



**NATIONAL INSTITUTE OF TECHNICAL TEACHERS'
TRAINING & RESEARCH
SECTOR 26 CHANDIGARH-160019**

(Established by Government of India, Ministry of Human Resource Development)
(www.nitttrchd.ac.in)

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e-TENDER NOTICE

e-Tenders are invited for purchasing, providing and installation of Wired and Wireless Network devices in the institute. The bid document can be downloaded from the website of Chandigarh Administration at <https://etenders.chd.nic.in>.

1.	Downloading of e-tender document	Start Date : 10.11.2016 at 09.00 A.M. End Date : 12.12.2016 at 01.00 P.M.
2.	Pre Bid Query by email Pre Bid Meeting	Last Date : 28.11.2016 at 04.00 P.M. 05.12.2016 at 10.00 A.M.
3.	Revised Specifications (if any) – By Corrigendum on the Institute's & Chandigarh Administration tenders website	07.12.2016 at 11.00 A.M.
4.	Date of submission of e-tender	Start Date : 12.12.2016 at 11.00 A.M. End Date : 20.12.2016 at 05.00 P.M.
5.	Physical submission of EMD and necessary documents	Start Date : 12.12.2016 at 11.00 A.M. End Date : 20.12.2016 at 05.00 P.M.
6.	Opening of Technical Bid (online)	22.12.2016 at 11.00 A.M.

The complete tender document is also available on NITTTR website at:-
<http://www.nitttrchd.ac.in>.

Director – NITTTR Chandigarh

INSTRUCTIONS TO BIDDERS REGARDING e-TENDERING PROCESS

1. The Bidders shall have to submit their Bids online in Electronic Format Digital Signatures. For participation in the e-tendering process, the Bidders need to register themselves at <http://etenders.chd.nic.in/nicgep>. On registration, they will be provided with a user ID and a system generated password enabling them to submit their Bids online using Digital System Certificates (DSC).
2. Tenders without Digital Signatures will not be accepted by the electronic tendering system. No tender will be accepted in physical form and in case it has been submitted in physical, it shall be rejected.
3. Bids will be opened online as per time schedule mentioned in “**Terms and Conditions of the Tender**”.
4. Before submission of online bids, bidders must ensure that scanned copies of all the necessary documents have been uploaded with the bid.
5. Director, NITTTR, Chandigarh will not be responsible for any delay in online submission of bids due to any reason whatsoever.
6. Bidders should get ready with the scanned copies of EMD as specified in the tender documents. Related EMD as per the section and amount in the form of a Demand Draft in favour of the Director, NITTTR, Chandigarh payable at Chandigarh should be submitted to Director National Institute of Technical Teachers Training and Research Sector-26 Chandigarh so as to reach him on or before the last date for receiving the tenders.
7. The details of EMD specified in the tender document should be same as submitted online (scanned copies). Otherwise tender will be rejected summarily.
8. The conditional bids shall not be considered and may be outrightly rejected in the very first instance.
9. The Financial Bid through e-tendering of only those bidders shall be opened who will qualify in the technical bid and are approved by the Purchase Committee/Technical Experts.
- 10. The tenderers are required to upload all self-attested copies of the relevant documents required as per Terms & Conditions and Check List, failing which their bids may be summarily/outrightly rejected and will not be considered.**

TERMS AND CONDITIONS OF THE TENDER

1. The last date and time for submission online (through e-tendering only) and receipt of physical submission of EMD with necessary documents by post/courier/in-person related with the tender is **20.12.2016 up to 05:00 PM**.
2. Each tender must be accompanied with Earnest Money Deposit (EMD) in the shape of Demand Draft in favour of Director, NITTTR, Chandigarh payable at Chandigarh, valid for three months on any Scheduled Bank.
3. The EMD amount for separate Sections are as shown
 - Wired and Wireless Network devices. - Rs. 2,00,000/-
4. The sealed envelope of EMD bearing the Advertisement No. and should be clearly superscribed as **“EMD for Wired and Wireless Network devices due on 22.12.2106”** should be submitted in the office of Director, NITTTR, Sector-26, Chandigarh on or before **20.12.2016 up to 05:00 PM**.
5. The quantity of items and quantity indicated in the enclosed **Annexure I** are tentative. Director reserves the right to increase or decrease the quantity or delete some or all of the items depending on the needs of the institute.
6. The tenderer should indicate specifically the sales tax, duties and levies chargeable against each item. The Institute is entitled to custom duty exemption and concessional sales tax applicable to Educational and Research organizations.
7. The rates quoted should be F.O.R. , NITTTR Chandigarh. In case rates are chargeable at any other place, the packing and forwarding charges should be clearly mentioned indicating the mode of transport and insurance during transit.
8. The tenderer should clearly indicate the delivery period and validity period of the offer.
9. The tenderer should clearly indicate the availability of service and maintenance facilities at Chandigarh for the items quoted.
10. The tenderer should clearly indicate the delivery period, validity period of the offer and duration of successful completion of the project. **If the project is not completed in the specific duration a penalty will be charged @ 0.5% per week or part thereof the project value.**
11. The above mentioned details particularly the Sales Tax, the levies and other charges, if not quoted properly, the bid can be cancelled. Conditional/doubtful bids will also be liable for cancellation.[**If the Sales Tax, the levies and other charges is not possible to enter in online tender, kindly quote your price inclusive of all taxes]**

