / 24 Fiber terminations
		Shall be factory fitted with LC SM adapters, LC-PC SM pigtails, splice trays, protector sleeves and fiber management rings, with zero assembling required during installation
		Shelves shall be available and compatible with all connector types
	Mounting brackets can be placed in different positions	
2	Material	Min 16 gauge steel
3	Drawer shelf features	Easy access to splicing tray
		Easy access to back side of connector
4	Accessories	Fiber management guides, radius controls & secure tie downs to be integrated in the shelf for better cable management
		Should be preloaded with grounding kits and earthing lugs. Labeling strip for adhesive labels.
5	Cable Inlets	Cable inlets should be secured from dust and dirt penetration
6	Material	Min 16 gauge steel
7	Pigtails loaded in Shelf:	
i	Type	LC-PC Type, SM 1.5 Mtr.
ii	Attenuation	<=0.3 dB
iii	Return Loss	>= 45 dB
iv	Cable Info	9/125 um
v	Outer Dia	0.9 mm
vi	Buffer material	LSZH
vii	Buffer Color	White
viii	Strippability	Semi tight
9	Warranty	25 years on component and performance
10	Compliance	ROHS / ELV Compliant

C. 6/12/24 Fiber LIU, SCAPC type Loaded, Rack-mount

- a. It should be loaded with 6/12/24 nos. of SCAPC Pigtails and SCAPC adapters, 2 nos of splice trays of 6/12/24 fiber capacities. The splice trays should be hinged on a tower so that lower trays can be easily accessible. The splice tray should have the following dimensions in mm – 225(L) x98(W).
- b. A tray wedge should be supplied along with the kit for ease of working on the lower trays.
- c. The adapter plates should be suitably identified with adapter numbering.
- d. The kit supplied should contain at least 30 fusion splice protectors, 20 nos of cable ties, suitable quantity of foam tape and hose clamps.
- e. There should be a provision to store the loop of loose tube.
- f. The fiber cable should be fixed to the body with hose clamps and there should a provision for strength member attachment.
- g. The rails used should be self-locking type so that there is no possibility of the drawer moving forward accidentally.
- h. The top cover should be removable type, no tools should be required to open the top cover.
- i. Optical Performance: Insertion Loss: ≤ 0.3dB
Return Loss: ≥ 60dB

D. LC-LC Fiber Patch Cord, SM

Sr No.	Specifications	Requirement
1	Make and Type	LC/PC to LC/PC Duplex tuned Fiber Optic Patch Cord 9/125 Micron
2	Cable Sheath	LSZH
3	Cable Diameter	1.8 mm twin zip
4	Ferrule	Ceramic
5	Buffer	Tight buffered
6	Insertion Loss	MAX .3 db
7	Return Loss	> 45 db
8	Temperature Range	-10 Degree C to +60 Degree C
9	ROHS	ROHS/ELV Compliant
10	Warranty	25 Years
11	Length	1 Mtr, 3 Mtr, 5 Mtr, 10 Mtr, 15 Mtr

E. CAT6 UTP Jacks with Face Plate and Back Box

Sr No.	Specifications	Requirement
1	Type	PCB based, Unshielded Twisted Pair, Category 6, TIA /EIA 568-C.2 and ISO/IEC 11801
2	Modular Jack	750 mating cycles
3	Wire terminal	200 termination cycles
4	Accessories	Integrated bend-limiting strain-relief unit for cable entry
		Support cable pair termination process on the jacks at 90 degree angle.
		Bidder should have a mechanism to maintain the quality of the termination in respect of the skill level of the termination staff.
5	Housing	Polyphenylene oxide, 94V-0 rated.
6	Blocks	Polycarbonate, 94V-0 rated
7	Jack contacts	Beryllium copper, plated with 1.27 mm [.000050] thick gold in localized area and 3.81 mm [.000150] minimum thick tin-lead in solder area over 1.27 mm [.000050] minimum thick nickel under plate
8	Wiring blocks	Polycarbonate, 94V-0 rated
9	Approvals	(a) UL Listed / CSA Approved
		(b) ETL verified to TIA / EIA Cat 6
10	Performance characteristics @ 250 MHz	Insertion Loss : 0.10dB NEXT : 47.9dB FEXT : 40.1dB Return Loss : 46dB
11	ROHS Compliant	ROHS/ELV Compliant
12	Warranty	25 years on component and performance
13	Faceplate	Single port British Style 86 x 86 mm shuttered, White. Should be supplied with labeling strips and label covers.

