



राष्ट्रीय फैशन प्रौद्योगिकी संस्थान

वस्त्र मंत्रालय, भारत सरकार

निफ्ट कैम्पस, करवड़, जोधपुर-342 037, राजस्थान, भारत

National Institute of Fashion Technology

Ministry of Textiles, Govt. of India

NIFT Campus, Karwar, Jodhpur-342 037, Rajasthan, India



15631/IT/Internet Connectivity/Campus Wi-Fi

Date: 04/12/2024

“Invites Expression of Interest (EOI) from Govt Agencies / Any Central or State (Public sector undertaking-PSUs) for Supply, Installation and Commissioning for New Installation/Upgradation Wi-Fi Infrastructure at NIFT ,Campus Karwar, Jodhpur”

Expression of Interest (EOI) SCHEDULE

Date of publication of inviting EOI	04/12/2024, 4:00 PM
Date from which EOI document can be downloaded	04/12/2024 4:00 PM
Pre-Bid Date & Time for EOI Document	11/12/2024 (11:00 AM)
Last date for EOI Submission Date & Time	26/12/2024 (4:00 PM)
Date and time of opening of EOI Document	26/12/2024 (4:30 PM)

Interested Govt agencies /Any Central or State (Public sector undertaking-PSUs) may submit their EOI in two separate sealed envelopes with profile of the organization indicating experience in similar services, Survey report along with the network diagram in one envelope, and the budgetary estimate for New Installation/Upgradation and Commissioning of Wi-Fi Infrastructure along with service charges in the other envelope. The covers shall be superscribed as 'EOI for New Installation/Upgradation and Commissioning of Wi-Fi Infrastructure at NIFT, Campus Karwar, Jodhpur.

Both the covers shall be put into another large cover and submitted to:

Purchase Officer,

National Institute of Fashion Technology,

NIFT Campus, Karwar, Jodhpur- 342037, Rajasthan, India

EOI Document is available on NIFT website <https://nift.ac.in/jodhpur/tenders>.

Note: This EOI document contains 18 pages and bidders are requested to sign on all the pages.

**I accept the above Terms and Conditions
(Full Signature of the agency)**

1. Introduction:

National Institute of Fashion Technology (NIFT) is a statutory Body governed by the NIFT Act 2006 & set up by the Ministry of Textile, Govt. of India for the promotion and development of education and research in field of Fashion Technology. NIFT provides Fashion business education across the country through its network of 19 campuses. NIFT has its head office at New Delhi with its campuses located at Bengaluru, Bhopal, Bhubaneswar, Chennai, Daman, Gandhi Nagar, Hyderabad, Jodhpur, Kangra, Kannur, Kolkota, Mumbai, New Delhi, Patna, Punchkula, Raebareli, Shillong ,Srinagar and Varanasi.

NIFT, Jodhpur campus was established in the year 2010 and imparting education to 5 (Five) undergraduate and 1(One) post graduate programmes. However the present campus of NIFT, Jodhpur has been shifted in its permanent new building in 2015-16 at Karwar, Jodhpur.

2. Notice Inviting Expression of Interest(EOI)

Interested Govt agencies/Any Central or State (Public sector undertaking-PSUs) may submit their EOI in two separate sealed envelopes with profile of the organization indicating experience in similar services, Survey report along with the network diagram in one envelope, and the budgetary estimate for New Installation/Upgradation and Commissioning of Wi-Fi Infrastructure along with service charges in the other envelope. The covers shall be superscribed as 'EOI for New Installation/Upgradation and Commissioning of Wi-Fi Infrastructure at NIFT , Campus Karwar, Jodhpur. Both the covers shall be put into another large cover and submitted to:

Purchase Officer,
National Institute of Fashion Technology,
NIFT Campus, Karwar, Jodhpur- 342037, Rajasthan, India

3. Correspondence Address: National Institute of Fashion Technology, NIFT Campus, Karwar, Jodhpur-342037, Rajasthan, India.

If any clarification is required relating to this EOI, the same can be sought from the following officers of NIFT Jodhpur.