12. Any attempt direct or indirect, to cast influence, negotiation on the part of the tenderer with the officials/authority to whom he/she will submit the tender or the tender accepting official/authority before the finalization of tenders will render the tenderer liable for exclusion from consideration.
13. Tender(s) received without earnest money (EMD) shall be rejected straightway.
14. The requirements of the Institute in terms of category of equipment, detailed specifications and quantity are given in **SCHEDULE OF TECHNICAL SPECIFICATION / REQUIREMENT (As per Annexures I)**. Director, NITTTR reserves the right to change the quantity for any/all items without assigning any reason.
15. The Tender must be submitted along with the copies of:
 - Manufacturers' license or authority from the manufacturer
 - Latest Income Tax Clearance Certificate
 - Sales Tax Registration Certificate
14. The Director reserves the right to reject any or all tenders without assigning any reason whatsoever.
15. The tenders will be opened on the date and time indicated in the presence of tenderers if any present on the occasion.
- 16. The tenders not accompanied by Earnest Money or incomplete in any respect will be rejected outrightly.**
17. No advance payment or payment against performa invoice will be made. Payment will be made after receipt, installation and testing of items, to the satisfaction of the authorized representative(s) of the Director.
18. In case, the item(s) is to be imported for supply, irrevocable letter of credit will be opened with the Bank. The Institute's Banker is State Bank of Patiala, Extension Counter, Chandigarh College of Engineering and Technology, Sector-26, Chandigarh – 160019
19. All damaged or unapproved goods shall be returned at the risk and cost of the Tenderer and the incidental expenditure thereupon shall be recovered from them.
20. This institute is recognized as R&D institute and is exempted from Excise Duty. The quoted prices must be mentioned showing Excise Duty separately.
21. The institute is eligible for Concessional Sales Tax against Educational Certificate. VAT/Sales Tax must be quoted separately.
22. Training for the operation of equipments, if any, shall be provided by the firm free of cost to the faculty/other staff of the institute.

23. The Equipment/Machinery will be maintained free of charges during the warranty period as on the terms and condition of the tender or Annexures.
24. Instructional materials and **e-manuals** will be uploaded by the supplier free of cost.
25. The bidder must fill the Check List from the authorized signatory only with the seal of the firm. **(As per Annexure-II)**
26. The bidder if place with the purchase order must submit the bank guarantee as per GFR rules for all items having warranty/guarantee for the warranty/guarantee period.
27. For Wired and Wireless Network devices includes three sections: Sections A (ACTIVE ITEMS), B (PASSIVE ITEMS) and C (SERVICE /LABOUR) the bid should be from a single Vendor/OEM as the Wired and Wireless Networking must be on a Turnkey basis.
28. Vendor for Wired and Wireless Network has to ensure 24*7 support to meet the service Level in the warranty period of 3 years. Bidder must provide at least two (02) dedicated Resident Engineers 24 x 7 x 365 days in the warranty period (including all holidays).
29. The bidder for Wired and Wireless Network must have an cumulative annual turnover of Rs. 20 crore or more in last 3 three financial years ending at 31 March 2016.
30. Bidder for Wired and Wireless Network should supply a copy of similar work order of Rs. 60 lakhs or more with installation report of same work done in the last 3 years.
31. The bidder must submit a drawing in A4 size only for a tentative plan for Wired and Wireless Network which clearly indicates the laying of UTP cabling, optical fiber cables in various buildings and the placement of active devices. Bidders are free to visit our site for this purpose.
32. The Bidder may send query/clarification on or before 28.11.2016 at 04:00 PM for Pre-Bid Meeting by email at tendercse@nitttrchd.ac.in on technical specifications, terms and conditions. The Institute will provide the time slot for vendor for the Pre-Bid Meeting for the queries/clarifications sent by email to us. The bidders should strictly follow the time given to them. No on the spot queries / clarifications raised shall be addressed.
33. The bidder must quote all the items mentioned in tender, else the bid will be considered as incomplete, and liable to be rejected.
34. The Courts at Chandigarh shall have the exclusive jurisdiction to try all disputes arising out this agreement between the bidder or supplier and NITTTR Chandigarh if any

