Tender Document Fee Rs.500/

NATIONAL INSTITUTE OF TECHNOLOGY
KURUKSHETRA-136119

INVITATION OF TENDERS

For supply of Campus Wide Networking Phase-II

Tender Reference	**:**	**SO/NITK/CCN/Tender/2008**
Date of Commencement of Sale of Tender document.	**:**	**17.09.2008**
Pre Bid Meeting	**:**	**30.09.2008 at 11.30 A.M. in Centre for Computing & Networking (CCN)** **Any amendment in tender document after pre bid meeting will be displayed on the Institute Website only.**
Last date and Time for Receipt of tenders	:	**15.10.2008 upto 2.30 P.M.**
Time and date of opening of tenders	**:**	**15.10.2008 at 3.00 P.M.**
Place of opening of Tenders	**:**	**Office of the Stores Officer, NIT, Kurukshetra**

INSTRUCTIONS TO TENDERERS
&
CONDITIONS OF CONTRACT

1. In case the Tender Documents are downloaded from the website of the Institute for submission of the tender, the Tender Document Fee may be deposited through Demand Draft alongwith the Tender otherwise the tender may be rejected.

2. **System of Tendering**

   Two bid system (Technical & Commercial bids should be submitted in separate covers in following manner):

   (i) Bid containing technical specifications and Earnest Money Deposit.
   (ii) Bid containing financial offer.

   The envelopes should be marked as Technical Bid and Financial Bid with reference numbers and submitted in one cover.

   These bids will be opened in two stages on different dates. The bid containing technical specifications and Earnest Money deposit will be opened at Ist stage and if the same is found according to required specifications, the bid containing financial offer shall be opened in IInd stage

3. Tender must be sent in a properly sealed envelope with tender number and due date subscribed on the envelope addressed to the Stores Officer, NIT, Kurukshetra.

4. The price should be quoted on prescribed price schedule. All the columns shall be duly and properly filled in separately. The rates and units shall not be overwritten in the price schedule. The rates shall be quoted both in figures and words. All corrections must be attested by the tenderer. The Tender should be signed by the authorized signatory of the firm.

5. The tenderer shall deposit earnest money as specified in Schedule of Requirements alongwith Technical Bid in the form of Accounts payee Demand Draft, Fixed Deposit Receipt, Bankers Cheque or Bank Guarantee from any Commercial Bank in favour of the Director, National Institute of Technology, Kurukshetra valid for 45 days beyond the final bid validity period. The tenders without Earnest Money shall be rejected. EMD of the tenderer will be forfeited, if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender. Further, if the successful tenderer fails to furnish the required performance security within specified period, its EMD will be forfeited.

6. Prior to expiration of the period of validity of tender, a notification of award will be issue to the successful tenderer in writing that its bid has been accepted.

7. Within 21 days of notification of awards, the successful tenderer shall furnish the Performance Security in the Performance Security form provided in the tender document for an amount of 5% of total value of the contract in shape of Accounts payee Demand

Draft, Fixed Deposit Receipt, Bankers Cheque or Bank Guarantee from any Commercial Bank in favour of the Director, National Institute of Technology, Kurukshetra for valid for a period of 60 days beyond the date of completion of contractual obligations of the supplier including warranty obligations. The performance Security will be forfeited in the event of a breach of contract by the supplier.

8. The required delivery period must be mentioned against each item. After the order has been placed, the goods must be delivered within the stipulated period or by the delivery period extended by the Director. In case of late delivery of goods the Director is entitled to recover as penalty from the tenderer a sum @ 0.5% of the total value of the goods for every week or part thereof and the maximum 10% of the total value of the goods for which the consignment is delayed beyond the due date.

9. The payment will be made after receipt of goods according to specifications, its installation and good working order. In case the goods are rejected these have to be removed by the supplier at his own cost. The rejected goods must be replaced by the supplier within 15 days of the dispatch of registered notice intimating that the goods have been rejected failing which the order may be cancelled and security forfeited.

10. No payment will be made in advance for any supplies under this tender. No claim for any duty, not stipulated in tender will be admitted at any stage.

11. The valid documentary proof of Sales Tax, VAT/Service Tax Registration No. & details of Income Tax registration (PAN) should be submitted alongwith tender. The taxes must be quoted clearly and separately. The Form D is not issued by the Institute. If the taxes are not quoted separately, it will be presumed that the rates quoted are inclusive of taxes. The rates quoted should be firm and include all charges for delivery FOR KURUKSHETRA inclusive of packing, forwarding and Insurance charges. The material may be dispatched "FREIGHT PAID" in all cases where the offer is F.O.R. destination.

12. The consignment must be insured not exceeding at the rate of 1% of the value against the risk of breakdown and damage in transit with an Insurance Company if the goods are likely to get damaged in transit. In the absence of insurance the entire responsibility shall rest with the supplier and the Director shall not be bound to pay for such items, broken or damaged in transit.

13. The Custom/Excise Duty exemption is not applicable in this case.

14. In case of goods controlled by the Government, the tendered rates shall not be higher than the controlled rates.

15. The warrantee period as specified in the specifications should be mentioned in the tender. A list of users where similar equipment has been supplied in the past should be furnished with the tender.

16. Director of the Institute reserves the right to accept or reject any tender without assigning any reason.

17. The institute reserve the right to verify/seek confirmation of all original documentary evidence submitted by the venders in support of the tenders, specifications for eligible criteria. In case any information furnished by vender is found false/incorrect the tender will be rejected. The descriptive literature with full technical data and drawing/photos must be furnished alongwith the tender.

18. In case of dispute the decision of the Director shall be final. All above conditions will be enforced unless written orders of the Director are obtained relaxing any specific condition in any particular instance.

19. The tender shall remain valid for **90 days** from the date of opening of tender. Fax or conditional tenders shall not be accepted.

20. **Tender received beyond the fixed date and time shall not be accepted.**

21. The tenderers are required to quote their lowest rates in the very first instance and there shall be no negotiation in purchases. In case only one tender is received or only one tender remains according to specifications of the required goods, negotiations will be carried out.