- Computer Engineer, NIFT, Jodhpur, 0291-2659533, [e-mail: computerengg.jodhpur@nift.ac.in](mailto:computerengg.jodhpur@nift.ac.in)
- Purchase Department NIFT, Jodhpur Mob No. 0291-2659571 [e-mail:purchase.jodhpur@nift.ac.in](mailto:purchase.jodhpur@nift.ac.in)

The Expression of Interest (EOI) should be submitted in sealed envelopes and address:-

Purchase Officer,
National Institute of Fashion Technology,
NIFT Campus, Karwar, Jodhpur- 342037, Rajasthan

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4. A. Technical Cover shall contain:

- i. Profile of the Govt agencies /Any Central or State (Public sector undertaking-PSUs).
- ii. Experience details in the field of Installation and Commissioning of Wi-Fi Infrastructure and agency has to comply the technical specification of goods which is mentioned in EOI Document.
- iii. Copy of Accounts of the last three years (2021-2022, 2022-2023 and 2023-2024) in proof of turnover.
- iv. Details of availability of skilled/technical manpower to handle the specific area.
- v. Undertaking to the effect that the organization had not been blacklisted at any time and no case/inquiry has been registered against the organization.
- vi. Copy of manufacturer's Authorization Form.

B. The second cover shall contain:

1. Item wise budgetary estimate for procuring, installation and commissioning of the entire system including support systems. Actual cost of implementation shall be within the budgetary cost quoted for.
2. Agency Service charge for the organization.
3. Interested organizations may survey the site with prior intimation to the NIFT Jodhpur campus, for providing the estimate.
4. Requirement details of layout are attached.

5. EOI Terms and Conditions:

1. NIFT Jodhpur Campus is currently exploring options offering cost-effective solution for implementing new installation/Upgradation and Commissioning of Wi-Fi equipment in Campus.
2. Govt agencies /Any Central or State (Public sector undertaking-PSUs) are invited for providing the best possible Budgetary Estimation with Service Charges for installation /Upgradation and Commissioning of Wi-Fi in NIFT Jodhpur Campus.
No other than (Govt agencies /Any Central or State (Public sector undertaking PSUs) agencies will be entertained for this project.
3. The agency has to mention the Rate quotation validity on their budgetary proposal(Validity of rate quotation should be at least 6 months or more)
4. EOI/Execution of the proposal is strictly subject to getting financial approval of NIFT Head Office.
5. The successful agency shall be responsible for operations and management of the entire system including its sub systems, customer support and responsibility as per SLAs.
6. The successful agency must ensure that the equipment for which the payments are made by the client shall at all times be fully insured and be kept under comprehensive onsite warranty of 3 Years and upgrade support from OEM and the same shall be transferred to client at the end of the term (or the extended term) if any.
7. All the equipment provided by the agency must be from the same OEM and connectivity should be minimum 10GbE fiber optics cable (layer 3 to layer 2 switches) from the server/network controller room to other buildings.
8. During the term of this agreement the successful agency agrees to maintain the equipment in good working order and for this purpose will provide the following repair and maintenance service:
 - I. The successful agency shall correct any faults and failures in the equipment and shall repair and replace worn or defective parts of the equipment during Client`s normal working hours on all working days.
 - II. In cases where unserviceable parts of the equipment need replacement, the successful

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agency shall replace such parts at no extra cost to Client, with brand new parts or those equivalent to new parts in performance.

III. The agency shall further ensure that the equipment is not down at any time for want of spare parts.

9. The agency may submit the budgetary estimate and service charges in a sealed envelope at NIFT Jodhpur Campus.
10. The agency may survey the site for providing the estimate with prior intimation at 0291-2659533
11. Interested Govt agencies/Any Central or State (Public sector undertaking-PSUs) may submit their EOI may be addressed to the Purchase Department (NIFT Jodhpur Campus), National Institute of Fashion Technology, Karwar Campus, Jodhpur, 342037.
12. The detailed specification of Wi-Fi equipment (Active and Passive Component) which is vetted by the NIFT Head Office and the layout of the NIFT Jodhpur campus is attached.
13. The Agency/representative may visit the site and understand the scope of work completely before participating in the rate EOI process same and seek clarifications if so desired.
14. The successful L-1 agency has to furnish Performance Security Deposit which will be 5 % of the value of the contract as refundable in favour of the "National Institute of Fashion Technology Jodhpur". No interest shall be payable on this deposit. Performance Security should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including warranty obligations.