Annexure-I

WIRED & WIRELESS NETWORKING		
SECTION – A (ACTIVE ITEMS)		
I.	Bidder must attach information i.e. Make & Category / Version for devices with Brochure/Data Sheet or any printed material from the OEM.	
II.	Should have all components like Switches, Wired, Wireless devices if any, PSU, Small Form-factor Pluggable (SFP), should be from the single OEM	
III.	OEM should be represented in Enterprise Wired and Wireless LAN Access Infrastructure Latest Report to be under Leaders / Challengers/ Visionary segment Gartner Magic Quadrant	
IV.	Must provide at least one day training on the installed devices to Faculty and Technical staff free of cost.	
V.	Minimum 3 years warranty on Active items from the date of satisfactory installation with comprehensive replacement and direct OEM 24x7 support.	
VI.	Proposed Switches, Transceivers, Wireless AP, Wireless Controller & their firmware and OS should be compatible with the existing network in NITTTR which have three major OEM's ie EXTREME, CISCO and DLINK devices and are currently running smoothly.	
SPECIFICATIONS FOR ACTIVE DEVICES		QTY.
S. No	<u>48 PORT ACCESS SWITCH (NON-POE)</u>	21
1	<ul style="list-style-type: none"> • Should have minimum of 48 x 100/1000 BaseT RJ45 Ethernet ports from day 1. • Should have minimum 2 x 1GBase SFP ports unpopulated which can upgradable to 10 Gigabit when required in future with license and suitable SFP+. • Should be a manageable from day 1, by a console cable with serial/USB or Web based with RJ45 outlet through CLI, Telnet and SSH. • Minimum switching capacity: 136 Gbps or more • Minimum forwarding rate: 101 Mpps or more • Switch should have minimum of 512 MB ECC DRAM and 512 MB of Flash memory. • Should support IPv4 and IPv6 from day one. • Should support with Layer 2 and Layer 3 trace route • Should have 8K IPv4 Routes and 2K IPv6 Routes. • Should support minimum 16K MAC Address and 4K active VLAN's • Should support minimum 1K IGMP Groups. • Should support minimum 1K ACL's • Should support minimum 9200 bytes Jumbo Frame size for large data file transfers. • Should have inter-VLAN routing and static routes for IPv4 and IPv6 from day 1 and upgradable to support PBR and OSPF when required. • Should support 802.1d, 802.1s, 802.1w, 802.3ad and 802.1x protocols • Should support IGMP snooping v1, v2 & v3. • Should have Netflow / Jflow / Sflow /OpenFlow from day 1. • Proposed hardware should be NDPP or EAL2/EAL3 Certified. • Should be IPv6 logo certified from day 1. • Should support SNMP v1, v2 and v3 for Remote monitoring (RMON) • Should be 19" Rack mountable & the switch should be supplied with Indian standards. • All necessary SFP's, interfaces, connectors, patch cords (if any) & licenses must be delivered along with the switch from day one. 	

<i>S. No</i>	<u>24 PORT ACCESS SWITCH WITH 10G SFP+ (NON-POE)</u>	03
2	<ul style="list-style-type: none"> • Should have minimum of 24 x 100/1000 BaseT RJ45 Ethernet ports from day 1. • Should have minimum 2 x 10GBase SFP+ ports for uplinks, both should be populated with Single Mode 10 LR OFC Transceiver from day 1. • Should be manageable from day 1, by a console cable with serial/USB or Web based with RJ45 outlet through CLI, Telnet and SSH. • Proposed transceiver modules should be compatible with the existing network in NITTTR which have three major OEM's ie EXTREME, CISCO and DLINK devices. • Switching capacity: 88 Gbps or more • Forwarding rate: 65 Mpps or more • Switch should have minimum of 512 MB ECC DRAM and 512 MB of Flash memory. • Should support IPv4 and IPv6 from day one. • Should support with Layer 2 and Layer 3 trace route. • Should have 8K IPv4 Routes and 2K IPv6 Routes. • Should support minimum 16K MAC Address and 4K active VLAN's • Should support minimum 1K IGMP Groups. • Should support minimum 1K ACL's • Should support minimum 9200 bytes Jumbo Frame size for large data file transfers. • Should have inter-VLAN routing and static routes for IPv4 and IPv6 from day 1 and upgradeable to support PBR and OSPF when required. • Should support 802.1d, 802.1s, 802.1w, 802.3ad and 802.1x protocols • Should support IGMP snooping v1, v2 & v3. • Should have Netflow / Jflow / Sflow / OpenFlow from day 1. • Proposed hardware should be NDPP or EAL2/EAL3 Certified. • Should be IPv6 logo certified from day 1. • Should support SNMP v1, v2 and v3 for Remote monitoring (RMON) • Should be 19" Rack mountable & the switch should be supplied with Indian standards. • All necessary SFP's, interfaces, connectors, patch cords (if any) & licenses must be delivered along with the switch from day one. 	

<i>S. No</i>	<i>24 PORT ACCESS SWITCH (NON-POE)</i>	04
3.	<ul style="list-style-type: none"> • Should have minimum of 24 x 100/1000 BaseT RJ45 Ethernet ports from day 1. • Should have minimum 2 x 1GBase SFP ports unpopulated which can upgradable to 10 Gigabit when required in future with license and suitable SFP+. • Should be a manageable from day 1, by a console cable with serial/USB or Web based with RJ45 outlet through CLI, Telnet and SSH. • Switching capacity: 88 Gbps or more • Forwarding rate: 65 Mpps or more • Switch should have minimum of 512 MB ECC DRAM and 512 MB of Flash memory. • Should support IPv4 and IPv6 from day one. • Should support with Layer 2 and Layer 3 trace route. • Should have 8K IPv4 Routes and 2K IPv6 Routes. • Should support minimum 16K MAC Address and 4K active VLAN's • Should support minimum 1K IGMP Groups. • Should support minimum 1K ACL's • Should support minimum 9200 bytes Jumbo Frame size for large data file transfers • Should have inter-VLAN routing and static routes for IPv4 and IPv6 from day 1 and upgradeable to support PBR and OSPF when required. • Should support 802.1d, 802.1s, 802.1w, 802.3ad and 802.1x protocols • Should support IGMP snooping v1, v2 & v3. • Should have Netflow / Jflow / Sflow /OpenFlow from day 1. • Proposed hardware should be NDPP or EAL2/EAL3 Certified. • Should be IPv6 logo certified from day 1. • Should support SNMP v1, v2 and v3 for Remote monitoring (RMON) • Should be 19" Rack mountable & the switch should be supplied with Indian standards. • All necessary SFP's, interfaces, connectors, patch cords (if any) & licenses must be delivered along with the switch from day one. 	

