

**KLE ACADEMY OF HIGHER EDUCATION AND RESRARCH**

**Network Up-gradation**

**TECHNICAL COMPLIANCE SHEET**

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1. **OVERVIEW**

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| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
| 1. | The Optical Fiber and Copper cabling systems manufacturer should be ISO 9001 ISO 14000 Certified. |  |  |  |
| 2. | All factory test reports for cables / Racks should be available online from a publicly accessible portal as and when required by the customer. The reports shall have the performance parameters clearly mentioned for Copper and Fiber. |  |  |  |
| 3. | There should be a minimum of 10 years extended product warranty and Application Assurance as a part of certification of entire installed cabling system. |  |  |  |
| 4. | All proposed passive products should have data sheets available on the OEM’s website. URL of each product to be submitted along with the bid. |  |  |  |
| 5. | All passive components / Racks should be RoHS complied with. Declaration of – ROHS compliant should clearly be mentioned on data sheets of each Passive Components. |  |  |  |
| 6. | Bid security Amount 2 % percentage of the bid price |  |  |  |
| 7. | Corporate Training has to provide by the OEM/ Vendor for the minimum 10 Employ.  |  |  |  |

1. **INSTALLATION PARTNER / SYSTEM INTEGRATOR QUALIFICATION CRITERIA**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
| 1. | The Contractor / Installer / System Integrator should be authorised channel partner of the OEM Suppliers mentioned above. |  |  |  |
| 2. | The Contractor / Installer should be able to produce minimum 3 references of clients with whom they have worked for more than 100 Fiber and 1000 Copper Port counts. |  |  |  |
| 3. | The Contractor / Installer should have their own inhouse team of structured cabling installers for copper and fiber systems. (NO sub-contract / outsourcing) |  |  |  |
| 4. | The Contractor / Installer / System Integrator should produce OEM trained certificate for Installer |  |  |  |

1. **TECHNICAL SPECIFICATIONS – CABLING PRODUCTS**

**3.1 SINGLE MODE FIBER**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
| 1. | Fiber Optic Cable: 9/125μm, OS2, AS PER ITU-T G.652.D, G.657.A1(Bend Insensitive) |  |  |  |
| 2. | Gel-Free cable is tested in accordance with Telcordia GR-409 |  |  |  |
| 3. | Fiber cable Diameter Over Jacket should be maximum 18 mm, Tensile Strength should be 396 N (long term) and 1320 N (short term) and Compression of the fiber cable should be minimum of 10 N/mm. |  |  |  |
| 4. | Flame test method, the cable should be Certified /compliant to IEC 60332-3, IEC 60754-2, IEC 61034-2. |  |  |  |
| 5. | The Attenuation shall be 0.3 dB/km @ 1310nm and 0.4 dB/km @ 1550nm. |  |  |  |
| 6. | The installation temp shall be at least between the range of -10- and +60-degree C. Operating Temp shall be at least between the range of - 20- and +70-degree C. |  |  |  |

**3.2. Fiber Patch Panels and Pigtails**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | Fiber Patch Panels and Pigtails |
| 1 | Depth of the Fiber Patch Panel should not exceed 35 cm. |  |  |  |
| 2 | The shelf should be able to accommodate 24 fiber splice trays which can be mounted on top of each other if required. |  |  |  |
| 3 | The shelf shall have at least 2 knockouts for easy cable access. The knockouts will prevent rodents from entering the fiber shelf. |  |  |  |
| 4 | Regulatory Compliance: | RoHS 2011/65/EU |  |  |  |
| 5 | Optical Performance | SM Insertion Loss, Typical: 0.30 dB Return Loss, Min: 55.0 dB |  |  |  |
| 6 | Pigtails shall have 12 (Twelve) different colours: Blue / Orange / Green / Brown / Slate / White/ red/ black/ yellow/ violet/ rose/ aqua |  |  |  |