F. CAT6 UTP Patch Panel, 24/48 port

Sr No.	Specifications	Requirement
1	Type	24/48-port, Modular, 1U, PCB based, Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 and ISO/IEC 11801
2	Port arrangement	Configured as 6 Port Module with individually replaceable CAT-6 Jacks
3	Circuit Identification	Front of each module shall be capable of accepting 9 mm to 12 mm labels
4	Port Identification	9mm or 12mm Labels on each of 24-ports (to be included in supply
5	Modular Jack	750 mating cycles
6	Wire terminal	200 termination cycles
7	Accessories	Integrated bend-limiting strain-relief unit for cable entry on each port
8	Materials	
	Housing	Polyphenylene oxide, 94V-0 rated
	Wiring blocks	Polycarbonate, 94V-0 rated
	Jack contacts	Beryllium copper, plated with 1.27 mm [.000050] thick gold in localized area and 3.81 mm [.000150] minimum thick tin-lead in solder area over 1.27 mm [.000050] minimum thick nickel under plate
	Panel	Powder coated steel
9	Approvals	UL listed / ETL Verified
10	Termination Pattern	TIA / EIA 568 A and B
11	ROHS Compliant	ROHS/ELV Compliant
12	Warranty	25 years on components and performance

G. CAT6 UTP Patch Cord

Sr No.	Specifications	Requirement
1	Type	Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 & ISO/IEC 11801
2	Conductor	24 AWG 7 / 32, stranded copper conductors 100 Ohm
3	Length	4 feet, 7 feet, 10 feet
4	Plug Protection	Transparent Slim boot
5	Jacket	Flame Retardant PVC
6	Warranty	25-year component
7	UL Listing	CMR Rated
8	ROHS Compliant	ROHS/ELV Compliant

H. CAT6 UTP Cable

Sr No.	Specifications	Requirement
1	Type	Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 & ISO/IEC 11801. Cabling system to be Certificate by Intertek (ETL) for the 4-Connectors channel testing to the Cat 6 Cabling system as per the ANSI/TIA 568 C.2 & as well as the ISO 11801 standards up to 600 MHz.
2	Conductors	23 AWG solid bare copper
3	Insulation	Polyethylene
4	Jacket	Flame Retardant PVC
	Pair Separator	Cross-member (+) fluted Spline.
5	Approvals	(a) UL Listed / UL Verified. UL Mark should be visible on the Packaging.
		(b) ETL verified to TIA / EIA Cat 6
6	Operating temperature	-20 Deg. C to +60 Deg. C
7	Frequency tested up to	Minimum 600 MHz; ETL report to be provided for 600 MHz performance.
8	Packing	Box of 305 meters
9	Cable Outer Diameter	.23 inches
10	Delay Skew	45ns MAX.
12	Impedance	100 Ohms + / - 15 ohms, 1 to 600 MHz.
13	UL/NEC Ratings	CMR Rated
14	Mutual Capacitance	5.6 nF MAX /100 Mtr.
15	Conductor Resistance	66.58 Ohms Max / KM
16	Propagation Delay	536 ns/100 Mtrs. MAX @ 250 Mhz
17	Performance characteristics @ 250 MHz	Attenuation: 32.8dB/100m NEXT : 44dB PS NEXT : 41dB ELFEXT : 23dB PSELFEXT : 19dB Return Loss: 25.3dB ACR : 11.3dB
		Should have a PSNEXT margin of 7.5 dB over CAT6
		CAT6 cabling system should be tested and verified by the Independent third party laboratories for Zero BER (Bit Error Rate) testing at the data transmission speed of 1 Gbit/s.
18	ROHS Compliant	ROHS/ELV Compliant

I. 15U Rack

Sr No.	Technical Features
1	Wall mount 2 post rack supporting 19" rackmount equipment
2	Equipment Space: Height: 15 RMU Width: 19" EIA Depth: 20" D
3	Material: Black Powder Coated Aluminium alloy
4	Cable Management: Shall support vertical and horizontal cable managements for front, back and patch cable managements.
5	Load Capacity: 1000 lb of equipment
6	Construction: Bolted assembly
7	Universal hole pattern, 5/8" - 5/8" - 1/2 " vertical hole spacing
8	Cable Ladder tray to be included in supply for providing support to the rack as well as routing cables.
9	The rack shall be supplied with both side vertical cable managers with hinged doors. Vertical cable duct width should be min 4 inches with finger style cable managers in front and rear.