22. All disputes will be subject to Kurukshetra Jurisdiction.

SCHEDULE OF REQUIREMENTS

S.No	Equipment	Brief Description	Quantity	Unit	Delivery Schedule	Bid Security (Rs.)
1	Wireless Control Switch	for 50 access point	1		24 weeks from the date of contract (Supply, Installation & Commissioning) at NIT,KKR	**4,83,000/-**
2.	Distribution switch	Modular, expandable Design 8 SFP Slots 12 port 10/100/1000 Redundant Power Supply (optional)	1	Each		
3.	Access Switches	Fast Ethernet stackable Switch 24 10/100 Mbps ports with 2 SFP slots Fast Ethernet stackable Switch 4810/100 Mbps ports with 2 SFP slots	22 56	Each		
4.	LX modules	1000BaseLX GBIC Modules	14	Each		
5	Wireless access point	With antennae and mounting hardware of the same make as of control switch	40			
6.	Passive Copper Components (Cat-6)	1. Information outlets 2. Single face plate/SMB 3. Double face plate SMB 4. 7ft Workstation/Equipment Cords 5. 24 port Cat-6 Patch Panel 6. 3 ft Workstation/Equipment Cords 7. 7 ft cross over cable/cord (Cat-6) 8. Cat-6 cable	2948 2500 500 2948 141 3224 20 500	Nos. Nos. Nos. Nos. Nos. Nos. Nos. boxes		
7	Fiber Components	1. 6 Core SMF 2. SC connectors/pigtails (1m) 3. 6 port adaptor plates loaded with SC duplex coupler 4. 12 port LIU with blanks 5. SC-LC/SC FIBER PATCH CORD(3 m)	2000 100 14 12 13	Mtrs. Nos. Nos. Nos Nos		
8.	Networking Enclosures	1. 12U Wall Mount Rack with 2 Sections with Standard Accessories The above racks must have all the standard accessories including wire manager, power distribution and hardware mounting ports.	48	Nos Nos. Nos		
9.	Cabling	1. Laying of Cat-6 UTP Cable 2. Fixing & Termination of I/O's(single and double face) 3. Labeling, Installation & Termination of Jack Panel 4. Fixing, Installation of Rack With Proper Management of Cables 5. Laying of Fiber Cable with route markers 6. Fixing & Installation of LIU 7. Fusion Splicing of Pigtails on Fiber Cables 8. Penta Scanner Testing numbering and ferruling of UTP Nodes 9. Fiber Link Testing With Power Meter and OTDR for dB Loss 10. Certification & Documentation Charges 11. Digging of hard & Soft Soil 12. Resident Engineer Charges	500 2948 141 48 2000	Box Nos. Nos. 		
10.	Accessories	1. HDPE Pipe 25mm 2. PVC Channel/Conduit (suitable dia) with Accessories	5000 40000	Mtrs. Mtrs.		
11	Power	Armoured Electric power cable burial type for switches from CCN	2000	Mtrs		

Terms & Conditions

a) Performance of the on-site assembly, commissioning and startup of the equipment. Including the following:
   i. Installation, Configuration and Satisfactory Customization of the parameters of the Layer 3 Distribution Switches. The configuration shall be restricted to VLAN's configuration of Access Lists as necessary and implementing Policies where necessary. This includes the implementation of Virtual Router Redundancy Protocol on the Layer 3 Switches. The cost for Installation, Configuration and customization shall be quoted for as unit price per Layer 3 and / or Policy module (where applicable)
   ii Installation, Configuration and Satisfactory Customization of the parameters of the wireless access points and central control switch
   iii Customization of existing Network Management software and associated modules;

b) Furnishing the detailed operation and maintenance manuals for each item of supply;

c) Training of the Purchaser's personal at the purchaser's site in the installation and operation of the hardware, utilities and all contracted software.

d) Maintenance and repair of the equipment at each location during the warranty period including supply of all spares. This shall not relieve the supplier of any warranty obligations under this contract.

e) Maintenance and/or repairs of the supplied goods for a period of three years after the end of the warranty period. The bidder should indicate the spares and their costs, if any, which are not included in the maintenance contracts.

f) The annual Maintenance Contract (AMC) will be comprehensive and will cover the cost of all the spare parts required for replacement/repair the system except consumable items. The AMC may be on regular basis to ensure the minimum downtime of the system. In other words AMC should assure 98% uptime of all equipment.

g) On-site assembly, commissioning of the network.

Furnishing the documents with following details after successful implementing the structured Cabling System to be provided in both copy and soft copy in CD-ROM.

- Detailed connectivity diagram;
- Raceway/pathway diagram;
- Cable routing diagram;
- Copper and Fiber patching details;
- Wireless Access Point Connectivity;
- Wireless Control Switch Configuration;
- Naming and labeling details;
- Cable scanning and test results.

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h) Training to IT support engineers of Purchaser for at least three days on the components of structured cabling, LAN, WAN, Security, basic trouble shooting and maintenance. (Shall provide all reference manuals, booklets and other materials required for training) at Purchaser's premises in Kurukshetra. A maximum of 10 personnel would need to be trained.

i) Provision of Resident Engineer

j) Inspection of the installation will be at the installation site and Acceptance will be granted upon successful installation unless otherwise provided. Title to /or risk of loss or damage to all items shall be the responsibility of the bidder until acceptance by Purchases, unless loss or damage results from negligence by Purchaser. If the materials or services supplied to Purchased are found to be defective or do not conform to the specifications, Purchaser reserves the right to cancel the contract upon written notice to the bidder and return products at bidder's expense, based upon the terms of the Contract.

k) The acceptance test will be conducted by the purchaser/their consultant or any other person nominated by the purchaser, at its option. The acceptance will involve trouble-free operation for seven consecutive days. There shall not be any additional charges for carrying out acceptance tests. No malfunction, partial or complete failure of any part of hardware or excessive heating of motors attached to printers, drivers etc. or bugs in the software should occur. All the software should be complete and no missing modules/sections will be allowed. The supplier shall maintain necessary log in respect of the results of the tests to establish to the entire satisfaction of the purchaser, the successful completion of the test specified.

l) In the event of the hardware and software failing to pass the acceptance test, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which the purchaser reserves the rights to get the equipment replaced by the supplier at no extra cost to the purchaser

m) Purchaser shall at all times have access to the work wherever it is in preparation or progress, and the bidder shall provide proper facilities for such access and for inspection.

n) The bidder shall not declare as completed, any work until Purchaser has inspected the work. Should the bidder close up the work prior to inspection by Purchaser, the bidder shall uncover the work for inspection by Purchaser at no cost to Purchaser, and then recover the work according to the specification contained herein
o) The bidder shall notify Purchaser in writing when the work is ready for inspection. The Purchaser will inspect the work as expeditiously as possible after receipt of notification from the bidder.
p) The bidder shall provide a Twenty-Year Product Performance Warranty for all the passive elements quoted
q) If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the equipment proves to be unsatisfactory, the Purchase shall have the right to continue to operate or use such equipment until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.
r) The Supplier shall provide complete and legal documentation of hardware, all sub-systems, operating systems, compiler, system software and the other software. The Supplier shall also provide licensed software for all software products, whether developed by it or acquired from others. The supplier shall also indemnify the purchaser against any levies/penalties on account of any default in this regard.

NOTE:

- All passive components quantities shown in the bid document are indicative and hence may vary as per actual requirements. The vendor will assess the exact distances for OFC and UTP cabling involved at the time of site survey before the submission of their bids. The final payment for cabling will made in accordance with their financial bids, hence vendors must quote for actual quantities of UTP and OFC cabling requirements in their bids.