**3.3. CATEGORY 6A CABLING SYSTEMS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | Cat 6A Cables |
| 1. | The Cable should meet ANSI/TIA 568C.2 Category 6A Specifications. |  |  |  |
| 2. | The cable should consist of Eight 23 AWG copper conductors. Copper Clad Aluminum or any other combinations are not allowed. |  |  |  |
| 3. | The nominal Outside diameter should not be more than 7.5 mm. |  |  |  |
| 4. | Must comply with the following Fire Safety standards IEC 60332-3-22, IEC 60754-2 and IEC 61034-2 |  |  |  |
| 5. | The cable and cordage shall be "True UTP" components that do not include internal or external shields, screened components, or drain wires. No Special Grounding requirements |  |  |  |
| 6. | NEXT - Minimum 3 dB headroom |  |  |  |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | **Cat 6A Path Panels and Outlets** |
| 1. | Shall be 24 port panel capable of terminating 24 CAT 6A U/UTP cables. |  |  |  |
| 2. | The panel shall be equipped with a removable rear mounted cable management bar and front and rear labels. |  |  |  |
| 3. | The 8-pin modular (RJ-45) jacks shall comply with IEC 60603-7-4 |  |  |  |
| 4. | The information outlet will have insertion life of 750 cycles minimum. |  |  |  |
| 5. | Operating Temperature Range = 14°F to 140°F (-10°C to 60°C) Storage Temperature Range = -40°F to 158°F (-40°C to 70°C) |  |  |  |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | **Cat 6A Path Cords – RJ 45** |
| 1. | The system must support patch cord lengths of 1 meter minimum and equipment cords of 2 meter minimum and The Patch cords shall be solid core construction for better performance. |  |  |  |
| 2. | Nominal cordage diameter shall be maximum or lower than 7.5 mm. |  |  |  |
| 3. | Must comply with the following Fire Safety standards IEC 60332-3-22, IEC 60754-2 and IEC 61034-2. |  |  |  |
| 4. | The cordage shall be UTP components that do not include internal or external shields, screen components, or drain wires |  |  |  |

**3.4. CABLE TRAYS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
| 1. | All Indoor cable tray should be solid metallic secured container with removable cover. |  |  |  |
| 2. | Material of construction should be Mild Steel, Hot Rolled with galvanized zinc coating. |  |  |  |
| 3. | The thickness for cable trays shall be considered minimum 2 mm. |  |  |  |
| 4. | Height of the tray should be 100mm & its Nominal Width should be 300mm, 450mm. |  |  |  |
| 5. | The cable trays shall be supplied in standard lengths of 2500 mm or 3000 mm. |  |  |  |
| 6. | Galvanizing: All cable trays, tray accessories, tray covers & tray supports including washers, etc. shall be hot dip galvanized. |  |  |  |
| 7. | Standard for Cable tray Steel IS: 2062, IS: 1079, IS: 811, IS: 513, IS: 808, IS: 1730, IS: 8910, ASME, |  |  |  |
| 8. | Standard for hot dip galvanizing IS: 2629, IS: 2633, IS: 4759, IS: 4826 |  |  |  |

**3.5. WALL MOUNT RACKS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
| 1. | 19" wall mounting extruded aluminum rack with size (HxWxD) 15U H x 600mm W x 650mm D - Grey colour, Single fan, side openable panel, top ventilation. 1) Lockable front toughened glass door - 1no. 2) Side doors openable - 2no. 3) 230V A/C 90CFM fan with finger guard - 1 nos. 4) Fan Finger Guard - 2 nos 5) AC power strip with 5/15 Amp 6 sockets - 1 nos 6) 19" Horizontal PVC cable manager - 2 nos. 7) Earthing kit - 1 nos. 8) Stationary shelf - 1nos. 9) Hardware packet - 2 nos |  |  |  |