S. No	<i>24 PORT ACCESS SWITCH (POE)</i>	06
4.	<ul style="list-style-type: none"> • Switch architecture should be Fixed Form factor based. • Switch should have wire-speed, non-blocking and distributed forwarding on all the ports. • Switch should have minimum of 24 x 100/1000 Mbps RJ45 from day one with minimum 370W to cater all PoE points or atleast to have minimum of 10 x 100/1000 Mbps RJ45 from day one with minimum 370W to cater all PoE+ points. • Should have minimum 2 x 1GBase SFP ports unpopulated which can upgradable to 10 Gigabit when required in future with license and suitable SFP+. • Should have minimum 2x 1GBase SFP ports, which can be upgradable to 10 Gigabit when required in future. • Switching capacity: 88 Gbps or more • Forwarding rate: 65 Mpps or more • Switch should have minimum of 512 MB ECC DRAM and 512 MB of Flash memory. • Should support IPv4 and IPv6 from day one. • Should support with Layer 2 and Layer 3 trace route. • Should have 8K IPv4 Routes and 2K IPv6 Routes. • Should support minimum 16K MAC Address and 4K active VLAN's • Should support minimum 1K IGMP Groups & IGMP snooping v1, v2 & v3 • Should support minimum 1K ACL's • Should support minimum 9200 bytes Jumbo Frame size for large data file transfers. • Should have inter-VLAN routing and static routes for IPv4 and IPv6 from day 1 and upgradeable to support PBR and OSPF when required. • Should support 802.1d, 802.1s, 802.1w, 802.3ad and 802.1x protocols • Should support 802.3af and 802.3at protocols • Switch should support Port-based and 802.1Q tag-based VLANs, MAC-based VLAN, Guest VLAN, Private VLAN Edge, also known as protected ports, with multiple uplinks • Switch should have full Layer 2 features like STP, RSTP, MSTP/PVST, LACP/IEEE802.3ad, ACL, QoS and IGMPv1/v2/v3 from day one. • Switch should have Static Routing for IPv4 & IPv6 from day1. • Switch should support OSPF & VRRP/HSRP. • Should support 8 queues per port and security protocols like RADIUS, TACACS/TACACS+, AAA & SSH. • Should have Netflow / Jflow / Sflow /OpenFlow from day 1. • Proposed hardware should be NDPP or EAL2/EAL3 Certified. • Should be IPv6 logo certified from day 1. • Should support SNMP v1, v2 and v3 for Remote monitoring (RMON) • Should be 19" Rack mountable & the switch should be supplied with Indian standards. • All necessary SFP's, interfaces, connectors, patch cords (if any) & licenses must be delivered along with the switch from day one. 	

S. No.	<u>WLAN CONTROLLER having following features</u>	01
5.	Controller should be 19" Rack mountable 1U or 2U height.	
	WLAN Controller should have minimum 4 x of 10/100/1000 Ethernet Ports & one Console port.	
	Controller should be ready for supporting the 100 AP's from day one (1) with scalability for 125 or more AP support in future without adding any new hardware. Controller should support of seamless roaming access over L2/L3 network.	
	Redundancy Features: Controller Must provide Active: Active with 1+1 and N+1 redundancy. The controllers should be capable of being implemented in HA mode with clustering.	
	Controller should support 802.11 a/b/g/n/ac Wave 1 Standards	
	Should support 100% redundancy for Primary controller i.e. 1:1 including Hardware and desired licenses to support AP's	
	Controller should provide air-time fairness between these different speed clients – slower clients should not be starved by the faster clients and faster clients should not adversely affected by slower clients.	
	Controller should support Spectrum Analysis feature to detect interference from different sources.	
	System should provide real-time charts/logs showing interference for access point.	
	Ability to map SSID to VLAN and dynamic VLAN support for same SSID.	
	Support automatic channel selection for interference avoidance	
	Controller must support 802.11k and 802.11r.	
	Access points can discover controllers on the same L2 domain without requiring any configuration on the access point	
	Access points can discover controllers across Layer-3 network through DHCP or DNS option	
	Security & Monitoring	
	Controller should support following for security & Authentication:	
	WIRELESS SECURITY: WEP, WPA-TKIP, WPA-PSK, WPA2-AES, 802.11i	
	AUTHENTICATION: 802.1X, local database External AAA servers : Active Directory, RADIUS, LDAP	
	System should provide DOS attacks and Intrusion Detection & Prevention and Control for any Rogue Access Points.	
	The AP should be able to scan for rogue access points and the controller should be able to locate them on a floor map. The controller / system should be able to send a notification to the administrator when a rogue AP has been detected.	
	Controller should support CAPWAP/LWAPP protocol.	
	System must be able to provide L2/L3/L4 Access Control.	
Controller should support L2 Client Isolation so User cannot access each other's devices. Isolation should have option to apply on AP or SSID's		
Controller should support Access Control based on Identity/Role/ Device/Time or Application.		
IPv4 & IPv6 support from Day One (1)		
Should support onboard and external DHCP server		
Controller should support Integrated or External AAA server including Microsoft AD and Linux based open source AAA servers.		