6. Summary of Requirement

List of Active Part with their Qty.			
Sr.No.	Items/Description	Qty	Unit(in Nos.)
1	Wireless Controller	1	Nos.
2	Layer 3 Switch (Core Switch - 24 Port)	1	Nos.
3	Layer 2 Switch (48 Port)	1	Nos.
4	Layer 2 Switch (24 Port)	8	Nos.
5	Layer 2 Switch (12 Port)	4	Nos.
6	Layer 2 Switch (8 Port)	21	Nos.
7	Wireless Access Point (Indoor)	180	Nos .
8	Wireless Access Point (Outdoor)	3	Nos.

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Name of the Equipment : Wireless Controller

General Specifications

Wireless controller should support 250 AP and 5000 clients from day 1 and can be upgraded to 500 AP support with 10000 clients without any hardware change.

Hardware:

- The controller shall support deployment flexibility without compromising any features
- The controller shall support min 5 Gbps tunneling capacity and shall be upgradable to 10 gbps.
- The controller shall support 2x 10G/Multigigabit fiber uplink.
- Wireless Controller shall support link aggregation and load sharing between Access Point to WLC links
- The controller shall support hardware encrypted data plane between Access Point and Controller
- The controller shall be proposed with complete feature set including licensed feature

High Availability:

- High Availability mode shall support controller inline data plane mode as well as local switching mode and Mesh mode
- High Availability mode shall allow geographically dispersed installation between Controllers
- The controller failover shall not trigger client de-authentication and re-association
- The controller shall support hot WLC software patching for fixing bugs
- The controller shall support hot AP software patching for fixing bugs
- The controller shall support new AP hardware without need for upgrading entire controller software.
- The controller shall support rolling AP upgrade
- The controller shall support rolling AP upgrade without need for clustering
- The redundant Controller shall sync Access Point and Client Status, including DHCP IP lease status

Software:

- Access Point shall be able to proactively distribute Client connection before and after association and tracking client condition in real time using data packet RSSI
- The controller shall support standard-based, secure AP-Controller data&control protocol like CAPWAP. protocol that has known vulnerability like PAPI cannot be used.
- The controller shall support Inter-Controller Wireless Roaming
- The controller shall maintain per-user Application usage and shall be able to export it for network analytic.
- The controller shall support Multi Languages options from embedded GUI Management
- The controller shall provide per-Client Connection Scoring and provide reasoning of Client Connection Score
- The controller shall support Cellular offload using IPv6 tunneling to Mobile Core network

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RF management:

- The controller shall be able to support multiple RF Management profile per group of APs, including Transmit Power Control and Dynamic Channel Assignment on both 2.4GHz and 5Ghz
- The controller shall be able to identify and avoid interferers with network performance impact analysis report
- The controller shall support optimized, automatic channel width (20~160Mhz) selection over 5GHz, 802.11ac

Mesh:

- Mesh AP nodes shall provide quick convergence and fast failover to new root mesh node
- Mesh Backhaul interface shall support full duplex operation using wired daisy chaining
- Mesh AP shall support fast roaming for Wired-client through wired-to-wireless bridge client

Application Recognition and Control

- The controller shall support per-user and per-WLAN based application recognition and control that throttle usage by rate-limiting
- The controller application recognition technology shall support exporting to 3rd party compatible format, such as NetFlow v9
- The controller shall provide policy-based mDNS gateway including chromecast gateway
- The controller shall support new application signatures without upgrading controller software

BYOD & Security:

- The controller shall provide Device Profiling using multiple profiling methods to reduce false-detection
- The system shall provide secure onboarding service for both employee and guest based on standard-based security protocol
- Proposed system shall not use public cloud as user data repository
- The controller shall be able to embedded custom web portal page (HTML) to fully customize user experience without additional cost or extra box
- The controller shall provide rule-based rogue classification and automatically run rogue mitigation action
- The controller shall be able to detect employee device connection to Rogue Access Point and contain it automatically. It should also support protection from Honeypot or Evil twin.
- The controller shall support Content Security using DNS integration, Web Classification shall be fully customizable
- The system shall support control plane encryption on both IPv4 and IPv6
- The Controller's image upgrade shall be done through secure, encrypted transport
- The controller shall be able to provide unique pre-shared keys to the devices that do not support the 802.1x security protocol
- The controller shall support Identity PSK for onboarding
- The controller shall support identification & mitigation of threats inside encrypted traffic

Network:

- The controller shall support mapping of specific VLANs to single SSID, depending on Access Point location and user

Configuration:

- The controller shall support automatic VLAN assignment per SSID to load-balance user connection.
- assigned VLAN pool shall be same as number of available VLAN in the system
- The controller shall support embedded best practice configuration profile and setup
- The controller shall support packet fragmentation between Access Point and controller communication

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Name of the Equipment : Layer 3 Switch (Core Switch-24 Port)

General Specifications

General Features :

- Switch should be 1U and rack mountable in standard 19" rack.
- Switch should support internal hot-swappable Redundant Power supply from day1.
- Switch should have redundant hot-swappable fans.
- Switch should have minimum 6 GB RAM and 16 GB Flash.
- Switch should have dedicated slot for modular stacking, in addition to asked uplink ports. Should support for minimum 480 Gbps of stacking throughput with 8 switch in single stack.

Performance :

- Switch shall have minimum 880 Gbps of switching fabric.
- Switch shall have minimum 32K MAC Addresses and 1000 active VLAN.
- Should support minimum 32K IPv4 routes or more and 16K IPv6 routes or more.
- Switch shall have 8K or more multicast routes.
- Switch should support atleast 64K flow entries
- Switch should support 128 or more STP Instances.
- Switch should have 16MB or more packet buffer.

Functionality :

- Switch should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z & 1588v2.
- Switch must have functionality like static routing, RIP, PIM, OSPF, VRRP, PBR and QoS features from Day1
- Should support advance Layer 3 protocol like BGPv4, BGPv6 , MPLS, VRF, VXLAN, OSPFv3, MP-BGP
- Switch shall have 802.1p class of service, marking, classification, policing and shaping and eight egress queues.
- Switch should support management features like SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS and TACACS+.
- Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbour Discovery Inspection and IPv6 Source Guard.
- Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment. Communication between switches should support encryption using suitable protocols like MACSec/VxLAN/GRE tunnel or equivalent
- Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type.
- During system boots, the system's software signatures should be checked for integrity. System should be capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.
- Switch shall have modular OS to support application 3rd party application hosting

Interface:

- Switch shall have 24 nos. 10/25 SFP+ ports and additional 4 nos. it should be expandable to 28 in future

Certification:

- Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification.

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Name of the Equipment : Layer 2 Switch (48 Port)

General Specifications

General Features :

- Switch should be 1U and rack mountable in standard 19" rack.
- Switch should support internal field replaceable unit redundant power supply from day 1.
- Switch should have minimum 2 GB RAM and 4 GB Flash.
- Switch should have dedicated slot for modular stacking, in addition to asked uplink ports. Should support for minimum 80 Gbps of stacking throughput with 8 switch in single stack.

Performance :

- Switch shall have minimum 176 Gbps of switching fabric and 90 Mpps of forwarding rate.
- Switch shall have minimum 16K MAC Addresses and 250 active VLAN.
- Should support minimum 11K IPv4 routes or more
- Switch shall have 1K or more multicast routes.
- Switch should support atleast 16K flow entries
- Switch should support 128 or more STP Instances.
- Switch should have 6MB or more packet buffer.

