

**निविदा सूचना संख्या 07 / 2023-24**  
**Part – A इंटरनेट सेवा हेतु निविदा ( Bid For Internet Service)**

फुलो झानो चिकित्सा महाविद्यालय, दुमका अंतर्गत Supply and maintenance of 1:1 Dedicated Unshared & Uncompressed Internet LeasedLine 100 Mbps की सेवा प्राप्त करने हेतु न्यूनतम दर निर्धारण के लिए मानक स्तर के सेवादाता कंपनियों से मुहरबन्द निविदा दिनांक-19.01.2024 के अपराह्न 12.00 बजे तक आमंत्रित किया जाता है। सभी प्राप्त निविदा दिनांक-19.01.2024 के अप0 01:00 बजे फुलो झानो मेडिकल कॉलेज, दुमका के कार्यालय प्रकोष्ठ में क्रय समिति के समक्ष खोला जाएगा। निविदा खोलने के समय निविदादाता अथवा उनके प्रतिनिधि उपस्थित रह सकते हैं। यह बीड अगले निविदा होने तक मान्य होगा। निविदा निम्न सेवा उपलब्ध कराने हेतु है।

**Technical Specification for Internet Leased Lines**

<b>BandwidthRequired</b>	100Mbps 1:1 ILL with unlimited upload and download
<b>No.of PublicIPs</b>	/29-6IPv4&/64 IPv6
<b>CPE (Router/Rack/UPS)</b>	CPEto be provided and managed by the ISP Provider
<b>InstallationAddress</b>	Phulo Jhano Medical College Dumka

**1. ServicePerformanceParameters**

Below tables represents Standard and Premium Service Level Parameters for ILL Service.

**a. Service Availability**

Type of SLA	ServiceAvailability (In%)
Premium	>= 99.5%
Standard	>= 98.5%

**b. Average Network Packet Loss**

Type of SLA	AverageNetworkPacketLoss (IPE-IPE)*
Premium	<=0.5%
Standard	<= 1.0%

**Internet Leased Line (ILL)**

S.No	TechnicalParameters	Proposed Solution
2.	Bandwidth Required	100 Mbps
3.	Access Technology to connect customer premise	Based on Feasibility
4.a	WAN Routing Protocol between Customer Device and Router	<input checked="" type="checkbox"/> Static <input type="checkbox"/> BGP
4.b	If BGP,Advertisement ofcustomer AS number via Internet Link	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
4.c	If BGP,please specify AS number	
5.	ILL delivery model	LAN+WAN
6.a	LAN public IPaddress requirement	IPv6Dual Stack
6.b	No of public IPv4 LAN IP address	/29,6 IPaddresses
6.c	No of public IPv6LAN IP address	/64
6.d	Additional public IPv4/IPv6 LAN IP address	
7.	LAN IP address be used for name resolution of any applications?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
8	Interface required in Router	GigE Electrical (RJ45)

**(1) इंटरनेट सेवा हेतु तकनीकी बीड (Technical Bid For Internet Leased Line Service)**

**Part -A** की निविदा इंटरनेट सेवादाता कंपनियों के लिए है। इस निविदा के तकनीकी निविदा में निम्नांकित कागजात संलग्न करना अनिवार्य है। इस निविदा के लिफाफे में निविदा संख्या 07/2023-24 (Technical Bid Part-A) अंकित करना होगा।

- (i) ISP License from DOT संलग्न करना होगा।
- (ii) SLA (Service Level Agreement) की प्रति संलग्न करना होगा।
- (iii) सेवादाता कंपनी का PAN & GST संलग्न करना होगा।
- (iv) Unified License from TRAI/DOT संलग्न करना होगा।
- (v) निविदादाता को निम्न प्रारूप में शपथ पत्र संलग्न करना होगा।

- (a) We ensure that the local loop provisioning does not violate regulations as laid by Government of India / TRAI in respect of such links / networks.
- (b) Our Company should have Toll Free number for fault registering within India and should provide support on 365 x 24 x 7 basis.
- (c) We ensure minimum 98.50% uptime per quarter for the connectivity.
- (d) We provide all necessary equipment for connectivity.
- (e) ISP should provide ILL with Managed Router.

(vi) निविदा शुल्क के रूप में 1000.00 (एक हजार) रुपये मात्र का बैंक ड्राफ्ट Principal, Phulo Jhano Medical College, Dumka के नाम से देय एवं दुमका में भुगतान हो, संलग्न रहना चाहिए (Non-Refundable)। इस पर किसी प्रकार का छूट देय नहीं होगा।

तकनीकी बीड में सफल पाये जाने पर ही संबंधित निविदादाता का वित्तीय बीड खोला जाएगा।

**(2) इंटरनेट सेवा हेतु वित्तीय बीड (Part-A . Financial Bid For Internet Leased Line Service)**

- (i) इसमें संबंधित Supply and maintenance of 1:1 Dedicated Unshared & Uncompressed Internet Leased Line 100 Mbps per Year, Internet सेवा प्रदाता की विवरणी, Brand Name, Specification सभी प्रकार के अधिष्ठापन व्यय सभी कर सहित कम्प्यूटर द्वारा मुद्रित कराकर देना होगा। किसी प्रकार का कटिंग या ओवरसाईटिंग मान्य नहीं होगा।
- (ii) निविदा का दर सभी करों एवं अन्य सभी व्यय सहित सम्मिलित रहना चाहिए। अलग से कोई राशि (यथा-परिवहन व्यय, अधिष्ठापन व्यय, पैकिंग, इन्श्योरेन्स चार्ज या अन्य कोई चार्ज) देय नहीं होगा।

**(3) अन्य शर्तें**

1. तकनीकी बीड एवं वित्तीय बीड को अलग-अलग लिफाफे में बंद करना होगा एवं उसमें निविदा दाता का नाम पूरा नाम, पता अंकित करना होगा। तत्पश्चात दोनों लिफाफे को एक बड़े लिफाफा में भरकर बंद करना होगा एवं उसमें निविदा दाता का पूरा नाम, पता अंकित करना होगा तथा उस पर मशीन उपकरण से संबंधित निविदा एवं निविदा संख्या लिखकर जमा करना होगा।
2. Internet सेवा प्रदान करने के अवधि के बीच किसी भी प्रकार की तकनीकी समस्या होने पर निविदादाता को इसका समाधान निशुल्क करना होगा। Internet सेवा बाधित रहने की स्थिति में दर के अनुरूप Fine देना होगा।
3. आपूर्ति आदेश निर्गत होने की तिथि से पन्द्रह दिनों के अन्दर संबंधित सेवा संचालित करना होगा। निर्धारित तिथि तक आपूर्ति नहीं करने पर नियमानुसार विधिसम्मत कार्रवाई की जा सकती है।
4. सशर्त निविदा मान्य नहीं होगा।
5. निविदा द्वारा निर्धारित दर अगली निविदा द्वारा दर अनुमोदित होने तक के लिए मान्य होगा।
6. अधोहस्ताक्षरी को यह अधिकार सुरक्षित रहेगा कि बिना कारण बताये निविदा को संशोधित/रद्द कर सकते हैं।
7. किसी भी प्रकार का विवाद होने पर न्यायिक क्षेत्र दुमका होगा।

3-8-24  
प्राचार्य,

फुलो झानो मेडिकल कॉलेज,  
दुमका।

फुलो झानो चिकित्सा महाविद्यालय, दुमका के मुख्य भवन में Installation, Configuration & Commissioning of LAN and Wi-fi Network की स्थापना हेतु संबंधित आवश्यक सामग्री एवं उपकरणों इत्यादि के साथ न्यूनतम दर निर्धारण के लिए मानक स्तर के कंपनीयों या उनके अधिकृत सेवादाता से मुहरबन्द निविदा दिनांक— 19.01.2024 के अपराह्न 12.00 बजे तक आमंत्रित किया जाता है। सभी प्राप्त निविदा दिनांक— 19.01.2024 के अपराह्न 01.00 बजे फुलो झानो मेडिकल कॉलेज, दुमका के कार्यालय प्रकोष्ठ में क्रय समिति के समक्ष खोला जाएगा। निविदा खोलने के समय निविदादाता अथवा उनके प्रतिनिधि उपस्थित रह सकते हैं। यह बीड अगले निविदा होने तक मान्य होगा। निविदा की शर्तें निम्न प्रकार हैं।