J. Indoor Wireless Access Point:

Architecture	Dual-band Controller-based 802.11a/g/n with Integrated Antenna
802.11n Capabilities	2x2 multiple-input multiple-output (MIMO) with two spatial streams
	20- and 40-MHz channels
	PHY data rates up to 300 Mbps
	Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx)
Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
	802.11n data rates (2.4 GHz and 5 GHz): 40-MHz Rate (Mbps) 300 Mbps
Maximum Number of Non-Overlapping Channels at 2.4 GHz	802.11b/g - 20 MHz: 3
	802.11n - 20 MHz: 3
Maximum Number of Non-Overlapping Channels at 5 GHz	802.11a - 20 MHz: 21
	802.11n - 20 MHz: 21
	802.11n - 40 MHz: 9
Wired capabilities	Should be able to bridge traffic locally to the vlans without sending to controller
	Should be able to enforce security ACLS locally without sending to controller
Wireless Capabilities	Transmit power should be 23 dBm or more
	Support minimum 8 SSID per Radio

	Should be able to provide a self-healing and self-optimizing wireless network that mitigates the impact of wireless interference, providing the most reliable wireless coverage
	Should be able to steer dual band clients to 5 Ghz for higher performance and congestion free network.
	Should be able to detect Rogue AP
	Should be able to act as a WiPS sensor
	Should be able to form Dynamic Mesh with neighboring AP
	Access points can automatically select the optimal power and channel during deployment phase - calibration

K. 5 KVA UPS:

Item	Specification
AC Input Parameters	230 V - 20 % + 15 %, Single Phase
Frequency	50Hz ± 10 %, should work on generators
Parameters	Output Voltage 220 / 230 V AC Single Phase
	Voltage Regulation ± 1 %
	Frequency 50 Hz ± 0.05 Hz
	Waveform Sine wave
	Harmonic Distortion Less than 3 %
	Power Factor 0.8 Lagging
	Overload 110 % for 10 Minutes.200 % for 5 Cycles
	Crest Factor > 4 : 1
Protections	Transient Recovery within 3 Cycles
	Battery Over Voltage
	Battery Under Voltage
	Output AC Over Voltage
Indications	Output Overload / Short Circuit
	<ul style="list-style-type: none"> • Mains On. • Load On Batteries. • Battery Low. • Inverter Overload • Load On Mains. • Battery Boost. • Battery Level Graph • Load Level Graph
Meter	Digital Meter for Output Voltage / Battery Voltage / Output Current / Output Frequency
Operational condition	Operating - 0° C - 50° C
	Relative Humidity - 95 % RH
	Audible Noise should be less than 55 db at 1 meter

L. 24-port switch:

Architecture	Stackable managed switch with 24 x 10/100/1000 BaseT (all 24) ports and minimum of 4 100/1000 SFP ports, having non-blocking architecture
	Should have one out of band ethernet Management ports and one serial Console port
	The switch should be supplied with necessary modules / transceivers of the same OEM as the switch. (Bidder to quote cost of transceiver as separate item. Further, technical bid should explicitly mention if they are quoting SX, LX, ZX or other variants of transceiver. Bidder can make a physical inspection of the site, before submission of bid, at their own cost after obtaining permission from the Institute Authority in this regard.)
	Should have at least 55 Gbps switching fabric
	Should have switching throughput of minimum 40 mpps
	Should have minimum 1 GB RAM and min. 2 GB flash
L2 and L3 features	Should support minimum 4K concurrent, port-based VLAN
	Should have minimum 16K MAC table with 6,00,000 Hrs or better MTBF
	Should support Static IP routing, RIP and RIPng from day-1
	Should be IPv6 enabled on day-1 without any additional hardware/software
Security and Management	L2/L3/L4 IP based, Source port, destination port, MAC based, Time based
	Should have IEEE 802.1X user authentication, Web-based authentication and MAC-based authentication
	Switch should have Dynamic ARP protection to block ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
	DHCP protection to block DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks should be supported
	DHCP enforcement to prevent users with Static IP should be supported
	The switch shall support multiple administrator accounts. Each administrator account shall be configurable with the desired level of management privileges
	Should have local and remote port mirroring with N:N mirroring
	Should have RADIUS authentication for secure switch CLI logon
	The switch should support SNMP V2c and V3, XML api, SDN with Open flow and RMON
	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.