- The vendor will configure the Layer 3 switches to provide isolation between different departments / hostels/residences based on VLAN technology.

- The warranty period shall be for 3 years from the date of acceptance of goods.

- **AMC- The vendor shall maintain the campus wide LAN for next 3 years after warranty period of active components. The amount of AMC will be taken into account for evaluation of the tenders. The annual maintenance cost after warranty period shall be paid in equal quarterly installments at the end of each quarter subject to satisfactory services rendered, as per the rates quoted**

- The respective price and the cost of resident engineer during warranty period for maintenance of existing CWN and new coming CWN in the Institute should be quoted in the bid if not quoted separately it will be assumed that price is included.

- The vendor (successful bidder) will sign service level agreement with the institute

TECHNICAL SPECIFICATIONS OF CAMPUS WIDE NETWORKING PHASE-II

BOM for NIT Kurukshetra (Turn-Key project) Campus (Residential & Hostels) structured cabling and wireless

Campus Network Requirements

National Institute of Technology, Kurukshetra has already setup appox. 1100 Nodes campus Wide Local Area Network in the Academic Area based on Gigabit OFC Backbones and CAT6 UTP Structured cabling during 2007.

NIT Kurukshetra is now planning to extend this facility to each user in Hostels & Residential Areas of the campus. There are at present 7 Nos. of Boys Hostels including a PG Hostel & MBA Hostel and 2 Nos. of Girls Hostels having appox. 1800 users and 150 faculty Residences including Chandralok.

As part of the first phase, the Gigabit OFC backbone has been provided to all Hostel buildings and now only the structured cabling based on CAT6 UTP standards for appox. 1800 nodes and switches need to be provided in each Hostel building.

However there is a requirement of providing OFC back bones in the Residential Area of the campus. It is being proposed to install a Gigabit Fiber Layer 3 Aggregation Switch at DA type flats. Additional OFC segments from this location will connect CA Type flats (at 2 locations), AD Type Flats & DB Type Flats. Similarly it is being also proposed to have OFC gigabit backbones from the CCN to BA type flats and from old Girls Hostel to BC Type Flats respectively. Rest of the flats shall be connected with CAT6 UTP backbones either from the old girls Hostel or from the respective nearest switch installed in the nearby flat.

This is a **turnkey project** including supply of materials and implementation of the work comprising of laying cables, mounting switching, structured cabling and maintenance of campus wide network and integrated wi-fi solution using the same existing NMS and core switch as that of switches & WLAN controlling device .

The tentative number of information outlets (users) to be brought on the LAN at each location is given below:

User Details for Hostel & Residential LAN

S.No.	Location	Nodes
	Hostels	
1	New Girls Hostel	205
2	Old Girls Hostel	125
3	Boys Hostel 1	240
4	Boys Hostel 2	240
5	Boys Hostel 3	265
6	Boys Hostel 4	255
7	Boys Hostel 5	255
8	PG Hostel	165
9	MBA Hostel	48
10	New Boys Hostel	400
	Residential	
11	Chandralok	23
12	CC Type Residences	12
13	DB Type Residences	56
14	DA Type Residences	9
15	CA Type Residences	13
17	BB,CB&BC Type Residences	12

18	AD Type Residences	6
19	BA Type Residences	6
	CWN-I left over/new construction	
20	Mechanical Department	80
21.	MBA Dept	100
22	Computer Department	250
23	Central Workshop	24
24	Electronics Department	120
25	Physics Department	24
26	Chemistry Department	2
	TOTAL	**2948**

Total Points = 2948

General Scope of Work

- Suitable solution to the campus wide network should be quoted.
- Supply, Install the Network Switches, firewall etc., and associated equipments as per the solution
- Supply, Install the cabling components and associated equipments as per the solution
- Test connectivity end-to-end and commission the system for proper connectivity as a part of QA/QC and UAT procedures documentation of the system installed and commissioned.
- Provide the details of the VLAN and security policy to be implemented, and its implementation.
- Customize existing Network Management System (NMS) to manage the entire campus wide LAN Infrastructure.
- Install wireless network through NMS

FOLLOWING CONSIDERATIONS SHALL BE KEPT IN MIND, TO ARRIVE AT THE SOLUTION OF THE CAMPUS WIDE LAN AT NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA.

High-availability: It is required of mission critical systems running on the campus network. If any active link going down or any other reason should have preferably no impact or minimal impact on the network performance. The network level redundancy should be automatic and no manual intervention should be required for switchover of the links.

Modularity: It is a key requirement, in the sense that incremental additions should be possible at the hardware & software levels, as evolving needs justify expansion.

Scalability and expandability: Scalability and expandability are the stated requirements of the proposed campus network at National Institute of Technology, Kurukshetra. The solution should be scalable and expandable, if required, should be easy with minimal changes in the network.

Flexibility: Flexibility and ease of adding new services or features (Data, Voice, Video, and Wireless etc.) required due to the dynamic operating environment. The proposed solution should also be flexible enough to support current standards and foreseen upcoming standards.

QoS: Quality of Service is required in the proposed network as various user groups and various applications will be running on the network. All the network components being proposed should support traffic policies & QoS.

Reliability: High Reliability of all the products constituting the core of the campus network & other sub systems is crucial. The products should have the self-healing with fast convergence features in case of any failure. The equipments proposed should have high MTBF and proven reliability.

Redundancy: Physical redundancy is required at fiber level. This should be achieved using redundant runs of fiber on redundant paths. If primary fiber gets cut or damaged for any reason, it should have preferably no impact or minimum impact on the overall operation of the system. Network level redundancy is required at the connectivity level. Downtimes must be minimized by the right choice of components, right design & provision of adequate redundancy.

Security: It is one of the key requirements of proposed campus network as different user groups are using this common infrastructure with very sensitive applications. So provision of adequate security has to be provided on the network between different user groups.

Management: complete visibility and control of the network, as well as the provision of being able to exchange data with the management platforms or other sub-systems is crucial to the proposed campus network. The existing NMS should support features for centralized proactive management, statistical analysis, trouble shooting tools, configuration tools etc.

Simplicity: The proposed network design should be simple with minimum variety of components and preferably from a single manufacturer. This also implies simple to understand, implement & maintain the entire system.

A. Structured cabling Design

Centralized Architecture is proposed in each block with the Switch Room located in middle of the building so that cable distance does not exceed maximum distance supported by UTP cables. The Switch Room will act as the centralized connectivity point for both Data and Voice (future plan). It is proposed to use Category 6 cables for horizontal data connectivity.
The backbone of the network will be built using 6 core SMF cables. It is proposed to have CCN as central hub with all other buildings/sections connected to it through 6 core SMF cables. There should also be provision for backbone cable redundancy. For that purpose, it is proposed to build fiber ring so that the same can be used in case main fiber connecting to central building is not available.