**(A) तकनीकी बीड (Technical Bid For Installation, Configuration & Commissioning of LAN and Wi-fi Network at Phulo Jhano Medical College , Dumka)**

Part –B की निविदा के तकनीकी निविदा में निम्नांकित कागजात संलग्न करना अनिवार्य है। इस निविदा के लिफाफे में निविदा संख्या 07 / 2023–24 (Technical Bid Part-B) अंकित करना होगा।

1. कम्पनी/फर्म/प्राधिकृत विक्रेता का GST निबंधन प्रमाण पत्र एवं GST Return(सितंबर 2023) की प्रति संलग्न रहना चाहिए।
2. निविदादाता को वित्तीय वर्ष 2022–2023 का आयकर रिटर्न एवं पेन कार्ड संलग्न करना होगा।
3. निविदा दाता को मजिस्ट्रेट अथवा नोटरी पब्लिक से शपथ पत्र (Affidavit) की मूल प्रति देना होगा कि उनका प्रतिष्ठान/कंपनी काली सूची में दर्ज नहीं है एवं रूग्ण अवस्था में नहीं है तथा सभी प्रकार के आरोपों एवं सभी प्रकार के सरकारी जाँच से मुक्त है।
4. Experience Certificate in same field minimum 3 Years संलग्न रहना चाहिए।
5. Networking design with implementation of LAN & Wi-fi Network in PJMC, Dumka must be approved by Registered Building Architect की प्रति संलग्न रहना चाहिए।
6. OEM का MAF (Manufacturing Authorization Form) का प्रति संलग्न होना चाहिए।
7. Switch OEM should be ISO 9001:2015 and ISO:14001:2015 का प्रति संलग्न होना चाहिए।
8. निविदादाता झारखण्ड राज्य का होना चाहिए। ( वित्तीय वर्ष समाप्ति को विचार करते हुए यथाशीघ्र कार्य को पूर्ण कराने के उद्देश्य से यह निर्णय लिया गया है)
9. Local Sales & Service Center झारखण्ड राज्य में होना चाहिए।
10. निविदा के साथ EMD के रूप में 50,000=00 (पचास हजार) रुपये मात्र का बैंक ड्राफ्ट Principal, Phulo Jhano Medical College, Dumka के नाम से देय एवं दुमका में भुगतये हो, संलग्न रहना चाहिए (Refundable)।
11. निविदा शुल्क के रूप में 1000.00 (एक हजार) रुपये मात्र का बैंक ड्राफ्ट Principal, Phulo Jhano Medical College, Dumka के नाम से देय एवं दुमका में भुगतये हो, संलग्न रहना चाहिए (Non-Refundable)।
12. तकनीकी बीड में सफल पाये जाने पर ही संबंधित निविदादाता का वित्तीय बीड खोला जाएगा।

**(B) वित्तीय बीड (Financial Bid)**

1. इस निविदा के निचे दिये गये सामग्रीयों की सूची एवं आवश्यकता के आधार पर Installation, Configuration & Commissioning of LAN and Wi-fi Network की विवरणी, Brand Name, Specification एवं सभी प्रकार के कर सहित प्रति ईकाई का दर कम्प्यूटर द्वारा मुद्रित कराकर देना होगा। न्यूनतम दर का निर्धारण सूची में सम्मिलित सभी सामग्रीयों का कुल दर पर किया जाएगा। किसी प्रकार का कटिंग या ओवरराइटिंग मान्य नहीं होगा।
2. निविदा का दर सभी करों एवं अन्य सभी व्यय सहित सम्मिलित रहना चाहिए। अलग से कोई राशि (यथा-परिवहन व्यय, अधिष्ठापन व्यय, पैकिंग, इन्श्योरेन्स चार्ज या अन्य कोई चार्ज) देय नहीं होगा।
3. संबंधित सामग्री एवं मशीन उपकरण की न्यूनतम एक वर्ष की गारण्टी/वारण्टी होना अनिवार्य होगा।

**(C) अन्य शर्तें**

1. तकनीकी बीड एवं वित्तीय बीड को अलग-अलग लिफाफे में बंद करना होगा एवं उसमें निविदा दाता का नाम पूरा नाम, पता अंकित करना होगा। तत्पश्चात दोनों लिफाफे को एक बड़े लिफाफा में भरकर बंद करना होगा एवं उसमें निविदा दाता का पूरा नाम, पता अंकित करना होगा तथा उस पर मशीन उपकरण से संबंधित निविदा एवं निविदा संख्या लिखकर जमा करना होगा।
2. List of Service Area इस निविदा के साथ संलग्न है जिसे आवश्यकता के अनुसार घटाया या बढ़ाया जा सकता है।
3. आपूर्ति आदेश निर्गत होने की तिथि से पन्द्रह दिनों के अन्दर संबंधित सेवा संचालित करना होगा। निर्धारित तिथि तक आपूर्ति नहीं करने पर नियमानुसार विधिसम्मत कार्रवाई की जा सकती है।
4. संस्थान में सेवा की आवश्यकता के आधार पर ही सामग्रीयों का क्रय किया जाएगा।
5. मशीन उपकरण/सामग्री की गुणवत्ता में कमी रहने पर उसे वापस कर दिया जाएगा। इसके लिए निविदादाता को हुई आर्थिक क्षति के लिए अधोहस्ताक्षरी जिम्मेवार नहीं होगा।
6. सशर्त निविदा मान्य नहीं होगा।
7. निविदा द्वारा निर्धारित दर अगली निविदा द्वारा दर अनुमोदित होने तक के लिए मान्य होगा।
8. अधोहस्ताक्षरी को यह अधिकार सुरक्षित रहेगा कि बिना कारण बताये निविदा को संशोधित/रद्द कर सकते हैं।
9. किसी भी प्रकार का विवाद होने पर न्यायिक क्षेत्र दुमका होगा।

3.8.24  
प्रचार्य,

फुलो झानो मेडिकल कॉलेज,  
दुमका।

# **PhuloJhano Medical College**

**Dumka, Dighi, Jharkhand – 814110**

**E-mail – principal.medicalcollege.dumka@gmail.com**

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## **Bid Requirement for Supply, Installation, Commissioning with 2 years onsite AMC's**

**Supply, Installation, Commissioning and 2 years onsite AMC's of associated equipment's/accessories Wi-fi Network PhuloJhano Medical College, Dumka, Jharkhand.**

**PhuloJhano Medical College, Dumka, Jharkhand** invites tender from OEM or OEM's authorized suppliers for Supply, Installation, Commissioning with 2 years onsite maintenance of following equipment in our below-mentioned.

### **Introduction:**

Phulo Jhano Medical College, Dumka, stands as a beacon of medical education and healthcare services. With the successful completion of the new building project, the institution is poised for a transformative leap into the digital age. However, the networking infrastructure remains pending, hindering the realization of a connected and technologically advanced campus.

PhuloJhano Medical College, Dighi, Dumka, proposes to implement Wi-Fi network access to their entire campus at Dumka. The purpose of the implementation is to help the students, Teacher, Lab & Class Rooms in the campus connect to the Internet & Intranet through wireless network from anywhere inside the College campus and able to access the information in a secured manner.

College employees, students, and guests will have shared access to wireless network resources to support the College mission of teaching, research, and outreach.

Anyone who wishes to connect to the College authoritative campus network with a laptop or other wireless device must use wireless network infrastructure devices that are owned by and centrally managed by the College to ensure integrity, security, and availability for appropriate educational and other's activities.