	Secure Web based management (https) and SSH v2 based management should be supported
	Time synchronization using Network time protocol must be available
	The switch should have feature of backing up the configuration & restoring a backed-up configuration. Multiple Configuration files must be supported. Config/image upload and download by SFTP should be supported.
QoS	Should have IP multicast Snooping, supporting min. 1K groups
	Should have IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
	Should have IEEE 802.1p Traffic prioritization allowing real-time traffic classification into 8 priority levels mapped to 8 queues
	Should be able to set the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), TCP/UDP port number, source port, and DiffServ
	Should have per-port Rate Limiting setting at ingress
	Should support IEEE 802.1ba (AVB) from day-1 without any additional hardware/software
Manageability	Should have sFlow / netflow for traffic monitoring
	Should have L2 Traceroute and L2 Ping
	Should support IEEE 802.1d, 802.1s, 802.1w. Should provide less than 50 msec convergence based on RFC 3619
	Should have EnergyWise or equivalent that monitors the power consumption, and also can take action based on business rules to reduce power consumption.
	Should have Auto Smartports or equivalent that discovers and configures the ports as other devices are plugged into the switch
Resiliency	Should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)
	Should have Link recovery to maintain voice convergence (less than 150 ms recovery)
	Should support Redundant Power Supply
Safety & Env. certification	FCC Part 15 Class A
	The switch shall conform to IEC-60950/CSA-60950/EN-60950/UL-60950 standard for safety requirements of information technology equipment.
Others	Should be operating in temperature: 0°C to 50°C and relative humidity: 10% to 95% Non-condensing
	Must have EAL3 /NDcPP or above common criteria certification

	OEM End-of-sale declaration shall not have been released for the quoted model at the time of the bid submission. Bidder must submit this declaration, certified by the OEM, alongwith the bid.
	The switch shall be supplied with the latest OS version
	All the specified features/parameters/certifications must be available on the Technical Bid opening date. Features/parameters/certifications proposed to be available in near future/on roadmap shall not be considered
	Bidder should submit the RFC 2544, RFC 2889 report based on Tolly, Lippis or equivalent established 3 rd party test report
	Authorization letter from OEM (Active) (in original) as proof of being authorized system Integrator and authorization certificate for sale and maintenance of quoted products.
	Proposed switch should be offered with min. 3 year warranty with Next Buisnes Day. Successful bidder, upon award of the work order/purchase order, will have to submit a letter from the OEM (in original) stating that, they have entered into back-to-back contract, mentioning explicitly the terms and period of the contract, with the OEM.
	The OEM should have presence in India for min 10 years and the incorporation letter for the same has to be submitted along with bid.
	The OEM should have TAC center with India toll free number.
	All the proposed switches IOS should be on the same platform for seamless and ease of manageability.

M. 48-port switch:

Architecture	Stackable managed switch with 48 x 10/100/1000 BaseT (all 48) ports and minimum of 4 100/1000 SFP ports, having non-blocking architecture
	Should have one out of band ethernet Management ports and one serial Console port
	The switch should be supplied with necessary modules / transceivers of the same OEM as the switch. (Bidder to quote cost of transceiver as separate item. Further, technical bid should explicitly mention if they are quoting SX, LX, ZX or other variants of transceiver. Bidder can make a physical inspection of the site, before submission of bid, at their own cost after obtaining permission from the Institute Authority in this regard.)