Functionality :

- Switch should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.
- Switch must have functionality like static routing, RIP, REP PIM, OSPF, VRRP, PBR and QoS features from Day1.
- Switch should support network segmentation that overcomes the limitation of VLANs using VXLAN and VRFs.
- Switch shall have 802.1p class of service, marking, classification, policing and shaping and eight egress queues.
- Switch should support management features like SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS
- Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbour Discovery Inspection
- Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and Communication between switches should support encryption using suitable protocols like MACSec/VxLAN/GRE tunnel or equivalent.
- Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type.
- During system boots, the system's software signatures should be checked for integrity. System should capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.

Interface:

- Switch shall have 48 nos. 10/100/1000 Base-T ports and additional 4 x 1/10 Gig SFP+ ports
- All 48 port should support PoE (802.3af) and PoE+ (802.3at) with a PoE power budget of 720 W.

Certification:

- Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification.

Name of the Equipment : Layer 2 Switch (24 Port)

General Specifications

General Features :

- Switch should be 1U and rack mountable in standard 19" rack.
- Switch should support internal field replaceable unit redundant power supply from day 1.
- Switch should have minimum 2 GB RAM and 4 GB Flash.
- Switch should have dedicated slot for modular stacking, in addition to asked uplink ports. Should support for minimum 80 Gbps of stacking throughput with 8 switch in single stack.

Performance :

- Switch shall have minimum 128 Gbps of switching fabric and 90 Mpps of forwarding rate.
- Switch shall have minimum 16K MAC Addresses and 250 active VLAN.
- Should support minimum 11K IPv4 routes or more
- Switch shall have 1K or more multicast routes.
- Switch should support atleast 16K flow entries
- Switch should support 128 or more STP Instances.
- Switch should have 6MB or more packet buffer.

Functionality :

- Switch should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.
- Switch must have functionality like static routing, RIP, REP PIM, OSPF, VRRP, PBR and QoS features from Day1.
- Switch should support network segmentation that overcomes the limitation of VLANs using VXLAN and VRFs.
- Switch shall have 802.1p class of service, marking, classification, policing and shaping and eight egress queues.
- Switch should support management features like SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS
- Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbour Discovery Inspection .
- Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type.
- During system boots, the system's software signatures should be checked for integrity. System should capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.

Interface

- Switch shall have 24 nos. 10/100/1000 Base-T ports and additional 4 x 1/10 Gig SFP+ ports
- All 24 port should support PoE (802.3af) and PoE+ (802.3at) with a PoE power budget of 720 W.

Certification:

- Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification.

Name of the Equipment : Layer 2 Switch (12 Port)

General Specifications

Architecture:

- Switch should have minimum 12 X Gig Base-T ports with additional uplinks 2 x 1G SFP and 2 x 1G copper ports
- Switch should 12 Gigabit Ethernet(Full POE+), 2 x 1 Gig Copper and 2 x 10 Gig SFP+ with line rate forwarding performance

Performance Requirements:

- Switch shall have minimum 40 Gbps of switching fabric and 50 Mpps of forwarding rate.
- Shall have minimum 14K MAC Addresses.
- Shall have minimum 250 Active VLANs and 4,000 VLAN Ids support

IEEE Standards:

- Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.

Quality of Service (QoS) requirements and Security Features:

- Shall have 802.1p class of service, IP differentiated service code point (DSCP) and IP precedence.
- Switch should support marking, classification, policing and shaping. Should support strict priority queuing.
- Switch should support port security.
- DHCP snooping to allow administrator to ensure consistent mapping of IP to MAC address
- Dynamic ARP protection blocking ARP broadcasts from unauthorized hosts
- IP source guard to prevent IP spoofing attacks
- STP BPDU port protection to prevent forged BPDU attacks.
- STP Root Guard to protect the root bridge from malicious attacks or configuration mistakes.
- IPv6 First Hop Security.
- Should support 802.1x authentication and accounting with Dynamic VLAN assignment.
- Switch should support IPv4 and IPv6 ACLs, VLAN, Port and Time based access list with time ranges.