Any wireless network device that would extend the College network, and is not managed by the authoritative campus network, will be considered a rogue device, and will be subject to detection and immediate removal from the network. These devices include but are not limited to wireless controllers, access points (APs), and servers that manage the system.

Wireless APs advertise the services they provide with a name programmed into the device called a Service Set Identifier (SSID). Wireless network names that are centrally managed may not be used or operated by users or units. Authorized users of the College network are responsible for knowing and adhering to user rights and responsibilities as defined in Administrative Policy



1. Propose infrastructure for implementing Wi-Fi solution in PhuloJhano Medical College, Dighi, Dumka.
2. Designing the infrastructure for the proposed wireless solution
3. Create necessary Bill of Material for the proposed technical solution
4. Supplying of necessary Hardware for the proposed solution
5. Installation of Access Points in PhuloJhano Medical College Campus, Dighi, Dumka.
6. Installation of Wireless Controller in PhuloJhano Medical College Campus, Dighi, Dumka
7. Provisioning & laying out of Passive Cable within the building connecting to wireless access point & network access switch
8. Uplifting wall mounting the access points
9. Configuring all the access points for Wi-Fi access
10. Configuring the network switches & Wireless controller
11. Enabling Internet Access throughout the campus via access points
12. Configuring security features for the Wi-Fi Access
13. Configuring Firewall for security features
14. Configuring Radius Server for AAA authentication, Authorization & Accounting for Wi-Fi Access
15. Test & UAT

**Objective:**

The primary objective of this proposal is to address the existing gap in networking infrastructure by implementing a robust Wi-Fi network across the entire campus. This initiative aims to enhance the learning experience, facilitate seamless communication, and support advanced medical research endeavours. Or

**The objective of this Purposed document for Installation, configuration and commissioning of Wi-fi Network at PhuloJhano Medical College, Dumka.**

## **SCOPE OF THE WORK**

### **Installation, Configuration, and Commissioning of Wi-Fi Network**

**Scope of Work:** Installation, Configuration, and Commissioning of Wi-Fi Network

**Project Overview:**

The project involves the comprehensive deployment of a Wi-Fi network at PhuloJhano Medical College in Dumka. The endeavor encompasses the installation, configuration, and commissioning of the wireless infrastructure to establish seamless connectivity across the entire campus.

## Key Objectives:

**Installation:** Deploying Wi-Fi access points strategically across the campus to ensure optimal coverage and connectivity.

**Configuration:** Setting up and configuring the network infrastructure to meet the specific requirements of PhuloJhano Medical College, considering factors like bandwidth needs, security protocols, and user capacity.

**Commissioning:** Conducting thorough testing and validation procedures to ensure the seamless integration of the Wi-Fi network, making it ready for operational use.

## Scope Details:

**Site Survey:** Conducting a comprehensive site survey to identify optimal locations for Wi-Fi access points, taking into account the layout, structural considerations, and connectivity requirements.

**Network Design:** Developing a customized network design based on the site survey findings, ensuring efficient coverage and minimal interference.

**Hardware Procurement:** Acquiring the necessary Wi-Fi equipment, including access points, controllers, and other required hardware components, adhering to industry standards.

**Software Configuration:** Configuring the Wi-Fi network with appropriate software settings, security protocols, and network policies to meet the specific needs of the medical college.

**Security Measures:** Implementing robust security measures, including firewalls, intrusion detection systems, and user authentication protocols to safeguard the network.

**Bandwidth Allocation and QoS Implementation:** Optimizing bandwidth allocation and implementing Quality of Service (QoS) measures to prioritize critical applications and ensure a smooth user experience.

**Training and Documentation:** Providing training sessions for the college staff on network usage and maintenance. Creating comprehensive documentation for future reference and troubleshooting.



**Post-Implementation Support:** Offering ongoing support and maintenance to address any issues, perform updates, and ensure the continuous functionality of the Wi-Fi network.

**Expected Outcomes:**

The successful completion of this project will result in a fully operational and secure Wi-Fi network at PhuloJhano Medical College, enhancing connectivity, facilitating seamless communication, and supporting the diverse digital needs of the institution **with two year AMC.**

**Product List**

(Product will be purchased as per requirement of Installation and Location Points of the Institution)

S N	Name of Items	Qty	Detailed Specification & Compliance	Rate of Quant including Installation + GS all taxes
1	Access Point Brand- <b>Cisco/D- Link/Digisol</b>	Each	<ul style="list-style-type: none"> <li>- Chipset: Qualcomm IPQ6000+QCA5052+QCN5022+QCA8071</li> <li>- Mounting: Ceiling / Wall</li> <li>- Antenna Type: Internal</li> <li>- Number Of Radios: 2</li> <li>- Frequency Band: Dual band</li> <li>- Supported Wi-fi Standards: 802.11a/b/g/n/ac/ax</li> <li>- Max Wireless Signal Range in Mts: 50</li> <li>- Channel Width (MHz): 80 MHz</li> <li>- Maximum Data Rate Mbps: 1800</li> <li>- Supported Encryption: WEP/WPA2/AES/WPA3</li> <li>- Receiver Sensitivity in db: -94</li> </ul>	
2	Wireless Controller Brand- <b>Cisco/D- Link/Digisol</b>	Each	<ul style="list-style-type: none"> <li>- WLAN Controller Architecture</li> <li>- The wireless controller shall have 5 RJ-45 auto-sensing 10/100/1000 ports ((IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T)</li> <li>- The wireless controller should have 4 x WAN ports &amp; three convertible ports for load balancing Two fixed LAN ports &amp; three convertible ports</li> <li>- Shall support IEEE 802.11b/g/n/ac/ax Access Points for centralized management and control</li> <li>- The device should support DMZ function for server hosting applications</li> <li>- Shall support up to 256 AP's and 256 (over NAT/WAN ) and Unlimited user ( w/o WAN ) from DAY 1 . APs and controller should be of same OEM.</li> <li>- The wireless controller shall be 1U 19" Rack-Mountable (the rack mounting</li> </ul>	

kit shall be included)

- CPU MT7621,DDR 512M,Flash 16M
- WLAN Controller Mobility Features
- Shall support fast roaming providing service transparency and fast hand-offs across Access Points within and across subnet boundaries
- Shall support QoS and security services which follow users as they roam
  
- Shall have full-service capabilities for wireless networks controlled across the WAN
- Shall support central configuration of virtual service communities (or SSIDs) QoS, authentication, encryption
- The proposed WLAN Architecture shall support distributed traffic forwarding allowing traffic to flow directly from source to destination, eliminating needless traffic to pass through the controller, delivering better performance and faster, more- responsive applications
- Shall support distributed 802.1x authentication allowing controlled access points to directly authenticate users through an external RADIUS server without controller involvement
- Shall support WAN failover over multiple WAN connection
- Shall support Port forwarding for hosting virtual server
- Shall support VPN or PPTP/L2TP
- Shall support basic L3 routing features such as Static Routing
- Shall support separate internal DHCP server can be configured for each LAN port to provide IP address to DHCP client devices
- Multiple DHCP server for Each Port
- WLAN Controller Security Features
- Shall support authentication based on user credentials (802.1X/EAP), hardware identifiers (MAC address, WEP key), and HTML login
- Shall support authentication and authorization through external RADIUS AAA services
- Shall support built-in stateful firewall for secure connection to Internet
- Shall support secure management interfaces, including access through CLI/Web
- Shall support Access Control Lists based on IP address, protocol types and port filtering and URL filtering
- Mapping of guest access traffic for secure passage through corporate network
- Shall have Captive portal for guest user authentication , MAC Authentication , PPPoE Authentication , Web Authentication for users
- Ethernet Superimposed and multiple ISP network access to avoid bandwidth overload, then support Ethernet backup to recover the dropped networking line, ensure the whole networking smoothly; It support policy-based routing function also, administrator will set the network based on IP/