1. **TECHNICAL SPECIFICATIONS - ACTIVE COMPONENTS.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr No** | **Description** **Minimum Technical specification****(Minimum support upto 3000 concurrent users)** | **Yes** | **No** | **Deviation** |
| **1** | **General Requirement** |  |  |  |
| 1.1 | Must have a 64-bit hardware platform & based on Multi-Core Architecture with Optimization for excellent throughput for all your key processes |  |  |  |
| 1.2 | The Proposed solution should have option for visibility into encrypted traffic flows, support for TLS 1.3 without downgrading the performance. |  |  |  |
| 1.3 | The device should be having security functions like Firewall, VPN (IPsec Site to Site &SSL Client VPN), Gateway level antivirus, Category based web and application filtering, Intrusion prevention system, Traffic shaping, DoS/DDoS. |  |  |  |
| 1.4 | Solution should offer with Central management solution with option to manage multiple firewalls from day one. |  |  |  |
| 1.5 | Solution should support Multiple WAN link balancing multiple Internet connections, auto-link health check, automatic failover, automatic and weighted balancing, and granular multipath rules, should support more than two ISP |  |  |  |
| **2** | **Hardware & Performance Requirement** |  |  |  |
| 2.1 | The appliance should support 4 x GbE copper 4 x 2.5 GbE copper 4 x SFP+ 10 GbE fiber |  |  |  |
| 2.2 | Firewall should have a minimum Firewall Latency (64 byte UDP) of 3 μs |  |  |  |
| 2.3 | Firewall must support at least 16 million concurrent connections |  |  |  |
| 2.4 | Firewall must support at least 3, 50,000 new sessions per second processing. |  |  |  |
| 2.5 | Firewall should support up to 30 Gbps of Firewall IMIX throughput. |  |  |  |
| 2.6 | Firewall should support integrated IPS throughputs of minimum 25 Gbps. |  |  |  |
| 2.7 | Firewall should have a minimum Firewall throughput of 75 Gbps. |  |  |  |
| 2.8 | Firewall should have a minimum Threat Protection throughput 6.5 Gbps. |  |  |  |
| 2.9 | Firewall should have a minimum NGFW throughput of 20 Gbps. |  |  |  |
| 2.10 | Firewall should have a minimum Ipsec VPN throughput ofminimum 60 Gbps |  |  |  |
| **3** | **General Features** |  |  |  |
| 3.1 | Firewall should support CLI and GUI based access to the firewall modules. |  |  |  |
| 3.2 | Should support Local authentication and integration with third party authentication solutions like, Active Directory, LDAP Server, RADIUS, TACACS+, eDirectory and Kerberos |  |  |  |
| 3.3 | Centralized, daily updates, automatic and manual updates or offline update. |  |  |  |
| 3.4 | Advance Threat Protection should have Inst ant identification and immediate |  |  |  |
| **5** | **Web Filtering** |  |  |  |
| 5.1 | Firewall should support minimum of at least 90+ predefined categories. |  |  |  |
| 5.2 | Should have flexibility to create network, user, Web and app-based traffic shaping (QoS) policy. |  |  |  |
| 5.3 | Exceptions based on network objects defined. |  |  |  |
| 5.4 | Notification of custom messages or URL redirection. |  |  |  |
| **6** | **Intrusion Prevention System** |  |  |  |
| 6.1 | IPS should protect for 7000+ Signatures database. |  |  |  |
| 6.2 | Firewall should block attacks such as DoS- SYN, IP/ICMP/TCP/UDP related attacks. |  |  |  |
| 6.3 | Solution should have IPS deep packet inspection engine with an option to select |  |  |  |
| 6.4 | IPS patterns which can ne applied firewall rule for better protection and should have option to create custom signature |  |  |  |