System Management and Administration:

- Configuration and management through the CLI, GUI, console, Telnet and SSH
- Switch should support SSHv2.
- Switch should support SNMPv2c, SNMPv3 and Remote monitoring (RMON).
- Network Time Protocol(NTP) or equivalent support
- Switch should support AAA using RADIUS and TACACS+.

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Name of the Equipment : Layer 2 Switch (8 Port)

General Specifications

Architecture

- Switch should have minimum 8 X Gig Base-T ports with additional uplinks 2 x 1G SFP and 2 x 1G copper ports
- Switch should 8 Gigabit Ethernet(Full POE+), 2 x 1 Gig Copper and 2 x 10 Gig SFP+ with line rate forwarding performance

Performance Requirements

- Switch shall have minimum 30 Gbps of switching fabric and 50 Mpps of forwarding rate.
- Shall have minimum 14K MAC Addresses.
- Shall have minimum 250 Active VLANs and 4,000 VLAN Ids support

IEEE Standards

- Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.

Quality of Service (QoS) requirements and Security Features

- Shall have 802.1p class of service, IP differentiated service code point (DSCP) and IP precedence.
- Switch should support marking, classification, policing and shaping. Should support strict priority queuing.
- Switch should support port security.
- DHCP snooping to allow administrator to ensure consistent mapping of IP to MAC address
- Dynamic ARP protection blocking ARP broadcasts from unauthorized hosts
- IP source guard to prevent IP spoofing attacks
- STP BPDU port protection to prevent forged BPDU attacks.
- STP Root Guard to protect the root bridge from malicious attacks or configuration mistakes.
- IPv6 First Hop Security.
- Should support 802.1x authentication and accounting with Dynamic VLAN assignment.
- Switch should support IPv4 and IPv6 ACLs, VLAN, Port and Time based access list with time ranges.

System Management and Administration

- Configuration and management through the CLI, GUI, console, Telnet and SSH
- Switch should support SSHv2.
- Switch should support SNMPv2c, SNMPv3 and Remote monitoring (RMON).
- Network Time Protocol(NTP) or equivalent support
- Switch should support AAA using RADIUS and TACACS+.

Name of the Equipment : Wireless Access Point (Indoor)

General Specification

- Access Point shall support 4x4 MIMO on both radio interfaces
- Access Point shall be able to powered up using PoE (.af)
- Access Point shall support assurance, packet capture, RF sensing capabilities
- Access Point shall support application visibility and control
- Access Point shall support encrypted traffic visibility
- Access Point should have Bluetooth5 radio to support use cases of location, asset tracking and analytics.
- Access Point shall ship with metal-based mounting bracket for durability and reliability
- Access Point shall be able to leverage current Access Point mount kit and cable conduit
- Access Point shall support Console port that uses Standard Port (RJ-45) type connection
- Access Point should have 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz
- Access Point should have USB port for future requirement.
- Must have atleast 3 dBi Antenna gain on each radios
- Must Support data rate upto 5gbps.
- Must support minimum of 23dbm of transmit power in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms.
- Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.
- Must incorporate radio resource management for power, channel and performance optimization
- Must have -93 dB or better Receiver Sensitivity.
- Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.
- Must support Management Frame Protection.
- Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI).
- Must support the ability to serve clients and monitor the RF environment concurrently.
- Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.
- Must be plenum-rated (UL2043).
- Must support 16 WLANs per AP for SSID deployment flexibility.
- Must support telnet and/or SSH login to APs directly for troubleshooting flexibility.
- 802.11e and WMM
- Must support QoS and Video Call Admission Control capabilities.
- Access point should be wifi 6 certified.