Architecture should be based on controller based Architecture with thick AP deployment. While encryption / decryption of 802.11 packets should be able to perform at the AP.
The Controller should support OS/Device finger printing and device type based policies i.e allow or deny, Bandwidth rate limit, VLAN mapping
Controller shall be manageable using CLI, Telnet/SSH, HTTP based GUI and SNMPv2/v3.
Controller should be able to present a dashboard with information on the status of the WLAN network.
Controller/System should be able to raise critical alarms by sending an email. The email client on the controller should support SMTP outbound authentication and TLS encryption.
Controller/System should have BYOD features and Guest Access management procedure where user may use internet without entering to Enterprise SSID and should be time restricted.
QoS features
Per SSID or dynamic Per user bandwidth Rate Limiting
Dynamic RF management that provides the capability to pause channel scanning / adjust RF scanning intervals based on application and load presence
Capability to provide preferred access for “fast” clients over “slow” clients (11n vs. 11g) in order to improve overall network performance
System must support Band Steering where 5 GHz clients are forced to connect over 5GHz Radio to provide better load balancing among 2.4GHz and 5GHz Radios.
Support advanced multicast features and WMM support to provide best performance on Video applications.
Should have Voice Call Admission control.
Client Management
The controller /system should provide a Guest Login portal in order to authenticate users that are not part of the organization.
The Controller/System should be able to provide a web-based application that allows non-technical staff to create Guest accounts with validity for fixed duration like hours or days.
Controller/integrated System should be able to send password direct through Email and SMS to the user.
User should be able to generate password their self for Guest Wi-fi access.
Controller/Integrated System should be able to generate bulk password for single user, multiple users or single user multiple devices.
System should support user management features like Rate limiting based on time based WLAN Access & User profile per WLAN etc.
System should support user management features like Rate limiting based on time based WLAN Access & User profile per WLAN etc.

S. No.	<i>INDOOR ACCESS POINTS having following features</i>	60
6.	<ul style="list-style-type: none"> • Access Points proposed must include radios for both 2.4 GHz and 5 GHz. • Must have a robust design for durability. • Should be able to handle minimum of 50 Concurrent users. • Must support 3X3 multiple-input multiple-output (MIMO) with Two spatial streams • Must support simultaneous 802.11 a/b/g/n/ac Wave 1 from day 1. • Must support 802.3.af Power over Ethernet (PoE) from day 1. • AP should support 802.11 ac Wave 1 beamforming for 802.11 ac Wave 1. • Must support minimum data rates of 300 Mbps on 2.4 GHz (as per 802.11n standard) & minimum data rates 1.3 Gbps on 5 GHz (as per 802.11ac Wave 1 standard) with backward compatibility. • Should compatible with wireless security as WPA-PSK, WPA-TKIP, WPA2 AES, 802.11/802.11i • AP should provide minimum 23dBm transmission power for 2.4GHz and 21dBm for 5GHz as limited by Wireless Planning & Commission (WPC) rules for indoor AP's. • Wireless AP should have the technology to improve downlink performance to all mobile devices. • Integrated or external antennas of the AP must be dual polarized with minimum gain of 3dBi on each radio. • Must support AP enforce load-balance between 2.4 GHz and 5 GHz band. • AP must have a very low receiver's sensitivity of -90dB or better • Must support IDS/IPS. • Access Points must support a distributed encryption/decryption model. • Access Points must support encryption on CAPWAP/LWAPP Standard. • AP should be dedicated to monitoring the RF environment. • Mesh support should support QoS for voice over wireless. • Must support minimum 16 WLANs per AP for SSID deployment flexibility. • Must support HTTP/S, Telnet and/or SSH login to APs directly for troubleshooting and manageability • Must support Power over Ethernet, local power, and power injectors. • Must support QoS and Call Admission Control capabilities. • Must should be certified by Wifi Alliance or UL 2043 • AP must include mounting kit for locking mechanism and Kingston lock slot 	