		<p>MAC/ Domain/ Interface policies.</p> <ul style="list-style-type: none"> <li>- IP shunting and session shunting, process diversion and other shunting rules like time, port, routing table, application and shunting weight, to meet with different application request.</li> <li>- Display or promote advertisement to user and bring extra value for merchant; Then it can work with the 3-party radius server for advertisement and billing functions</li> <li>- WAN Port VPN dial up, DNS Proxy, IP address translation, user behavior management, make it more professional in Enterprise</li> <li>- Administrator can set different template for different model, like SSID, password, mode, channel, RF power, coverage threshold.</li> <li>- Support onsite Warranty for Hardware and Online support for Configuration</li> <li>- Should have Service Centre with in State of Installation site</li> <li>- Network Authentication: WPA2/WPA3-PSK and WPA2/WPA3-Enterprise.</li>   <li>- Encryption Algorithm: AES as per IEEE 802.11 i requirements.</li> <li>- AAA (authentication, authorization and accounting) : AAA using RADIUS integration with external client</li> <li>- WLAN Controller Management &amp; Other Features</li> <li>- Shall control a network of 256 Access points ensuring consistent security, QoS, and roaming services from AP to AP</li> <li>- Shall have scalability consistent in 802.11 a/b/g and 802.11n networks</li> <li>- Shall support auto AP discovery, monitoring and configuration through CAP/WAP protocol</li> <li>- Shall support central management of wireless access point operating modes</li> <li>- Shall support plug-and-play auto-discovery and software installation for easy access point deployment</li> <li>- Shall have easy-to-use web-based administrator interface</li> <li>- Shall support accurate seamless integration with wired network, leveraging existing L2/L3 infrastructure resources, e.g., QoS, and External RADIUS AAA</li>   <li>- Shall support RADIUS activity statistics collection per-user for billing by data volume and elapsed session time</li> <li>- AC can dynamically adjust uniform distribution of users among different AP using Policy Rules</li> <li>- Operating temperature -20°C~55°C</li> </ul>	
<p>3</p> <p><b>Layer 3 switch 24 Port 10/100/1000</b></p>	<p>Each</p>	<ul style="list-style-type: none"> <li>- Physical Ports: 24 x10/100/1000BaseT + 4 x 10GE (SFP+). All switches and modules should be from same make for better compatibility and management,</li> <li>- Management Port: 1 x RJ45 Ethernet Management port, 1 x RJ 45 Console port and 1 x USB2.0 interface</li> <li>- Switching Capacity 128 Gbps</li> </ul>	

<p><b>Mbps with 4 x 1G/10G SFP+ ports</b></p> <p>Brand- Cisco/D- Link/Digisol</p>	<ul style="list-style-type: none"> <li>- Flash: 32MB SPI &amp;128MB NAND</li> <li>- RAM: 512 MB</li> <li>- MAC Address: 16K</li> <li>- CPU: ARM7 800M</li> <li>- Packet Buffer Memory: 1.5 MB</li> <li>- Routing Table: Max 1K</li> <li>- ACL Table: Max 1K</li> <li>- Relative Humidity: 10%~90% non-condensing</li> <li>- Temperature: Working 0°C~50°C, storage -40°C~75°C</li> <li>- Power Supply: AC: 100~240VAC</li> <li>- L2 Features: Switch should support IEEE802.3(10Base-T), IEEE802.3u(100Base-TX), IEEE802.3z(1000BASE-X), IEEE802.3ab(1000Base-T), IEEE802.3ae(10GBase), IEEE802.3x, IEEE802.3ak(10GBASE-CX4) <ul style="list-style-type: none"> <li>Switch should support Port loopback detection, N:1 Port Mirroring</li> <li>Switch should support LLDP, LLDP-MED and UDLD</li> <li>Switch should support 802.3ad LACP, max 128 group trunks with max 8 ports for each trunk and LACP load balancing</li> <li>Switch should support RSPAN and ERSPAN</li> <li>Switch should support IEEE802.1d(STP), IEEE802.1w(RSTP), IEEE802.1s(MSTP)</li> <li>Switch should support Root Guard, BPDU Guard, BPDU Tunnel</li> <li>Switch should support MAC VLAN, Voice VLAN, PVLAN, Protocol VLAN, Multicast VLAN and N:1 VLAN Translation</li> <li>Switch should support QinQ, Selective QinQ, Flexible QinQ</li> <li>Switch should support Broadcast/Multicast/Unicast Storm Control</li> <li>Switch should support Upto 4 Units per stack, 40 Gbps stacking bandwidth</li> </ul> </li> <li>Switch should support IGMP v1/v2/v3 Snooping and IGMP Proxy</li> <li>Switch should support ND Snooping and MLDv1/v2 Snooping</li> <li>-L3 Features: Switch should support Static Routing, RIPv1/v2, OSPFv2,BGP4,OSPFv3, BGP4+ <ul style="list-style-type: none"> <li>Switch should support LPM Routing, and Policy-based Routing (PBR) for IPv4 and IPv6</li> <li>Switch should support VRRP, URPF, ECMP, BFD</li> <li>Switch should support DVMRP, PIM-DM, PIM-SM, PIM-SSM, Any Cast RP, MSDP</li> <li>Switch should support Static Multicast Route and Multicast Receive Control</li> </ul> </li> <li>Switch should support Illegal Multicast Source Detect</li> <li>Switch should support ARP Guard, Local ARP proxy, Proxy ARP, ARP Binding, Gratuitous ARP, ARP Limit</li> <li>Switch should support Anti ARP/NDP Cheat, Anti ARP/NDP Scan, Dynamic ARP Inspection (DAI)</li> <li>Switch should support DNS Client, DNS Relay</li> <li>Switch should support 6to4 Tunnel, Configured Tunnel, ISATAP Tunnel, GRE Tunnel</li> <li>Switch should support IPv6 LPM Routing, IPv6 Policy-based Routing (PBR)</li> </ul>
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<p>4 <b>16 Port 10/100/1000 Mbps Gigabit Ethernet Unmanaged POE+ Switch</b> Brand- Cisco/D- Link/Digisol</p>	<p>Each</p>	<p>- <b>Hardware Configuration:</b> Switch should support 16 x 10/100/1000Mbps PoE RJ45 ports, 2 x 10/100/1000Mbps uplink RJ45 port and 1 x 1000Mbps SFP Slot. All switches and modules should be from same make for better compatibility and management.</p> <p>- <b>Standard:</b> Switch should support Network Protocol: IEEE802.3/802.3u, IEEE802.3x, IEEE802.ab, IEEE 802.3 af and IEEE 802.3 at standard</p> <p>- <b>Performance:</b> Switch should support Switching Capacity: 38 Gbps Full duplex Switch should support Packet Forwarding Rate: 28.27 Mpps each port Switch should support Forwarding Mode: Store-and-forward Switch should support MAC Address Table: 2K Switch should support Buffer memory: 1Mbits</p> <p>- <b>General:</b> Switch should support Power Source: Bult-in Power Supply Switch should support Input: AC 110V-240V Switch should support Power budget 300 Watt Switch should support Operating Temperature: -0°C to 50°C Switch should support Humidity: 20~95% Switch should support Storage Temperature: -20°C-70°C</p> <p>- <b>Lightning protection:</b> Switch should support lightning protection 4KV</p>	