Name of the Equipment : Wireless Access Point (Outdoor)

General Specification

- Access Point shall support 4x4 MIMO on both radio interfaces and MU-MIMO technology
- Access Point shall be able to support Multigigabit Ethernet, support up to 2.5 Gbps PHY speed using single Cat5e or above (Cat6, Cat6a, Cat7) cable
- Access Point shall be able to powered up using PoE (.af)
- Access Point shall have dedicated radio/chipset for spectrum monitoring capabilities, WIPS and off channel RRM without compromising and using the client serving radios.
- Access Point shall ship with metal-based mounting bracket for durability and reliability including accessories.
- Access Point should have 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz uplink, 1x Gigabit Ethernet SFP uplink
- AP must have standard RJ-45 console port
- Must have at least 6 dBi omni direction Antenna on each radios
- Must Support data rate upto 3Gbps.
- Must support minimum of 30 dbm of transmit power in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms.
- Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.
- Must incorporate radio resource management for power, channel and performance optimization
- Must have -97 dB or better Receiver Sensitivity.
- Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.
- Must support Management Frame Protection.
- Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI).
- Must support the ability to serve clients and monitor the RF environment concurrently.
- Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.
- Must support 16 WLANs per AP for SSID deployment flexibility.
- Must support secure remote login to APs directly for troubleshooting flexibility.
- Should support 802.11e and WMM
- Must support QoS and Video Call Admission Control capabilities.
- Access point should be Wi-Fi 6 certified
- The Access point shall be IP67 and NEMA rated
- The Access point shall support operating temperature of -40 to 65°C
- The equipment shall support up to 100 MPH sustained winds & 165 MPH wind gusts.
- Wi-Fi AP devices and solution should support "IEEE-802.1x, WAP-2, WPA-3
- Wi-Fi AP devices and solution should support for 802.1Q VLAN.
- - Wi-Fi AP devices should facilitate auto channel allocation to avoid interfaces between APs.
- Wireless solution should support dedicated management VLAN for configuration
- The switching and wireless should be from same OEM

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List of Passive Part with their Qty.			
Sr.No.	Items/Description	Qty	Unit(in Nos.)
1	SC-LC Patch Cable	60	Nos.
2	Cat 6 UTP Cable	40	Box
3	Cat 6 24 Port Loaded Patch Panel	10	Nos.
4	UTP Patch Cord (3 Mtr)	100	Nos
5	UTP Patch Cord (1 Mtr)	200	Nos.
6	I/O with Gang box	100	Nos .
7	9 U Rack Wall Mount	6	Nos.
8	Conduit/Casing 1"	3000	Mtr

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SC-LC Patch Cable

- Length shall be 1meter
- All patch cords shall conform to ANSI/TIA-568C.3
- Cable should be Single mode OS2 9/125 μ , Duplex type with bend insensitive fiber G.657.A1
- LSZH Sheath should comply flame test method as per IEC 60332-1
- Optical Performance of fiber patch cord:
- Insertion Loss: maximum 0.15 dB
- Return Loss: minimum 55.0 dB
- All patch cords should be factory terminated and packed.
- Should be RoHS Compliant

CAT-6 UTP Cable

- Category 6 4 pair LSZH cable should be compliant with TIA/EIA- 568- C.2
- Should be of 4 twisted pairs of 23 AWG solid conductors
- Should support network line speed up to 1 Gigabits per second.
- Shall be 4-pair Unshielded twisted pair with a cross filler/ isolator (+), meeting Category 6 tested to 250 MHz or more
- Should be ETL verified to TIA/EIA- 568- C.2 Category 6 standard for 250MHz (ETL certificate to be enclosed along with the bid)

Mechanical Characteristics:

- Construction: 4 pair unshielded cable should be constructed of 4 individual pairs.
- Conductor should be solid Copper
- Conductor Size should be 23 AWG (0.57 \pm 0.2)
- Insulator should be Polyethylene/Polyolefin
- Jacket/ Sheath type should be LS0H (Low Smoke Zero Halogen)
- NVP should be 65% or better
- Delay Skew should be <45nS
- Should be certified by ETL. All certificates must be attached along with Bid.