S. No.	<i>OUTDOOR ACCESS POINTS having following features</i>	15
7.	<ul style="list-style-type: none"> • Access Points proposed must include radios for 2.4 GHz and 5 GHz. • Should have 2 x 10/100/1000 Mbps interface. • Must support 3x3 multiple-input multiple-output (MIMO) with Three spatial streams on both radio. • Must support 802.11b/g/n on the 2.4 & 802.11ac Wave1 on 5 GHz radios simultaneously. • Must support data rates up to 300 Mbps on 802.11b/g/n and upto 1.3 Gbps on 802.11ac Wave 1. • Should compatible with wireless security as WPA-PSK, WPA-TKIP, WPA2 AES, 802.11/802.11i • Must support 40 & 80 MHz wide channels in 5 GHz. • Must support Effective Isotropic Radiated Power (EIRP) as per WPC norm • Should support controller based operations • Access Point should support Wireless Backhaul, point-to-point, point-to-multipoint bridging and serial backhaul capability • Should support Encrypted and authenticated connectivity between all backhaul components • Must incorporate radio resource management for power, channel, coverage hole detection and performance optimization • Access Point must support spectrum analysis intelligence to detect different wifi and non wifi interference and take corrective action for self healing and self optimized network. • Access point should send spectrum analysis data to Controller for performance optimization on basis of spectrum analysis data sent to controller. • Access point should support technology to increase the downlink performance to 802.11g clients, providing improved coverage and throughput to existing clients • Must support Power over Ethernet, PoE Kit and OEM mounting kit. • Access Point must be having integrated internal or external antenna. • Access point should be supplied with OEM mounting kit and shall support pole, wall, and roof mounting options as desired by NITTTR • Geographic orientation/Mounting flexibility – tilt angle for pole, wall, and roof mounting units. • The Access point shall be IP6-6/IP6-7 rated for dust and water Ingress protection. • The Access point shall be rated for operation over an ambient temperature range of 0° to 60°C • Must should be certified by Wifi Alliance or UL 2043 • Access point should able to work as sensor for WIDS/WIPS functionality. 	

WIRED & WIRELESS NETWORKING

SECTION – B (PASSIVE ITEMS)

General Instructions and Terms for Passive items

I.	Bids must attach information i.e. Make & Category for cables (Copper & Optical), I/O Box, Jack Panels, and Connectors with Brochure/Data Sheet or any printed material from the OEM.
II.	OEM to furnish test report & certification with the bid from ETL / third party laboratory for testing of CAT 6 on cabling system with zero bit error.
III.	All passive components should be from same OEM except Racks, Gang Box, HDPE Pipe and Chambers
IV.	All the CAT 6 components should be ROHS compliance.
V.	OEM should submit ETL verified CAT 6 component compliance certificate.
VI.	Bidder Should Submit the sample for all passive items before submitting the online or at the time of Pre-Bid meeting like - CAT 6 cable, IO, Face Plate, Patch Cord, HDPE pipe
VII.	Minimum 3 years warranty on passive items from the satisfactory installation.

S. No	SPECIFICATIONS FOR PASSIVE AND OTHER MISC. ITEMS	QTY.
S. No	<u>Category 6 UTP Roll of 305 Mtrs - INDOOR</u>	92
8.	<ul style="list-style-type: none"> • Category 6 Unshielded Twisted Pair cable shall be compliant with EIA/TIA 568-C.2 • Should be twisted 4 pairs of 23 AWG solid conductors • Cable should be CM rated • Cable Should Have Internal cross separator • Jacket: LSZH (Low smoke zero halogen) 	
S. No	<u>Information Outlet – I/O Box</u>	685
9.	<ul style="list-style-type: none"> • Single/Dual RJ45 Gang square plate (86mmx86mm) in ABS Plastic • Plug in Icons / Icon tree/ Labeling – to be supplied with plate • Write on labels in transparent plastic window – supplied with plate 	
S. No	<u>Face Plate with Single Insert in</u>	349
10.	<ul style="list-style-type: none"> • Single RJ45 compatible with Gang square plate (86mmx86mm) • Category 6, EIA/TIA 568-C.2 for RJ45 termination • All information outlets 22-24 AWG copper • Should be UL Listed and ETL verified • Contact Plating: 50 µinches gold over 100 µinches nickel 	
S. No	<u>Face Plate with Dual Insert in</u>	338
11.	<ul style="list-style-type: none"> • Dual RJ45 compatible with Gang square plate (86mmx86mm) • Category 6, EIA/TIA 568-C.2 for RJ45 termination • All information outlets for 100 W, 22-24 AWG copper • Should be UL Listed and ETL verified • Contact Plating: 50 µinches gold over 100 µinches nickel 	
S. No	<u>24 Port Jack Panel</u>	55
12.	<ul style="list-style-type: none"> • Shall be loaded with individually replaceable 24 nos. Category-6 I/O Jacks complying 	