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		<ul style="list-style-type: none"> <li>- Vlan: Switch should support network storm through VLAN function</li> <li>- Warranty: 3 Years</li> </ul>	
<p>5</p> <p>8 Port L2+ 10G Access Switch</p> <p>Brand- Cisco/D- Link/Digisol</p>	<p>Each</p>	<ul style="list-style-type: none"> <li>- <b>Ports:</b> 8 x 10/100/1000Base-T + 4 x 10GE(SFP+)Auto-MDIX</li> <li>- Management port: 1x Console port - 1x USB2.0 interface</li> <li>- <b>Performance:</b> Switching Capacity: 96Gbps - Forwarding Rate: 71.4Mpps - MAC address: 16K - Jumbo Frame: 10K - Packet buffer: 12Mbits - ACL Table: 512 - Queues Per Port: 8 - VLAN Table: 4K</li> <li>- <b>Physical:</b> - Dimension (W×H×D): 226mm x 44mm x 161mm - Power Input: 100~240VAC, 50~60Hz</li> <li>Power Consumption: Working Temperature: 0°C~50°C Storage Temperature: -40°C~70°C - Relative Humidity: 5%~95%, non-condensing</li> <li>- <b>VLAN:</b> - Port-based VLAN - IEEE802.1Q - Private VLAN - Protocol VLAN - Voice VLAN - MAC VLAN - Q-in-Q, Selective QinQ, Flexible QinQ - VLAN Translation, N:1 VLAN Translation</li> <li>- <b>L3 Features:</b> - Static Routing, PBR DHCP: - IPv4/ IPv6 DHCP Client - IPv4/ IPv6 DHCP Relay Option 82, Option 37/38 - Ipv4/ IPv6 DHCP Snooping - IPv4/ IPv6 DHCP Server</li> <li>- <b>SPANNING TREE PROTOCOL</b> - 802.1D Spanning Tree - 802.1w Rapid Spanning Tree - 802.1s Multiple Spanning Tree - Root Guard - BPDU Guard - BPDU Forwarding - TCN filtering</li> <li>- LACP: - 64 groups / 8 ports</li> <li>- L2 Ring Protection - MRPP - ERPS (G.8032) - Loopback Detection - Fast Link</li> <li>- <b>Security Features:</b> - IP ACL, MAC ACL, MAC-IP ACL, User-Defined ACL - Time Range ACL - ACL rule can be configured on port, VLAN interface - Storm Control based on packets - Port Security, MAC Limit based on VLAN and Port - Anti-ARP-Spoofing, Anti-ARP-Scan, ARP Binding - ND Snooping - Dynamic ARP Inspection (DAI) - IEEE 802.1x - Authentication, Authorization, Accounting - Radius &amp; TACACS+</li> <li>- <b>Multicast:</b> - IGMP Snooping (V1,v2,v3) - IGMP Proxy, IGMP v3 - MLD v1/ v2 Snooping</li> <li>- <b>Qos Features:</b> - 8 Queue Per Port - Bandwidth Control - Flow Redirect - Classification based on ACL (Access Control List), VLAN ID, COS, TOS, DSCP) - Policy Based on Port &amp; VLAN, - Single rate single barrel double color for policing - SP+ SDWRR, DWRR, SP DWRR for Scheduling - Match the IP fragmentation of message</li> <li>- <b>Maintenance and Operation Management:</b> - TFTP/FTP - CLI, Telnet, Console - Web/SSL (IPv4/IPv6) - SSH (IPv4/IPv6) - SNMPv1/v2c/v3 - SNMP Trap - Public &amp; Private MIB interface - RMON 1,2,3,9 - Ping, Trace Route - Radius Authentication - Syslog (IPv4/IPv6) - Sntp/NTP (IPv4/IPv6) - Dual IMG, Multiple Configuration Files - Port Mirror, RSPAN, sFlow - VCT, DDM - OAM - ULDP (Like Cisco UDLD) - LLDP/LLDP MED</li> <li>- <b>Green Energy:</b> - FAN less</li> </ul>	

<p>FIBER RACKMOUNT LIU LOADED DRAWER TYPE 06/12/24 PORT</p> <p>Brand- Cisco/D-Link/Digisol</p>	<p>Each</p>	<ul style="list-style-type: none"> <li>- The Fiber Rackmount LIU loaded having Adapter panel fixed on drawer base frame, with Adapters and with Pigtails and assembled with splice tray as per the Loaded fiber port requirement and their applicable accessories.</li> <li>- Suitable to mount at different positions (depth wise) on standard 1U 19inch racks. Drawer type to pull out for easy maintenance when assembled in racks.</li> <li>- Cold Rolled Steel material with black powder coating</li> <li>Three types of cable entry holes for different size cables through cable glands, covered with rubber cable grommets/covers.</li> <li>Splicing of 24 fibers in each plastic fiber splicing trays with integrated cable spool design.</li> <li>- Non removable top cover and no rear cover. Drawer type to pull out for better access of interior.</li> <li>- As per the Loaded fiber port requirement, Loaded 6/12/24 (SC Simplex) adapters with SC SIMPLEX Pigtails on rackmount ports.</li> <li>- As per the Loaded fiber port requirement Accessories kit consists of Cable management rings/Cable saddles, Cable glands (PG13.5, 2 nos), Splice rods, Blanking clips, Velcro ties, Cable ties, Cable inlet/outlet hole covers (2 types, 2 nos each)</li> <li>- Cable management rings/Cable saddles can be mounted inside the rackmount, no provision to mount outside in front of the adapter panel.</li> <li>- Suitable for storing up to 3 meter of 900 µm tight buffered fiber pigtail per adapter.</li> <li>- Panel Dimensions: 482 x 220 x 44.3 mm (Length x Width x Height)</li> <li>- Splice Tray Dimensions: 220 x 90 x 15 mm (Length x Width x Height)</li> <li>- Port identification numbers printed on the Adapter panel</li> <li>- Standards: Comply as per ANSI/TIA-568-C.3, ISO/IEC 11801, RoHS Compliant.</li> <li>- Operating Temperature: -20 °C to +70° C</li> <li>- Installation Temperature: -20 °C to +70° C</li> </ul>	
<p>LIU 6 PORT</p> <p>Brand- Cisco/D-Link/Digisol</p> <p>7</p>	<p>Each</p>	<p>Fiber Drawer LIU, Loaded, 6SM SC SX Adapter.</p>	

8	LIU 24 PORT  Brand- Cisco/D-Link/Digisol	Each	Fiber Drawer LIU, Loaded, 24SM SC SX Adapter.	
9	SC_LC FIBER PATCHCORD SINGLE MODE  Brand- D-Link/Digisol/Finolex	Each	<ul style="list-style-type: none"> <li>- Fiber optic patch cord with two core (Duplex) / one core (Simplex) fiber cable terminated with SC/LC/ST/FC connector at one end and SC/LC/ST/FC connector at other end.</li> <li>- The terminated connectors in assemblies are designed and are compatible with industry standards (ANSI/TIA-568-C.3, ISO/IEC 11801). Have good geometrical characteristics of apex offset &amp; radius of curvature &amp; fiber height</li> <li>- 100% factory terminated and tested for optical characteristics &amp; fiber end face finish.</li> <li>- Fiber type G. 652D standard. OS2 (9/125 μm),</li> <li>- Buffer Diameter: 0.9 ± 0.05 mm, Jacket Thickness: 0.35 ± 0.05 mm, Strength Member as Aramid yarn</li> <li>- Cable Diameter: 2.0 ± 0.2 (Simplex), 2.0 x 3.8 ± 0.2 (Duplex)</li> <li>Jacket colour: Yellow, Jacket Material: LSZH</li> <li>- Connector Ferrule: Ceramic, Apex Offset should be &lt;50um,</li> <li>- Fiber height should be ±100nm</li> <li>- Connector Repeatability ≤ 0.2dB with 1,000 times mating cycles.</li> <li>- Connector cable retention: 50 N (11.24 lbs),</li> <li>- Crush resistance: 100N/100mm, Bend Radius: 20 x Diameter of cable</li> <li>- Attenuation: ≤ 0.36 dB/km (@1310 nm), ≤ 0.25 dB/km (@1550 nm)</li> <li>- Chromatic Dispersion: ≤ 3.5 ps/nm.km (@1285 - 1330 nm), ≤ 18 ps/nm.km (@1550 nm)</li> <li>- Zero Dispersion Wavelength: 1300 - 1324 nm</li> <li>- Cut-off Wavelength: ≤ 1260 nm</li> <li>- Mode Field Diameter: 9.2 ± 0.4 μm (@1310 nm), 10.4 ± 0.5 μm (@1550 nm)</li> <li>- Insertion Loss (@1310 &amp;1550nm): SM (UPC/PC) Type: SC/LC/ST/FC: ≤ 0.3 dB</li> <li>- Return Loss (@1310 &amp;1550nm): SM (UPC/PC) Type: SC/LC/ST/FC: ≥ 50 dB</li> <li>- Insertion Loss (@1310 &amp;1550nm): SM (APC) Type: SC/LC/ST/FC: ≤ 0.3 dB</li> <li>- Return Loss (@1310 &amp;1550nm): SM (APC) Type: SC/LC/ST/FC: ≥ 60 dB</li> <li>- Traceability sticker available for product tracking and Interferometry report need to submit</li> <li>- Standards: IEC 60332-1, ANSI/TIA-568-C.3, ISO/IEC 11801                      RoHS Compliant</li> <li>- Installation Temperature: -20 °C to +70° C,</li> <li>- Operating Temperature: -20 °C to +70° C</li> <li>- Available in various length in meters</li> </ul>	