B. WAN Design

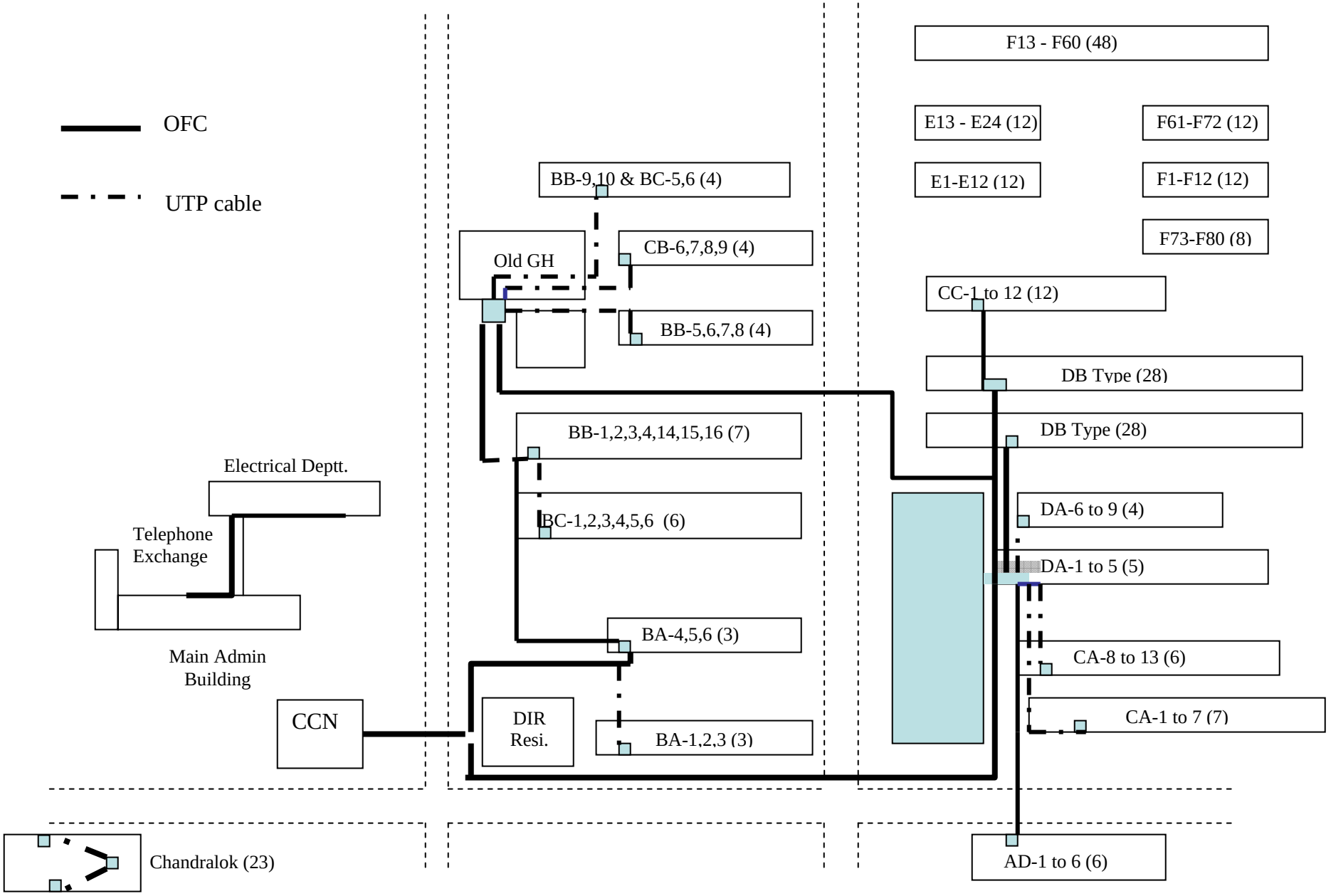
The WAN infrastructure will be mainly used for providing Internet connectivity to students and faculties. It will also be used for remote access of student database, assignment submission, etc. Our Institute has 14 MBPS leased line on OFC local loop for Internet connectivity.

C. Wireless LAN

Design to cover entire campus Institutional Residential and Hostels with no black hole and zones

Please refer the diagram for proposed physical connectivity. The layout of existing campus wide networking Phase-I would be provided at the pre-bid meeting

OFC backbone for Residential area and UTP CABLE LAYOUT



GENERAL TECHNICAL SPECIFICATIONS FOR THE SCHEDULE

(A) ACTIVE COMPONENTS SPECIFICATIONS

1. WIRE LESS CONTROL SWITCH

The central switch should have following features:

S.No.	Feature	Description	Compliance Yes/No
1.	**Ports**	1 x 10/100 Base T Management Port 2 x DB 9 4 x 10/100/1000 Base T 1 x DB 9 serial console port for debugging	
2.	**Scalability**	Maximum number of managed access points-50 upgradable to 100 in normal mode & upto 200 in Failover mode.	
3.	**Performance**	Maximum number of users (single controller)- upto 2048 concurrent Maximum number of Access Domains-32	
4.	**Security**	Authentication- Captive Portal – URL redirect to a web page, Walled Garden-unauthenticated access to restricted sites 802.1x – WPA, EAP-TLS, EAP-TTLS, PEAP, EAP-MD5, RADIUS, Rogue AP Detection Encryption- WEP (40 & 128 bit), TKIP, AES	
5.	**IEEE Standards**	802.1D, 802.1Q, 802.1X, 802.1aa – 802.1x, 802.3af, 802.3, 802.3i, 802.3u, 802.3x, 802.3z, 802.11a, 802.11b, 802.11g, 802.11d – 802.11, 802.11h, 802.11i, 802.11e, 802.11 MIB	
6.	**Protocols**	IPv4, IPv6,TCP, UDP, ICMP, ARP, RADIUS, SLP, DHCP, OSPF v2, NSSA, TFTPv2, EAP-TLS, SNMP, MIB-II, SNMPv2, SMIv2, HTTPs, Minimum Router requirement RFCs, MIB for network managed TCP/IP, SMIv2, DS field in IPv4/IPv6, SNTPv4, Path MTU Discovery, Dynamic Authorization Extensions to RADIUS, Internet Draft – Secure Shell v2 (SSHv2), Internet Draft – EAP-TTLS, Internet Draft – EAP-PEAP, Internet Draft – CAPWAP Tunneling Protocol (CTP)	
7.	**Storage Temp.**	-40°C to 70°C	
8.	**Operating Temp.**	5°C - 40°C	
9.	**Relation Humidity**	10 – 95% (Non Condensing)	
10.	**LAN Interface**	Ethernet 10/100/1000	
11.	**Safety Standards**	CISPR 24 A2:2002 IEC/EN 61000-4-2,3,4,5,6,11	
12.	**Environments**	EN 300 019-2-3 v2.1.2 EN/ETSI 019-2-1 v2.1.2	