	with TIA-568.C.2	
	<ul style="list-style-type: none"> • Should 19" rack mountable & of 1U height & complete with all mounting accessories • Should be made of cold rolled steel/metal • Should conform to TIA / EIA 568-C.2 Component Compliant • Should terminate 24 UTP CAT 6 (4 pair) Cables • Ports should be with individual dust cover and individual replaceable • Should confirm to EIA/TIA 568A/B wiring Pattern • Should have labeling strips for identification. • Should have integral cable management shelf. • Should be ETL verified 	
S. No	<i>UTP CAT 6 - Patch / Mounting Chord of 1 Mtr</i>	1040
13.	<ul style="list-style-type: none"> • Should be 4 Pairs 24 AWG or better of copper cables. • The Outer Jacket should be Low Smoke Zero Halogen. • 24 or better AWG stranded bare copper • Shall have RJ-45 jacks with transparent plugs at both the ends • All patch cords shall be factory crimped and packed with cross separator • Should comply with proposed ANSI/TIA/EIA-568-C.2 	
S. No	<i>UTP CAT 6 - Patch / Mounting Cord of 2 Mtrs</i>	930
14.	<ul style="list-style-type: none"> • Should be 4 Pairs 24 AWG or better of copper cables. • The Outer Jacket should be Low Smoke Zero Halogen. • 24 or better AWG stranded bare copper • Shall have RJ-45 jacks with transparent plugs at both the ends • All patch cords shall be factory crimped and packed with cross separator • Should comply with proposed ANSI/TIA/EIA-568-C.2 	
S. No	<i>UTP CAT 6 - Patch / Mounting Cord of 3 Mtrs</i>	35
15.	<ul style="list-style-type: none"> • Should be 4 Pairs 24 AWG or better of copper cables. • The Outer Jacket should be Low Smoke Zero Halogen. • 24 or better AWG stranded bare copper • Shall have RJ-45 jacks with transparent plugs at both the ends • All patch cords shall be factory crimped and packed with cross separator • Should comply with proposed ANSI/TIA/EIA-568-C.2 	

S. No	<u>Double Section Wall Mount Rack 15U 19" with cable manager & other accessories</u>	06
16.	<ul style="list-style-type: none"> Racks manufactured out of steel sheet punched, formed, welded and Powder coated 	
	<ul style="list-style-type: none"> Rack should be from ISO 9001, 14000, 18000 Certified Company UL Listed 	
	<ul style="list-style-type: none"> Rack Should be UL Certified 	
	<ul style="list-style-type: none"> Rack should have Front Toughened Glass Door with lock & Key 	
	<ul style="list-style-type: none"> Rack should Two Sections - Front Section to be bolted to back section. Back section Fixed to Wall 	
	<ul style="list-style-type: none"> Front Section should be Swing type and give Access to back on Opening. 	
	<ul style="list-style-type: none"> Rack should be 15U in Height, 19" Wide, 500MM Depth or more 	
	<ul style="list-style-type: none"> Rack should have the provision for mounting 1or 2 Fan on Top cover 	
	<ul style="list-style-type: none"> Rack should have 1 no. Power Distribution Units with 6No.s Of Octagonal Socket 5/15 A Indian Round Pin with PDU Rating 3.6 KVA 	
	<ul style="list-style-type: none"> Rack should have 1 No Horizontal Cable Organizer with Plastic Loops. 	
	<ul style="list-style-type: none"> Rack should have 1 Packet of Mounting hardware, Pack of 20 	
S. No.	<u>Double Section Wall Mount Rack 12U 19" with cable manager & other accessories</u>	15
17.	<ul style="list-style-type: none"> Racks manufactured out of steel sheet punched, formed, welded and Powder coated 	
	<ul style="list-style-type: none"> Rack should be from ISO 9001, 14000, 18000 Certified Company UL Listed 	
	<ul style="list-style-type: none"> Rack Should be UL Certified 	
	<ul style="list-style-type: none"> Rack should have Front Toughened Glass Door with lock & Key 	
	<ul style="list-style-type: none"> Rack should Two Sections - Front Section to be bolted to back section. Back section Fixed to Wall 	
	<ul style="list-style-type: none"> Front Section should be Swing type and give Access to back on Opening. 	
	<ul style="list-style-type: none"> Rack should be 12U in Height, 19" Wide, 500MM Depth or more 	
	<ul style="list-style-type: none"> Rack should have the provision for mounting 1or 2 Fan on Top cover 	
	<ul style="list-style-type: none"> Rack should have 1 no. Power Distribution Units with 6No.s Of Octagonal Socket 5/15 A Indian Round Pin with PDU Rating 3.6 KVA 	
	<ul style="list-style-type: none"> Rack should have 1 No Horizontal Cable Organizer with Plastic Loops. 	
	<ul style="list-style-type: none"> Rack should have 1 Packet of Mounting hardware, Pack of 20 	
S. No.	<u>Double Section Wall Mount Rack 6U 19" with cable manager & other accessories</u>	04
18.	<ul style="list-style-type: none"> Racks manufactured out of steel sheet punched, formed, welded and Powder coated 	
	<ul style="list-style-type: none"> Rack should be from ISO 9001, 14000, 18000 Certified Company UL Listed 	
	<ul style="list-style-type: none"> Rack Should be UL Certified 	
	<ul style="list-style-type: none"> Rack should have Front Toughened Glass Door with lock & Key 	
	<ul style="list-style-type: none"> Rack should Two Sections - Front Section to be bolted to back section. Back section Fixed to Wall 	
	<ul style="list-style-type: none"> Front Section should be Swing type and give Access to back on Opening. 	
	<ul style="list-style-type: none"> Rack should be 6U in Height, 19" Wide, 500MM Depth or more 	
	<ul style="list-style-type: none"> Rack should have the provision for mounting 1or 2 Fan on Top cover 	
	<ul style="list-style-type: none"> Rack should have 1 no. Power Distribution Units with 6No.s Of Octagonal Socket 5/15 A Indian Round Pin with PDU Rating 3.6 KVA 	
	<ul style="list-style-type: none"> Rack should have 1 No Horizontal Cable Organizer with Plastic Loops. 	
	<ul style="list-style-type: none"> Rack should have 1 Packet of Mounting hardware, Pack of 20 	