			<ul style="list-style-type: none"> <li>- Product should be Make in India and OEM should have own manufacturing facility in India since 5 Years. The OEM brand should be Indian origin only. OEM should have valid GST number &amp; trade license of Eastern Region. All OFC, UTP cable and accessories should be from same make for better compatibility and management.</li> </ul>
10	<p>LC_LC FIBER PATCH CORD SINGLE MODE Brand- D- Link/Digisol/ Finolex</p>	Each	<ul style="list-style-type: none"> <li>- Fiber optic patch cord with two core (Duplex) / one core (Simplex) fiber cable terminated with SC/LC/ST/FC connector at one end and SC/LC/ST/FC connector at other end.</li> <li>- The terminated connectors in assemblies are designed and are compatible with industry standards (ANSI/TIA-568-C.3, ISO/IEC 11801). Have good geometrical characteristics of apex offset &amp; radius of curvature &amp; fiber height</li> <li>- 100% factory terminated and tested for optical characteristics &amp; fiber end face finish.</li> <li>- Fiber type G. 652D standard. OS2 (9/125 μm),</li> <li>- Buffer Diameter: 0.9 ± 0.05 mm, Jacket Thickness: 0.35 ± 0.05 mm, Strength Member as Aramid yarn</li> <li>- Cable Diameter: 2.0 ± 0.2 (Simplex), 2.0 x 3.8 ± 0.2 (Duplex)</li> <li>Jacket colour: Yellow, Jacket Material: LSZH</li> <li>- Connector Ferrule: Ceramic, Apex Offset should be &lt;50um,</li> <li>- Fiber height should be ±100nm</li> <li>- Connector Repeatability ≤ 0.2dB with 1,000 times mating cycles.</li> <li>- Connector cable retention: 50 N (11.24 lbs),</li> <li>- Crush resistance: 100N/100mm, Bend Radius: 20 x Diameter of cable</li> <li>- Attenuation: ≤ 0.36 dB/km (@1310 nm), ≤ 0.25 dB/km (@1550 nm)</li> <li>- Chromatic Dispersion! ≤ 3.5 ps/nm.km (@1285 - 1330 nm), ≤ 18 ps/nm.km (@1550 nm)</li> <li>- Zero Dispersion Wavelength: 1300 - 1324 nm</li> <li>- Cut-off Wavelength: ≤ 1260 nm</li> <li>- Mode Field Diameter: 9.2 ± 0.4 μm (@1310 nm), 10.4 ± 0.5 μm (@1550 nm)</li> <li>- Insertion Loss (@1310 &amp;1550nm): SM (UPC/PC) Type: SC/LC/ST/FC: ≤ 0.3 dB</li> <li>- Return Loss (@1310 &amp;1550nm): SM (UPC/PC) Type: SC/LC/ST/FC: ≥ 50 dB</li> <li>- Insertion Loss (@1310 &amp;1550nm): SM (APC) Type: SC/LC/ST/FC: ≤ 0.3 dB</li> <li>- Return Loss (@1310 &amp;1550nm): SM (APC) Type: SC/LC/ST/FC: ≥ 60 dB</li> <li>- Traceability sticker available for product tracking and Interferometry report need to submit</li> <li>- Standards: IEC 60332-1, ANSI/TIA-568-C.3, ISO/IEC 11801 RoHS Compliant</li> <li>- Installation Temperature: -20 °C to +70° C,</li> <li>- Operating Temperature: -20 °C to +70° C</li> <li>- Available in various length in meter</li> </ul>
11	OFC Cable (SINGLEMODE UNITUBE ARMoured FIBER CABLE)	Per 10 mtr	<ul style="list-style-type: none"> <li>- 06/08/12/24-Core, Single mode 9/125-micron primary coated buffers, 10G Ethernet OS2, Armored Loose Tube, ECCS (Electrolytic Chrome Coated Steel) Tape, Jelly Filled Loose Tube.</li> <li>- Two Steel Wires/Rods embedded in outer periphery of the jacket as strength members. UV Stabilized jacket and protected from Rodent attacks</li> </ul>

<p><b>Brand- D-Link/Digisol /Finolex</b></p>		<ul style="list-style-type: none"> <li>- Complying to ANSI/TIA-568-C.3, ISO/IEC 11801, Telcordia GR-20 Core, ITU-T REC G.652D, IEC 60793-1/60794-1, EN 50173, RoHS Compliant</li> <li>- Suitable for use in indoor/outdoor ducts, direct burial and backbone cabling</li> <li>- Loose tube material: Polybutylene Terephthalate (PBT) with Natural/White Color having Inner Diameter/Outer Diameter 1.7/2.5 ± 0.1 mm</li> <li>- Peripheral strength member as two steel wires/rods having dimensions as 0.6 ± 0.05 mm</li> <li>- Moisture Barrier as Water Swellable Tape, Armoring ≥ 0.150 mm (ECCS Tape), Number of Ripcords as 01 no polyester-based yarns.</li> <li>- Outer sheath material as HDPE/LSZH with diameter as 7.5/8.5 ± 0.5 mm having thickness of 1.5mm nominal</li> <li>- Weight of the cable for 04/06/08/12 core (HDPE/LSZH): 65.0/75.0 ± 10 kg/km, for 24 cores (HDPE/LSZH): 75.0/95.0 ± 5 kg/km</li> <li>- Fiber color and Loose tube color as per ANSI/TIA standards.</li> <li>- Tensile Strength: 1000 N, Crush Resistance: 4000 N/100mm</li> <li>- Minimum bend radius: 20 x Diameter (during installation),</li> <li>- Minimum bend radius: 10 x Diameter (during full load)</li> <li>- Fiber Type: G. 652D (OS2)</li> <li>- Attenuation: ≤ 0.38 dB/km (@1310 nm), ≤ 0.25 dB/km (@1550 nm)</li> <li>- Chromatic Dispersion: ≤ 3.5 ps/nm.km (@1285 - 1330 nm), ≤ 18 ps/nm.km (@1550 nm)</li> <li>- Zero Dispersion Wavelength: 1300 - 1324 nm</li> <li>- Zero Dispersion Slope: ≤ 0.092 ps/nm<sup>2</sup>.km</li> <li>- Polarization Mode Dispersion: ≤ 0.2 ps/vkm</li> <li>- Cut-off Wavelength: ≤ 1260 nm</li> <li>- Mode Field Diameter: 9.2 ± 0.4 μm (@1310 nm), 10.4 ± 0.4 μm (@1550 nm)</li> <li>- Core Cladding Concentricity Error: ≤ 0.8 μm</li> <li>- Cladding Diameter: 125 ± 1 μm , Coating Diameter : 245 ± 10 μm</li> <li>- Cladding non-circularity: ≤ 1 %</li> <li>- Installation Temperature: -20 °C to +70° C,</li> <li>- Operating Temperature: -20 °C to +60° C</li> <li>- Cable Size and Standard Length: 4F to 12F: 4.0 kms ± 10% 24F: 2.0 kms ± 10%</li> </ul>	
<p>12</p> <p>CAT 6 (SOLID CABLE CATEGORY 6 UTP FR-PVC)</p> <p><b>Brand- D-Link/Digisol /Finolex</b></p>	<p>Per 10 mtr</p>	<ul style="list-style-type: none"> <li>- The 4 pair Unshielded Twisted Pair cable shall be UL® Listed and ETL verified</li> <li>- This cable well exceeds the requirements of ANSI/TIA-568-C.2 and ISO/IEC 11801 Class E</li> <li>- Nominal Outer Diameter of Cable should be 5.8 ± 0.2 mm and Conductor Diameter 23 AWG</li> <li>- Construction: 4 twisted pairs separated by internal PE Cross Separator. Full separator. Half shall not be accepted. Rip Cord is must.</li> <li>- Conductor: Solid bare Copper, Outer jacket sheath: FRPVC with UL approved CM/CMR rated cable. Jacket color: Grey</li> <li>- Insulation Material: High Density Polyethylene (HDPE) with Insulation Diameter: 0.89 ± 0.01 mm</li> <li>- Dielectric Strength of cable should be 2.5 KVDC for 2 seconds</li> <li>- Bending Radius:&lt; 4X Cable Diameter at -20°C ± 1°C Pulling Force: 25.35 lbs</li> <li>- Electrical Parameters: Insertion loss (Attenuation), NEXT, PSNEXT, ELFEXT (ACRF), PSELFEXT (PSACRF), Return Loss, ACR and PS ACR.</li> <li>- Insertion Loss of 32.8 db/100m at 250 MHz</li> </ul>	