2. DISTRIBUTION SWITCH

S.No.	Feature	Description	Compliance Yes/No
1	Port Density Capability	24 port 1000 BASE-X SFP/mini GBIC	
2	Technology support	10/100 base TX, 1000 Base SX/LX/T, 10/100/1000 Base TX	
3	Back Plane capacity	40 Gbps or better	
4	Throughput	30 Mpps or better	
5	MAC address support	12,000 MAC address	
6	Redundancy	Dual redundant Power supply Provision for VRRP or HSRP	
7	VLAN support	IEEE 802.1Q VLAN with 500 VLANs	
8	Switching / Routing Services	L3 switching**,** L2-L4 services	
9	Protocols	RIPv1/v2, OSPF IGMP IEEE 802.1Q, 802.1p, 802.1d, 802.3x, 802.3ad, 802.1s, 802.1w VRRP or HSRP	
10	Management	Web View, Telnet Access via SShv2 encryption, SNMPv3, Console, RMON	
11	QoS	802.qp prioritization with minimum of four priority queues for critical applications like Voice / IP telephony L2/L3/L4 traffic classification Weighted Fair Queuing Rate Limiting	
12	Security	802.1x Port based Network access control MAC address Locking RADIUS/TACACS support / MAC support Support for user based policies Support disabling of a port	

3. ACCESS SWITCH

S.No.	Feature	Description	Compliance Yes/No
1.	Port density capability	24/48 port 10/100 with 2 SFP slots	
2.	Technology Support	10/100 Base TX, 1000 Base SX/LX/T	
3	Stackable Design	Up to minimum 8 units in height	
4.	Back plane capacity	8.8 Gbps for 24 ports	
5	Throughput	6.5 Mpps	
6	MAC Address Support	8,000 MAC addresses	
7	VLAN support	IEEE 802.1Q VLAN with 255 VLANs	
8.	Switching Services	L2 switching L2-L4 services	
9	Protocols	IEEE 802.1Q,802.1p,802.1d,802.3x,802.3ad,802.1w,IGMP	
10	Management	Web View, Telnet, SNMP, Console, RMON	
11	QoS	802.1p prioritization with minimum of four priority queues for support of critical application like voice/IP telephony L2 traffic classification Weighted Fair Queuing Rate Limiting	
12	Security	802.1x Port based Network access control MAC address Locking RADIUS/TACACS support	

4. ACCESS POINT WIRELESS PLUG AND PLAY TYPE

S.No.	Feature	Description	Compliance Yes/No
1	**Radio Transceiver standards**	IEEE 802.11a,b/g,802.3af	
2	**Access point power**	2.4GHz,5.0 GHz	
3	Antenna Internal Diversity	2.4 GHz – 2 dBi Gain • 5.0 GHz – 5 dBi Gain	
4	Frequency Bands	2.4 GHz to 2.4835 GHz 5.15 GHz to 5.850 GHz	
5	**Wireless modulation, data rates, receive sensitivity**	IEEE 802/11 a,b,g standards	
6	**Maximum Transmit power**	5.15 GHz to 5.850 GHz 18dbm	
7	**Operating temperature**	5° C to 40°	
8	**Storage temperature**	**-40° C to 85° C**	
9	**Relative Humidity**	**10 - 95% (Non-Condensing)**	
10	**Altitude**	**0 - 3000 meters**	
11	Input Power	Power over Ethernet (PoE) **48VDC, 250mA via Power over Ethernet (PoE)**	
12	Interface	Auto sensing 10/100 Ethernet interface	
13	EMC standards	CISPR22:2003:A1:2004 Class A,CISPR 24:1997 Class A,IEC/EN 61000-4-2, IEC/EN 61000-4-3 ,IEC/EN 61000-4-4 ,IEC/EN 61000-4-5 ,IEC/EN 61000-4-6,IEC/EN 61000-4-11	

All Active components of structured cabled LAN and Wireless part should be of the same make and compatible with existing CWN

(B) PASSIVE COPPER COMPONENTS SPECIFICATION

5. UTP CABLING SYSTEM

All the UTP Cables should comply with the following requirements:

Type	**Unshielded twisted pair cabling system, TIA / EIA 568-B.2, Category 6.**	**Compliance Yes / No**
Networks Supported	10 / 100 Ethernet, 155 Mbps ATM, 1000 Mbps IEEE 802.3ab Ethernet	
Approvals		
TIA / EIA 568-B.1	ETL verified	
IEEE 802.3ab	Zero bit error, ETL verified	
Warranty	20-Year Extended product warranty and Application Assurance	
Performance characteristics to be provided along with bid	Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR for channel should exceed the standard specs by 400% Margin.	Attach
Should support 6 Connection Channel and exceed CAT6 Specs	Within 100 mtrs of channel, 6 terminations of cable should guarantee CAT6 performance	
Should perform to CAT6 with short channel	Should guarantee the CAT6 performance even when the termination of Information outlets are done within 15 mtrs of MDF	

6. UTP CABLE

Type	**Unshielded Twisted Pair, TIA / EIA 568-B.2, Category 6.**	**Compliance Yes / No**
Material:		
Conductors	23 AWG solid bare copper	
Insulation	Polyethylene	
Pair Separation	Cross member fluted spline	
Jacket	Flame Retardant PVC	
Packing	Box of 305 meters	
Delay Skew	45ns / 100m MAX.	
Operating temperatures	-20^0C to + 60^0C	
Approvals	UL Verified	
Performance characteristics	Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR	Attach

7. UTP JACKS

Type	**PCB based, Unshielded Twisted Pair, TIA / EIA 568-B.2-1, Category 6 - Modular Jack**	**Compliance Yes / No**
Durability	750 mating cycles, 200 termination cycles	
Approvals	UL listed	
Performance characteristics	Insertion Loss, NEXT, FEXT and Return Loss rated at least 350 MHz	Attach with bid
Dust Covers	Integrated hinged	
Other features	Strain relief and band limiting boot for cable 94 V-0 rated Jack Contacts – Phosphorous Bronze, Plated with 1.27 micro meter thick gold	