S. No.	<u>Optical Fiber Pigtailes Single Mode OS2 – 1 Mtrs or more</u>	50
19.	<ul style="list-style-type: none"> • Precision ferrule end face geometry 	
	<ul style="list-style-type: none"> • Factory polished, tested and serialized. 	
	<ul style="list-style-type: none"> • Buffer Diameter: 900um tight buffer 	
	<ul style="list-style-type: none"> • Minimum bend radius: install: 30 mm 	
	<ul style="list-style-type: none"> • Retention Strength: 100N 	
	<ul style="list-style-type: none"> • Cable: 900um Buffered 	
S. No 20.	<u>HDPE Pipe in meters</u>	550
	<ul style="list-style-type: none"> • HDPE pipe silicon coated PLB 40/33 mm with accessories like end caps, elbows and cable sealing plugs 	
S. NO 21.	<u>6 PAK adaptor plate SM with Duplex Couplers</u>	10
S. No. 22.	<u>Blank Plates for LIU</u>	50
S. No. 23.	<u>1” Conduit Pipe Length of 3 Meters - in lengths</u>	535
	<ul style="list-style-type: none"> • ISI Marked Conduit Pipe 1” Length of 3 Meters - in lengths • With sufficient accessories for fixing the pipes ie - Conduit Clip, Gatti, Screws, elbows, flexi etc 	

WIRED & WIRELESS NETWORKING

SECTION – C (SERVICE /LABOUR)

I.	Minimum of 3 years warranty on Active, Passive Items and related services on items from the day of satisfactory installation
II.	The billing of the services will be accepted as : As Per Actuals (APA)

SECTION C - SERVICES

S. NO	SECTION C - SERVICES	UNIT	QTY
24.	Conduit pipe Fixing with accessories ie - Conduit Clip, Gatti, Screws,elbow, flexi etc - As Per Actuals / mts	Meters	1605
25.	Laying of UTP CAT 6 Cable with labelling on the both either end - As Per Actuals / mts	Meters	28060
26.	Laying and Fixing of Information I/O Gang with proper numbering - As Per Actuals / numbers	Numbers	687
27.	Punching on Insert in for the faceplate Port & Port in the Jack Panel - As Per Actuals / numbers	Numbers	995
28.	Installation of 24 Ports Jack Panels in Wall Rack 15U - As Per Actuals /numbers	Numbers	20
29.	Installation of 24 Ports Jack Panels in Wall Rack 12U - As Per Actuals / numbers	Numbers	32
30.	Installation of 24 Ports Jack Panels in Wall Rack 6U - As Per Actuals / numbers	Numbers	4
31.	Mounting of Wall Rack Mountable 15U with power strip and cable manager - As Per Actuals / numbers	Numbers	6
32.	Mounting of Wall Rack Mountable 12U with power strip and cable manager - As Per Actuals / numbers	Numbers	15
33.	Mounting of Wall Rack Mountable 6U with power strip and cable manager - As Per Actuals / numbers	Numbers	4
34.	Mounting and configuring of the Wifi Access (Indoor & Outdoor points) - As Per Actuals / numbers	Numbers	75
35.	Laying of HDPE pipe – Soft digging Underground (Trenching/Wall/Roof) from for CAT 6 or 12 Core SM OFC - As Per Actuals / mts	Meters	450
36.	Laying Of HDPE pipe Hard digging - for CAT 6 or 12 SM Core OFC - As Per Actuals / mts	Meters	85
37.	Splicing Per Core from Both Sides	Numbers	50
38.	Fitting of the LIU in rack with 6 PAK adaptor plate SM with Duplex Couplers	Numbers	6
39.	Penta testing with Site Certification documentation	Numbers	APA
40.	Vendor for Wired and Wireless Network has to ensure 24*7 support to meet the service Level in the warranty period of 3 years. Bidder must provide at least two (02) dedicated Resident Engineers 24 x 7 x 365 days in the warranty period (including all holidays).		02

**CHECK LIST DULY FILLED IN TO BE ATTACHED WITH PRE-QUALIFYING-
CUM-TECHNICAL BID FOR THE MACHINERY/EQUIPMENT/SERVICES
FOR NITTTR CHANDIGARH**

- | | | |
|----|--|--------|
| 1. | Whether EMD in the shape of Demand Draft valid for three months, for the asked-for amount attached? | Yes/No |
| 2. | Whether tender document duly signed by authorized signatory Attached? | Yes/No |
| 3. | Whether a list of institutions / organizations where your firm has supplied this item / equipment / instrument / services recently, is Attached. | Yes/No |
| 4. | If you are an authorized agent / dealer / distributor of the firm / company / manufacturer and whether authority Letter as issued by them in your favour attached? | Yes/No |
| 5. | Whether Technical brochure of the equipment/services attached? | Yes/No |

Note :- If Yes, must attach all relevant documents.

**Signature of authorized signatory
with seal of the firm**