			<ul style="list-style-type: none"> <li>- Cable should support operating temperature from -20° to +70°C</li> <li>- Cable support Conductor Resistance <math>\leq 9.38 \Omega/100m</math> Max.</li> <li>- Mutual Capacitance of cable should be <math>&lt; 5.6 nF/100m</math> Max.</li> <li>- Resistance Unbalance of cable should be 5% Max.</li> <li>- Capacitance Unbalance of cable should Max. 330 pF/100m</li> <li>- Cable support Delay Skew: <math>&lt; 45 ns/100m</math>, Operating Voltage: 72V</li> <li>- Nominal Voltage of Propagation (NVP): 69% and Current Rating: 1.5 A Max.</li> <li>- Impedance: <math>100 \pm 15 \Omega @100 MHz</math>. and Propagation Delay @250 MHz: 536 ns/100m</li> <li>- ETL Verified 4-Connector Channel performance certificate RoHS Compliant</li> <li>- Printed sequential Length Counter of each meter on Outer Jacket</li> <li>- Category 6 UTP cables shall Supports Gigabit Ethernet (1000 base-T) verified upto 600 Mhz</li> </ul>	
13	1 MTR CAT6 UTP PATCHCORD <b>Brand- D-Link/Digisol/Net/Finolex</b>	Per Mtr	<p><b>SPECIFICATION / QUALITATIVE REQUIREMENT</b></p> <ul style="list-style-type: none"> <li>- Category 6 patch cords with four pair twisted stranded copper wire cable terminated with RJ45 modular plugs at both the ends.</li> <li>- Patch Cords 100% factory tested for better quality and suitable for the high-speed data transmission.</li> <li>- Complies with the ANSI/TIA/EIA-568-C.2, ISO/IEC 11801, RoHS compliant Standard. Supports Data Networks Speeds Up to 10/100-Base-T and 1000-Base-T.</li> <li>- Patch cord with LSZH jacket to reduced toxic/corrosive gasses emitted during combustion</li> <li>- Transparent modular plugs with transparent slip-on boot and cable assemblies</li> <li>- T568B wiring scheme crimped at both connector ends.</li> <li>- Available in different colors and different length on request</li> <li>- Patch cord conductor: 24 AWG, Stranded copper wires, Insulation: HDPE</li> <li>- Connector Plug: 30<math>\mu</math>” Gold plated contact, Phosphor Bronze base material</li> <li>- Jacket Diameter: <math>5.8 \pm 0.1mm</math></li> <li>- Plug Insertion/Extraction Life: 750 Cycles min. using FCC approved plug</li> <li>- Plug &amp; Jack Contact Force: 100 Grams min. using FCC approved plug</li> <li>- Plug Retention Force: 11 lbf min.</li> <li>- Current Rating: 1.5 amps, Voltage Rating: 72 Vdc max.</li> <li>- Insulation Resistance: 500M<math>\Omega</math> min, Contact Resistance: 20m<math>\Omega</math> max, DC Resistance: 0.1<math>\Omega</math> max.</li> <li>- ETL Verified 4-Connector Channel performance certificate</li> <li>- Operating Temperature: -20 °C to +70° C</li> <li>- Installation Temperature: -20 °C to +70° C</li> </ul>	
14	PATCH PANEL 24 PORT CAT 6	Each	<ul style="list-style-type: none"> <li>- The Cat-6 transmission performance is in compliance and Exceeds ANSI/TIA/EIA-568-C.2 Standard. Supports 1000-Base-T.</li> <li>- 90 Degree (Top Entry) Punch Down Design for Convenient Network Terminations.</li> <li>- Ease of Installation with built in Rear Cable Management.</li> <li>- Removable Module Design</li> </ul>	

	<p>UTP Brand- D-Link/Digisol/Finolex</p>	<ul style="list-style-type: none"> <li>- 6x4 Module Specially Designed Jack Configuration</li> <li>- Contacts pins and IDC mountings assembled in PCBs by Solderless Press-fit process. PCB: FR4, 1.6mm Thickness 2 Layers</li> <li>- Jack Wire: 30μgold plating over 40μ ~ 80μ nickel plating (Square Wire, 360°plated)</li> <li>- IDC Conductor: 0.5 mm Phosphor Bronze (Base Material), 100μ Tin Plating</li> <li>- Contact Compatibility: 22~26 AWG Stranded and Solid Wires</li> <li>- 1U Patch Panel to Mount In any Standard Rack. Panel Frame: SPCC Powder Coating in Matt Finish Black Color.</li> <li>- Housing: High Impact Flame Retardant Plastic, UL 94V-0 Rated</li> <li>- Easy Port Labeling Identification Provision</li> </ul> <p><b>Electrical Characteristics:</b></p> <ul style="list-style-type: none"> <li>- Current Rating: 1.5amps</li> <li>- Insulation Resistance: &gt;= 500mΩ</li> <li>- Contact Resistance: &lt;=10mΩ</li> <li>- DC Resistance: &lt;=0.1Ω</li> <li>- DC/AC Volt Endurance: DC 1000V/AC 750V 1 Min</li> </ul> <p><b>Mechanical Characteristics:</b></p> <ul style="list-style-type: none"> <li>- Plug Insertion Life: &gt;= 750 Cycles with FCC Compliant RJ-45 Plug</li> <li>- Plug &amp; Jack Contact: &gt;= 100 Grams with FCC Compliant RJ-45 Plug Force</li> <li>- Plug Retention Force: &gt;= 11 LBF</li> <li>- Durability: 200 Termination Cycles</li> <li>- Operating Temperature: -10 Degree ~ 60 Degree</li> <li>- Operating Humidity: 10% ~ 90% RH</li> <li>- Storage Temperature: -40 Degree ~ 68 Degree</li> </ul> <p><b>Standard Verification:</b></p> <ul style="list-style-type: none"> <li>- ANSI/TIA-568-C.2</li> <li>- ISO/IEC 11801:2002/AMMD.2:2010</li> <li>- ISO/IEC 60603-7 Compliant</li> <li>- RoHS Directive 2002/95/EC/Compliant</li> <li>- UL LISTED</li> </ul>	
<p>15</p>	<p>Single mode 1000Base-LX SFP Transceiver LC Type Brand- D-Link/Digisol</p>	<p>Each</p> <ul style="list-style-type: none"> <li>- <b>Architecture:</b> 1000 Base LX Single-mode Fiber Transceiver</li> <li>- <b>Connector:</b> It should have duplex LC Connector</li> <li>- <b>Flow control:</b> Support 802.3x</li> <li>- <b>Mode:</b> 9/125 um Single mode Fiber Type up to 20 KM.</li> <li>- <b>Support wavelength:</b> 1310nm</li> <li>- <b>Case Operating Temperature:</b>support up to 0°~70°</li> <li>- <b>Storage Relative Humidity:</b>support up to 5% to 95%</li> </ul>	
<p>16</p>	<p>Firewall Brand- Fortinet/Check-Point/Cisco</p>	<p>Each</p> <ul style="list-style-type: none"> <li>- Interfaces and Modules</li> <li>- Hardware Accelerated GE RJ45 Interfaces: 16</li> <li>- Hardware Accelerated GE SFP Slots: 8</li> <li>- Hardware Accelerated 10GE SFP+ / GE SFP Slots: 4</li> <li>- Hardware Accelerated 25GE SFP28/ 10GE SFP+ Ultra Low Latency Slots: 4</li> </ul>	