8. UTP JACK PANELS

Type	**24-port, Modular, PCB based, Unshielded Twisted Pair, TIA / EIA 568-B.2-1, Category 6- 1 U size**	**Compliance Yes / No**
Ports	24	
Port arrangement	Modules of 6-ports each	
Category	TIA / EIA 568-B.2-1 category 6.	
Circuit Identification Scheme	Icons on each of 24-ports	
Port Identification	9mm or 12mm Labels on each of 24-ports (to be included in supply)	
Height	2U including cable manager	
Cable Management	Rear cable retention bar has to be provided Front patch cord organizer should be integral part	
Durability		
Modular Jack	750 mating cycles	
Wire terminal (110 block)	200 termination cycles	
Approvals	UL listed	
Termination Pattern	TIA / EIA 568 A and B;	
Performance Characteristics to be provided	Insertion Loss, NEXT, FEXT and Return Loss rated at least 350 MHz	Attach

9. FACE PLATES/SURFACE MOUNT BOXES

A

Type	**1-port, Shuttered, White, with surface box for surface mount applications, British Style**	**Compliance Yes / No**
No. of ports	as per site requirement	
Identification	To be supplied with Icons for Circuit identification and labels for port identification	

B

Type	**2port, Shuttered, White, with surface box for surface mount applications, British Style**	**Compliance Yes / No**
No. of ports	as per site requirement	
Identification	To be supplied with Icons for Circuit identification and labels for port identification	

10. WORKSTATION /EQUIPMENT CORDS

Type	**Unshielded Twisted Pair, TIA / EIA 568-B.2-1, Category 6**	**Compliance Yes / No**
Conductor	24 AWG 7 / 32, stranded copper	
Length	7-feet or 3 feet	
Plug Protection	Anti Snag	
Warranty	20 -year component warranty	
Category	Category 6.	
Jacket	PVC	
Insulation	Flame Retardant Polyethylene	

All Passive components should be of the same make

Structured Cabling System

The structured Premise Network Cabling System is to be designed following the EIA/TIA Commercial Building Cabling Standards. These standards define a structured cabling system consisting of the following elements:

- Work Area
- Horizontal Cabling
- Backbone Cabling
- Switch Room
- Entrance Facilities
- Administration

The Work Area is defined as the element of a structured premise network cabling system where there is a connection between the telecommunications outlet and the terminal devices. This section outlines specifications for the work area equipment cords and telecommunications outlets.

Color patch cords should be used for easy identification of the network services. Orange color patch cord should be used for Data, Blue for voice & Green for Backbone. All patch leads shall be factory terminated and tested, under controlled conditions.

The Horizontal Cabling Subsystem is the portion of the telecommunications cabling system that extends from the work area outlet/connector to the horizontal cross-connect in the telecommunications closet. The horizontal cabling includes the horizontal cables, the telecommunications outlet/connector in the work area, the mechanical termination, and patch cords or jumpers located in the telecommunications closed. The horizontal cabling subsystem shall meet EIA/TIA-568-B Commercial Building Cabling Standards.

Category-6 (CAT-6) non-plenum 4 pair, 24 AWG, Unshielded Twisted Pair cables should be used for Data termination. Each workstation will have specific numbers of data connections. The information in Table on page 52 will determine the number of runs of CAT-6 UTP cables required for a workstation.

The cables at the workstation end have to be terminated on the CAT-6 RJ-45 outlets and at the telecommunications closed side the same to be terminated on the appropriate jack panels.

Each building shall be served by its own horizontal cabling Subsystem that terminates in the Switch Room for the respective building. The 19" rack mountable 24 ports unloaded Jack Panels should be used along with CAT-6 RJ-45 outlets at the telecommunications closest for both Data and Voice termination. CAT-6 mounting closed side for equipment to Jack panel patching. Color patch cords should be used for easy identification of the network services.

The use of Backbone Cabling is to allow interconnections between telecommunications closest, equipment room, and entrance facilities. Backbone cabling consists of the cable, intermediate (IDF) and main cross-connects (MDF), terminations, patch cords or jumpers. The backbone cabling can be routed between cross-connects in closets and equipment rooms within a building or between buildings. Installation shall be in compliance with ANSI/TIA/EIA-568-A Commercial Building Cabling Standards.

6-Core SMF cable that supports dual wavelength (transmitting at 1310 nm and 1550mm ranges) should be used for Data Backbone. The 19" rack mountable Fiber Patch Panels should be used for Data Backbone connectivity. It should support required number of fiber termination as required at various IDF and MDF.

All the racks should support 19" rack mountable equipments/components. The Closed racks should have cooling fans, Power Bars, Horizontal and vertical cable managers, caster wheels, lock and key. The rack should have front glass door and rear metal door. The Racks needed in all Hub/equipment Rooms will be closed Racks (800mm x 800mm).

The **Entrance Facility** design shall comply with ANSI/TIA/EIA-569-A Commercial Building Standards for Telecommunications Pathway and Spaces, ANSI//EIA-569-A Commercial Building Grounding and Bonding Standards. The entrance facility includes the cabling components needed to provide a means to connect the outside service facilities to the premises cabling. The cabling installer is responsible for extending services (eg. Leased Line, ISDN, PSTN, etc) from all service providers from the demarcation point to the structured cabling system.

Administration of a Premise Network Cabling System involves accurate identification and record keeping of the components, which comprise the cabling system as well as the pathways, telecommunications closets and other spaces in which it is installed. All changes to the cabling should be recorded as and when they are carried out; This is essential for maintaining its flexibility. The administration system shall comply with ANSI/TIA/EIA-606 Administration Standard for the Telecommunication Infrastructure of Commercial Building. All elements of the Premise Network Cabling System shall be identified by a coded or decoded alpha-numeric identifier.

The naming convention should be such it carries details about the floor, location and service. (eg. The data connection at work station 10 at second floor can be named as 2010 D, where 2 denotes floor and 010 denotes location and D denotes service)
Cables shall have identifier labels at both ends of the cable. Label material shall be suitable for the environment.

The following identifiers are required; Cable identifier, pathway identifier, space identifier, Terminating Hardware identifier, Terminating Positions identifier and Grounding identifiers. Records of all of identified elements of the Premise Network Cabling System shall be maintained and linkages between elements provided.