CAT 6 24 Port Loaded Patch Panel

- Should be supplied with individually replaceable 24 numbers Category-6 I/O unshielded Jacks complying as per the ANSI/TIA-568C.2
- Should be 19" rack mountable and of 1U height & complete with all mounting accessories
- Should have label holder/cover for identification of ports
- IDC Connector plastic housing should be polycarbonate.
- Operating Life should be Minimum 20 re-terminations and contact material should be copper alloy.
- Material should be CRS (cold rolled steel)
- Should be supplied with integrated rear cable management shelf as for cable strain relief.
- Should have provision for better cable dressing at the rear
- I/O operating Life should be minimum 750 insertion cycles and contact material should be copper alloy.
- I/O contact plating should be 50 μ Gold/ 50 μ Nickel minimum

UTP Patch Cord (1Mtr/3Mtr)

- Category 6 Equipment cords (Length – 1 & 3 Mtr)
- Conductors Should be of 4 twisted pairs of 24 AWG stranded copper for better flexibility
- Patch cords should conform to ANSI/TIA-568-C.2 for Cat 6
- Should have RJ-45 jacks with boot at both the ends.
- All patch cords should be factory crimped and packed.
- Should have LSZH jacket for safety
- Plug Insertion Life should be Minimum 750 times
- Shall be RoHS Compliant

I/O With Gang Box

- Should be conform to Category-6 as per ANSI/TIA-568-C.2
- Should be support network line speeds up to 1 Gbps
- I/O operating Life should be minimum 750 insertion cycles and contact material should be copper alloy.
- I/O contact plating should be 50 μ Gold/ 50 μ Nickel minimum
- All information outlets for 22- 24 AWG copper cable should be use insulation displacement connectors (IDC)
- Operating Life should be minimum 750 insertion cycles
- Operating Life should Minimum 20 re- terminations.
- Plastic Housing must be Polycarbonate, UL94V- 0 rated
- I/O should be terminated using industry standard with tool-less or punch down method.
- Single square plate, 86mmx86mm
- Faceplate should be Spring-loaded shutter or cap to protects from dust and contaminants.
- Write on labels in transparent plastic window – supplied with plate
- Should be able to support variety of jacks – UTP, STP, Fiber, Coax etc.

9U Rack Wall Mount

- Rack 9U 550mm with Front Glass Door (tinted, Toughened) with Lock & Key
- Rack Should be supplied with 5 No. PVC 1U Cable manager, Mounting Hardware = 3 Nos (Set of 20)
- Rack Must Be supplied with PDU 5/15 Amp 6 socket with MCB
- Rack Should be supplied with Two Nos. of Fans

Please Note: The quantity given above is tentative. Actual quantity may vary.

**I accept the above Terms and Conditions
(Full Signature of the agency)**

Budgetary Quotation for Upgradation of Wi-Fi Infrastructure						
Sr.No.	Items/Description	Qty	Unit	Unit Price (in Rs)	G.S.T	Total Price (inclusive of G.S.T)
1	Wireless Controller	1	Nos.			
2	Layer 3 Switch (Core Switch - 24 Port)	1	Nos.			
3	Layer 2 Switch (48 Port)	1	Nos.			
4	Layer 2 Switch (24 Port)	8	Nos.			
5	Layer 2 Switch (12 Port)	4	Nos.			
6	Layer 2 Switch (8 Port)	21	Nos.			
7	Wireless Access Point (Indoor)	180	Nos.			
8	Wireless Access Point (Outdoor)	3	Nos.			
9	SC-LC Patch Cable	60	Nos.			
10	Cat 6 UTP Cable	40	Box			
11	Cat 6 24 Port Loaded Patch Panel	10	Nos.			
12	UTP Patch Cord (3 Mtr)	100	Nos.			
13	UTP Patch Cord (1 Mtr)	200	Nos.			
14	I/O with Gang box	100	Nos.			
15	9 U Rack Wall Mount	6	Nos.			
16	Conduit/Casing 1"	3000	Mtr			
17	Installation, Testing, Commissioning, Integration, Penta Scanning, Documentation, Training etc.	1 {As Per Actual}	Whole Job			
Total in Rs.						
Service Charge in Rs.						
G.S.T on Service Charge (As Applicable) Rs.						
Grand Total Rs.						

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