| 6.5 | Firewall should block attacks such as DNS cache poisoning, FTP bounce, improper commands. |  |  |  |
| **7** | **Application Control** |  |  |  |
| 7.1 | Firewall should have feature to identify, allow, block or limit usage of applications beyond ports and protocols. |  |  |  |
| 7.2 | Firewall should provide protection against Block potentially unwanted Applications |  |  |  |
| 7.3 | Application signature database of minimum 3500+ Applications for Application Control |  |  |  |
| **8** | **SD WAN** |  |  |  |
| 8.1 | Should have inbuild SD WAN technology with application path selection and routing, which is used to ensure quality and minimize latency for mission-critical applications |  |  |  |
| 8.2 | The Solution should support performance-based SLAs to automatically select the best WAN link based on jitter, latency, or packet-loss |  |  |  |
| 8.3 | Should support multiple WAN link options including VDSL, DSL, cable, LTE/cellular, and MPLS  |  |  |  |
| 8.4 | Should provide real-time insights into latency, jitter and packet loss for all WAN links |  |  |  |
| 8.5 | Should maintain application sessions when link performance falls below thresholds and should make a transition to a better performing WAN link |  |  |  |
| 8.6 | Should have a central SDWAN Orchestration platform to create Multiple site-to-site VPN tunnels between network locations using an optimal architecture like hub-and-spoke, full mesh, or some combination.  |  |  |  |
| 8.7 | Central Orchestration should have wixzards for easy and quick creating of VPN Tunnels |  |  |  |
| **9** | **Logging & Reporting** |  |  |  |
| 9.1 | Firewall logs must contain information about the firewall policy rule that triggered the log |  |  |  |
| 9.2 | Firewall must provide at a minimum basic statistic about the health of the firewall and the amount of traffic traversing the firewall. |  |  |  |
| 9.3 | Firewall should have support to log (in detail) all connections which are blocked or pass through the firewall. |  |  |  |
| 9.4 | Firewall should have support to generate performance statistics on real-time basis. |  |  |  |
| 9.5 | Firewall should have the capability to produce report s which measure usage. |  |  |  |
| 9.6 | Should Support 1000+ drilled down reports on the appliance |  |  |  |
| **10** | **OEM Criteria** |  |  |  |
| 10.1 | Proposed solution should have presence in Gartner's Magic Quadrant for Network Firewalls in latest reports |  |  |  |
| 10.2 | Should have ISO 9001:2015 or above certificate |  |  |  |
| **11** | **Licenses** |  |  |  |
| 11.1 | Five Year Subscription license for Firewall, Advanced Threat Protection (ATP), Intrusion Prevention System (IPS), Anti-malware, Web and App visibility control, and protection, onsite NBD support , security and software updates. License period will be counted after activation. |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | **Layer3 48 Port Multigigabit Switches**1. Layer – 3 48-port Switch supporting 1/10 Gbps SFP+ on all ports
2. Uplink port should be Minimum - 4x 40G
3. Stackable switches with minimum 1 Tbps stack bandwidth
4. Stackable up to Max 6 units
5. Prop. Stacking or Virtual stacking capability
6. Minimum 650W or higher AC Power Supply with Power Cord
7. Support for Redundant Power Supply
8. Switching capacity 2Tbps or Higher
9. Support 228K or more MAC Address
10. Multicast routing scale – 6000
11. 32 MB Packet Buffer