(C) FIBRE COMPONENTS SPECIFICATION

11. FIBER OPTIC CABLE

Cable Type	6-core, Single mode, Armored, loose-tube, Gel Filled, rodent resistant, direct burial type	Compliance Yes / No
No. of cores	6	
Standard	BELLCORE GR 20 / IEC 794-1, ITU-T G.652-D, IEC 60793 &IEC 60794 testing, ISO/IEC11801,TIA 568,ICEA640	
Attenuation		
@1310nm	0.4 dB / KM	
@1550nm	0.3 dB / KM	
Network Support		
10 / 100 Ethernet	2000m	
155 Mbps ATM	2000m	
1000 Base SX	900m	
1000 Base LX	550m	
10Gbps 1000 Base-SR	300m	
Tensile rating	1200N	
Maximum Crush resistance	3000N	
Operating Temperature	-40 Degree C to +70 Degree C	
Armor	Corrugated Steel tape Armor	

12. FIBER OPTIC LIU FOR 24 SC FIBERS:

Fiber optic patch panel	19-inch, Rack mounted Fiber optic patch panel
Height	1U
# of fibers	24
# of OSP Cables for termination	Minimum 2
Cable Management rings	Front and rear cable management rings, pre-loaded
# of 24-port or 12-port adapter plates	Min. 1 Grounding Lugs

Splice Tray holding at least 24 fiber couplers

13. FIBER OPTIC PATCH CORDS

Fiber Optic Patch Cords	SC-LC duplex FO patch cord with standard length of 10ft. or 3m	Compliance Yes / No
Cable diameter	2.5 mm twin zip for SC type &1.8mm for LC type	

Min return loss	>50 db	
Operating temp range	-20 degrees Celsius to 70 degrees Celsius	
Connector specifications		
Average connection loss	0.1db for LC and 0.3db for SC	
Ferrule	Ceramic	
Mating durability for 500 Reconnects	Insertion loss :<0.5db	

Other components like Fiber Patch Panels/12 port LIUs /Pigtails/Loaded adapter plates should also be from same manufacturer as Optical Fiber Cable & Patch cords.

Cabling Installation, Acceptance, Warranty and Documentation Specifications:

Please confirm Compliance for complete set of Implementation Specifications. By writing "Yes" it will be assumed that the bidder confirms compliance with all the clauses and guidelines given here, unless deviations has been sought in writing against each/any guideline.

Warranty Specifications:

Please Confirm Compliance
Yes / No

NIT Kurukshetra, 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 NIT, Kurukshetra, requirement AND specifications. The warranty shall be provided by the OEM vendor to NIT, Kurukshetra and shall not be administered in India for the authenticity of the process. It should be evaluated by an independent center which can't be influenced by the in country people. The duration of the warranty shall be for a minimum of 20 years and shall cover the system performance, application assurance. A sample warranty certificate shall be provided by the bidder along with the bid.

Installation Specifications

Cables should be directly buried at a minimum depth 1m above a bed of sand. The cable shall be covered by semi-circular concrete shells. Soil shall be filled up to a height of 250mm above the cable

and covered with warning tape. The remaining height of the trench shall be filled with soil. Cable bend radius should be as per the norms and cable markers should be provided every 100 meters or at bends which ever is less. In addition, each cable type shall be terminated as indicated below:

- Cables shall be laid and terminated in accordance with the recommendations made in the TIA/EIA document, manufacturer's recommendations and/or best industry practices.
- Removal of Armored core at the termination enclosure/ shelf should not be more than the required length for terminations of Fiber cores.
- Bend radius of the cable in the termination area shall not be less than 20 times the outside diameter of the cable.
- Buffer Tubing should be used before the terminations or splicing at the enclosure end.
- Cables shall be neatly clamped on the walls near the terminations boxes or shelves in the racks.
- Each cable shall be clearly labeled at the enclosure end. Cables labeled within the shelf or wall mount enclosures, where the label is obscured from view shall not be acceptable.
- Additional OFC of atleast 3m of length should be left at the enclosure end on both sides for future shifting of Rack/Wall enclosures.

Documentation Specifications
Please Confirm Compliance
Yes / No
The successful bidder shall after completion of the installation, submit a detailed documentation of the cable plant. The documentation shall cover, in the minimum, the following

- As-built diagrams of the campus Network, with building and floor wise distribution of users and connectivity
- Test results for UTP links
- Consolidated BOM with manufacturer's part Nos. and quantities used
- Warranty certificate from OEM supplier

TESTING AND CERTIFICATION

CAT-6 Cabling Testing

100 percent of the horizontal and riser wiring pairs shell be tested for opens, shorts, polarity reversals and split pairs.
Horizontal wiring pairs shall be tested from the information outlet to the telecommunication closet.

The CAT-6 cabling systems shall be tested to certify conformance with the ANSI/ TIA/EIA-568-A-5 Commercial Building Cabling Standards.

Require test documentation to list not only pass/fail indications for each circuit tested, but also the actual measured values of all the test parameters.
Testing of CAT-6 cabling systems shall include the following parameters:

- Length
- Attenuation
- Pair-to-Pair Near-End Cross Talk (NEXT)
- Power Sum NEXT
- Far-End Cross Talk (FEXT)
- Pair-to-Pair Equal Level Far End Cross Talk (ELFEXT)

- Power Sum ELFEXT
- Attenuation to Cross Talk Ratio (ACR)
- Power Sum ACR
- Propagation delay and Delay Skew
- Return Loss.
- All links must be characterized up to 100 MHz

Optical Fiber Cabling Testing
All fiber testing shall be performed on all fibers in the completed end-to-end system

There shall be no splices unless clearly defined. Testing shall consist of a bi-directional end to end by using either OTDR or Fiber Cable Tester.

The system loss measurements shall be provided at 1310 and 1550 nanometers for single mode fibers.
Loss Budget
The following formula should be used: Fiber links shall have a maximum loss of (allowable cable loss per km) (km of fiber in link) + (0.4dB)(number of connectors) = maximum allowable loss. A mated connector-to connector interface is defined as a single connector for the purpose of this contract.

The bidder, at no charge shall bring any link not meeting the requirements of the standard into compliance to Purchaser's requirements.

Structure cabling installer is responsible for getting the Structured Cabling Plan of implementation certified by the Structured-cabling vendor and must have at least 5 certified professionals

QUALIFICATION REQUIREMENTS

1. (a) The bidder should be a manufacturer or Authorized System Integrator of the manufacturer, who must have supplied and successfully installed items similar to the type specified in the schedule of requirements to at least 3 of the reputed organizations/institutions in the country in the last 3 years.

   The equipments offered for supply must be of the most recent series models incorporating the latest improvements in design. The models should have been released on or after 2004 and be in satisfactory operation for the last 6 months as on the date of bid opening. Further, manufacturer should be in continuous business of manufacturing products similar to that specified in the schedule of requirements during the last three years prior to bid opening.

   (b) Bid of bidders quoting as authorized representative (Authorized System Integrator) of a manufacturer meeting with the above requirements in full will also be considered provided.
   (i) The bidder (in case of being Authorized System Integrator for the manufacturer) should have a total turnover of minimum 10 Crore in each year in the last three years. Reports on financial standings of the bidder such as profit & loss statement & Audited balance sheets for the past three years, should be submitted.

(ii) The bidder (in case of being Authorized System Integrator of the manufacturer) must submit the manufacturer authorization letter from the manufacturer of all the various active and passive components as are made part of this tender.
(iii) The bidder as authorized representative has supplied, installed and commissioned items satisfactorily similar to the type specified in the schedule of requirement to at least 3 of the reputed organization/institutions in the country in the last three years. Purchase Order copies and Completion Certificate to be attached as proof of the same.
(iv) The Brands quoted for active and passive components shall have a single install base of minimum 1000 nodes at any one Govt./Educational institute/organization through their Authorized System Integrator. A copy of the Purchase Order shall be attached as proof of the same.