- GE RJ45 MGMT/HA Ports: 2
- USB Ports 2 RJ45 Console Port: 1
- Onboard Storage: 0 2x 240 GB SSD
- Included Transceivers: 2x SFP (SX 1 GE)
- System Performance —
- Enterprise Traffic Mix IPS Throughput<sup>2</sup>: 14 Gbps
- NGFW Throughput <sup>2,4</sup>: 11.5 Gbps
- Threat Protection Throughput<sup>2,5</sup>: 10.5 Gbps
- System Performance and Capacity
- IPv4 Firewall Throughput (1518 / 512 / 64 byte, UDP): 139 / 137.5 / 70 Gbps
- IPv6 Firewall Throughput (1518 / 512 / 64 byte, UDP): 139 / 137.5 / 70 Gbps
- Firewall Latency (64 byte, UDP): 4.12  $\mu$ s / 2.5  $\mu$ s\*
- Firewall Throughput (Packet per Second): 105 Mpps
- Concurrent Sessions (TCP): 8 million
- New Sessions/Second (TCP): 550 000
- Firewall Policies: 10 000 IPsec
- VPN Throughput (512 byte)<sup>1</sup>: 55 Gbps
- Gateway-to-Gateway IPsec VPN Tunnels: 2000
- Client-to-Gateway IPsec VPN Tunnels: 50 000
- SSL-VPN Throughput<sup>6</sup>: 4.3 Gbps
- Concurrent SSL-VPN Users (Recommended Maximum, Tunnel Mode): 10 000
- SSL Inspection Throughput (IPS, avg. HTTPS)<sup>3</sup>: 9 Gbps
- SSL Inspection CPS (IPS, avg. HTTPS)<sup>3</sup>: 7500
- SSL Inspection Concurrent Session (IPS, avg. HTTPS)<sup>3</sup>: 840 000
- Application Control Throughput (HTTP 64K)<sup>2</sup>: 32 Gbps
- CAPWAP Throughput (HTTP 64K): 64.5 Gbps
- Virtual Domains (Default / Maximum): 10 / 10
- Maximum Number of FortiSwitches Supported: 96
- Maximum Number of FortiAPs (Total / Tunnel): 1024 / 512
- Maximum Number of FortiTokens: 5000
- High Availability Configurations Active-Active, Active-Passive, Clustering
- Form Factor (supports EIA/non-EIA standards): Rack Mount, 1 RU
- AC Power Consumption (Average / Maximum): 169 W / 255 W 174 W / 260 W
- AC Power Input: 100–240V AC, 50/60Hz
- AC Current (Maximum): 6A@100V
- Heat Dissipation: 871 BTU/h 888 BTU/h
- Redundant Power Supplies (Hot Swappable): Yes (comes with 2PSU default)
- Power Supply Efficiency Rating: 80Plus Compliant

			<ul style="list-style-type: none"> <li>- Operating Environment and Certifications</li> <li>- Operating Temperature: 32°–104°F (0°–40°C)</li> <li>- Storage Temperature: -31°–158°F (-35°–70°C)</li> <li>- Humidity: 5%–90% non-condensing Noise Level 55 dBA</li> <li>- Airflow: Side and Front to Back</li> <li>- Operating Altitude: Up to 10 000 ft (3048 m)</li> <li>- Compliance FCC Part: 15 Class A, RCM, VCCI, CE, UL/ cUL, CB</li> <li>- Certifications: USGv6/IPv6</li> </ul>	
17	<p>27U Rack Frame</p> <p>Brand- Any</p>	Each	<ul style="list-style-type: none"> <li>- 27U Rack Frame-600X1000-STEEL Nos: 1</li> <li>- Casters Set of 4 Nos 1 Adjustable Levelers set of 4 Nos: 1</li> <li>- Glass Door-600-27U Front Nos: 1</li> <li>- Metal Door-600-27U-Vented Nos: 1</li> <li>- Side Panels-1000-27U-Vented Nos: 2</li> <li>- FHU with 2 FAN 180CFM Nos: 1</li> <li>- Horizontal Power Distribution Unit with 6 x 5/15A sockets Round Pin, 230 Volts AC, 16 Amp with Plug Nos: 1</li> <li>- Horz. Cable Manager-1U-Loop Nos: 1</li> </ul>	
18	<p>6U Rack Frame</p> <p>Brand- Any</p>	Each	<p>Wall Mount 6U x 550W x 450 D -Gray/White</p> <p>Front Glass Door (tinted, Toughened) with Lock &amp; Key,</p> <p>2 Pair of 19" Mounting Rails with U-Marking</p> <p>1U Cable Manager (1),</p> <p>6 Socket 5 Amp.</p> <p>Power Distribution Unit (1 No)</p> <p>Roof Mounted Fan Unit/ 90 CFM/230V AC (1 No)</p>	
19	<p>PVC Conduit pipe</p> <p>Brand- Any</p>	Per 10 feet	3M,25mm	
20	<p>Computer Desktop with Monitor</p> <p>Brand-</p>	Each	<ul style="list-style-type: none"> <li>- Operating Sysytem: Windows 11</li> <li>- Processor: 12th Gen Intel Core i7-12700 Processor</li> <li>- Display: 60.5 cm (23.8") Full HD 1920 x 1080 Frameless B 660 IPS Panel LED Backlight Display</li> <li>- Graphics: Intel UHD Graphics</li> <li>- Memory: 8 GB DDR4 RAM,</li> </ul>	

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	HP/Dell		- Storage: 512 GB-	
21	Failover Switch Brand- Fortinet/Check-Point/Cisco	Each	Management and Configuration Auto Discovery of Multiple Switches 8 to 300 Managed Switches depending on FortiGate model Software Upgrade of Switches Centralized VLAN Configuration Switch POE Control	
22	UPS Online UPS with 2/3 hours Backup	Each	- KVA Rating – 3 KVA - Switching Technology – IGBT-PWM - Single Phase (3 Wire, L+N+PE) - Input Voltage Range 160V~280V AC	
23	RJ45	Each	Connector	

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Sr. No	List of Service Area	
01.	Ground Floor	Department of Anatomy, Dissection Hall, Principal Chamber, Account Office, Cobas Lab, Waiting Area, Meeting Hall, Councillor Room, Anatomy Lab
02.	1 <sup>st</sup> Floor	Department of Biochemistry, Biochemistry Lab, Office & Class CAL Lab (Physio), Library, Department of Physiology, Physio Lab & Class,
03.	2 <sup>nd</sup> Floor	Department of Microbiology, Microbiology Lab & Class CAL Lab (Pharma), Library, Department of Pharmacology, Pharma Lab, Office & Class,
04.	3 <sup>rd</sup> Floor	Department of Pathology, Pathology Lab & Class, Library, Common Room, Hall
05.	4 <sup>th</sup> Floor	Department of FMT, FMT Museum & Class, Lecture Hall 1,2,3& 4 Department of PSM, PSM Lab & Class.



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