2. The bidder shall furnish the information on the past supplies and installations for at least 10 networking sites.

3. All bids submitted shall also include the following information:-

a. Copies of original documents defining the constitution on legal status, place of registration and principle place of business of the company or firm or partnership etc. Bidder shall be in the business of Networking for at least Five years. Copy of company Incorporation / Registration Certificate of the Firm shall be attached as proof.

b. Bidder must submit his Central and Local Sales Tax registration certificates, PAN number, latest Sales Tax clearance certificate, Income Tax clearance certificate.

c. Bidder should furnish a brief write up backed up with adequate data, explaining his available capacity and experience both technical & commercial, for the installation and supply of the required systems and equipments within specified time of completion after meeting all their current commitments.

d. Bidder should clearly confirm that all the facilities exists in his manufacturing factory for inspection and testing and these will be made available to the purchaser or his representative for inspection without any commercial implication to the tenderer.

e. Details of the service centers and information on the service support facilities that would be provided after the warranty period. Bidder should have an authorized service center in the region where installation is taking place. (Please mention the name of the region). Bidder to furnish the address of the service center for verification and visit (if required) by the technical team of institute.

f. Bidder shall furnish a list of his trained manpower strength and their certifications along with copies of the trainings attended and completed by those engineers.

g. Bidder shall submit at least 5 certificates each for training on active and passive components completed by his engineers from reputed active and passive components manufacturers respectively.

h. The bidder (Manufacturer/Authorized System Integrator) shall not have been debarred/ disqualified/ blacklisted by any Govt. body/ institution for participation in any tender / information Technology related requirements in the past 5 years. If the above is applicable to the Bidder, then his bid stands for automatic rejection from eligibility to participate in this tender requirement.

i. Detailed technical literature of all the products/items proposed as a part of solution along with product brochures and datasheets specified in the schedule of requirements.

j. The bidder must have a proper technical assistance center in India with logistic support, so as to service / replace the faulty equipments within next business day with a liasoning for this in the region (Please mention the name of the region). The maximum response time for maintenance complaint from any of the destinations specified in the Schedule of Requirements shall not exceed 24 hours.

k. The bidder is able to deploy sufficient number of certified personnel to do the installation, commissioning and training. [Their name and qualifications must be specified].

l. After installation the bidder should provide the drawing manuals and all other relevant documents in duplicate which would facilitate maintenance.

m. The OEM should have a valid ISO 9001 certification. (Documentary evidence is to be provided).

n. All types of switches (Wireless Control and Access, Distribution and Access) must be of the same make/brand/manufacture and compatible with the existing CWN. The manufacturer furnishes authorization in the prescribed format assuring full guarantee and warranty obligations

7. The bidder will also furnish:

(a) list of test equipments proposed for use in verifying the installed integrity of the copper and fiber optic cable systems on this contract;
(c) Copy of the Certificates issued by the clients on completion of the projects and performance of the bidder and Copy of SLA (Service Level Agreement) signed shall be enclosed.
(e) Executive summary of the solutions offered;
(f) Detailed write ups for all the systems offered;
(g) All assumption /dependencies and detailed scope of work;
(h) Detailed drawings and schematics for the solution proposed;
(i) Project Plan with resource allocation (Project Organization Chart);
(j) Detailed method statements and migration plan;
(k) QA/QC procedures and details of UAT.
(l) Recommended trainings, contents and duration as per requirement;

8 Requirements at Site:

The bidder shall maintain the site as neat as possible. He shall not cause any nuisance on the site by any persons employed by him or cause any disturbance to any other contractor engaged in the work at the site. He shall remove all the materials and carry away the materials once the work has been completed. Any repair work (cementing, white wash or paint) required will also be the responsibility of the bidder

9 **Powers and Water:**

The bidder shall be provided water and power free of charge at Site. However he shall not waste these resources. He shall be provided with one 5 Amps and on 15 Amps power points. He shall arrange for the distribution of the power using sufficient number of suitably rated switch boards, cables etc.

PRICE SCHEDULE

Having examined the tender documents, the receipt of which is hereby duly acknowledged, we offer to supply the goods and services in conformity with the said tender documents at the rates shown below:

1	2	3	4	5	6	7	8	9	10	11
Sr. No	Particulars of the items	Unit	Ex-works, Ex-godown or C.I.F.	Customs Duty/excise Duty inclusive, if exclusive rates be given	Packing forwarding Octroi inclusive, if exclusive rates be given	Whether SalesTax inclusive, if exclusive rates be given	Total Cost F.O.R. Kurukshetra	Delivery Period	Particulars of Manufacturers and Country in which manufactured	Remarks

N.B.: The price column should be properly filled. In case nothing is mentioned in the columns the price will be considered inclusive of Taxes, Excise Duty, packing and forwarding Octroi etc.

Dated the_____ Date of_____ **Address with seal**

Signature

PRICE SCHEDULE FOR ANNUAL MAINTENANCE FOR THREE YEARS AFTER WARRANTY PERIOD

Description	Annual Maintenance Charges For 3 Years	Remarks, if any

Signature of Bidder _____

Name _____

Address _____

MODEL BANK GUARANTEE FORMAT FOR FURNISHING EMD

Whereas ……..
(hereinafter called the "tenderer")
has submitted their offer dated ……
for the supply of …….
(hereinafter called the "tender")
against the purchaser's tender enquiry No. ……
KNOW ALL MEN by these presents that WE ……..
of ……having our registered office at
……are bound unto ……
…….
(hereinafter called the "Purchaser")
in the sum of ……
for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this …… day of ……200...

THE CONDITIONS OF THIS OBLIGATION ARE;

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

(2) If the tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:
   a) If the tenderer fails to furnish the Performance Security for the due performance of the contract.
   b) Fails or refuses to accept/execute the contract.

WE undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force upto and including 45 days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the authorized officer of the Bank)

Name and designation of the officer

Seal, name & address of the Bank and address of the Branch

MODEL BANK GUARANTEE FORMAT FOR PERFORMANCE SECURITY

To
The Director, National Institute of Technology, Kurukshetra

WHEREAS ……has
(name and address of the supplier) (hereinafter called "the supplier")
undertaken, in pursuance of contract No. ……dated ……
to supply (description of goods and services) (hereinafter called "the contract").

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a scheduled commercial recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the contract.

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of ……... ……..(amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed thereunder or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, adddition or modification.

This guarantee shall be valid until the ……day of ……20

(Signature of the authorized officer of the Bank)

Name and designation of the officer

Seal, name & address of the Bank and address of the Branch