12. IPv4 Routing 32K or more
13. IPv6 Routing 16K or more
14. DRAM 8GB or more
15. Flash 32GB or more
16. VLAN IDs Minimum4K
17. Jumbo Frames 9216 or more.
18. 5 Years of 8 x 5 X NBD warranty
 |  |  |  |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | **Layer2 24 Port Non PoE Switch**1. 24 port switch with 1Gbps per port
2. 4 x 10 Gbps SFP+ Uplink Port
3. Support for Stacking up to 8 Units
4. Stacking Bandwidth at 80Gbps Minimum
5. Switching Capacity 128 Gbps or More
6. MAC addresses 16,000
7. IPv4 routes 256 or higher
8. IPv4 routing entries 2000 or more
9. IPv6 routing entries 128 or more
10. Multicast routing scale -1000
11. Packet buffer 1.5 MB or more
12. DRAM 1 GB or more
13. FLASH 1 GB or more
14. VLAN IDs 4K or more
15. Jumbo frames 9216 or more
16. 5 Years of 8 x 5 X NBD warranty
 |  |  |  |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | **Layer2 24 Port Full PoE Switch Minimum 380W PoE Budget**1. 124 port switch with 1Gbps PoE per port
2. 4 x 10 Gbps Uplink Port
3. Support for Stacking up to 8 Units
4. Stacking Bandwidth at 80Gbps Minimum
5. Switching Capacity 128 Gbps or higher
6. MAC addresses 16,000
7. IPv4 routes 256 or higher
8. IPv4 routing entries 2000 or higher
9. IPv6 routing entries 128 or higher
10. Multicast routing scale -1000
11. Packet buffer 1.5 MB or higher
12. DRAM 1 GB minimum
13. FLASH 1 GB minimum
14. VLAN IDs 4K or more
15. Jumbo frames 9216 or more
16. 5 Years of 8 x 5 X NBD warranty
 |  |  |  |
| **Sr. No.** | **Description** | **Yes** | **No** | **Deviation** |
|  | **Layer2 12 Port Non PoE Switch**1. Compact 12 port 1 Gbps per port Fanless switch2. 2 x 10 Gbps Uplink Port 3. Switching Capacity 70 Gbps 4. MAC addresses 32000 5. IPv4 routes 14,000 6. IPv4 routing entries 4000 7. IPv6 routing entries 2000 8. Multicast routing scale -1000 9. Packet buffer 6 MB 10. DRAM 512 MB minimum 11. FLASH 256 Mb minimum 12. VLAN IDs 4096 13. Jumbo frames 9198 14. 5 Years of 8 x 5 X NBD warranty |  |  |  |
| **Sr. No.** | **Description-Modules** | **Yes** | **No** | **Deviation** |
| 1. | 10GBASE SR SFP+ Module for Multimode Fiber Cable Support 10 Gbps on OM4 cable up to 400 meters Hot Swappable in SFP+ Ports |  |  |  |
| 2. | Description 10GBASE-T SFP+ transceiver module for Category 6A cables Support 10 Gbps on up to 30 meters on CAT6A |  |  |  |
| 3. | 10GBASE-CU SFP+ Cable minimum 2 meters Twinax cable, passive, 30AWG cable assembly |  |  |  |
| **Sr. No.** | **Description – Wi-Fi APs – 2 Radios** | **Yes** | **No** | **Deviation** |
|  | 1. Wireless Access Point with **Minimum WIFI 6**
2. Should be Centrally managed through Wireless Controller / cloud
3. Radio Specification Dual band (2.4 GHz & 5GHz)
4. Spatial streams 2x2:2
5. UL/DL-OFDMA, TWT support, BSS coloring
6. SU-MIMO, UL/DL MU-MIMO support
7. Maximal ratio combining (MRC) and beamforming
8. Aggregate frame rate – Minimum 1.7Gbps
9. Interface- Port 2 x 1Gbps
10. Power - 802.3af PoE or DC power adapter
11. 5 Years of 8 x 5 X NBD warranty
 |  |  |  |
| **Sr. No.** | **Description – Wi-Fi APs – 4 Radios** | **Yes** | **No** | **Deviation** |
|  | 1. Wireless Access Point with WIFI 6
2. Should be Centrally managed through Wireless Controller / cloud
3. Radio Specification Dual band (2.4 GHz & 5GHz)
4. Spatial streams 2x2:2 + 4x4:4
5. UL/DL-OFDMA, TWT support, BSS coloring SU-MIMO, UL/DL MU-MIMO support
6. Maximal ratio combining (MRC) and beamforming
7. Band Steering
8. Aggregate frame rate – Minimum 2.9 Gbps
9. Interface Port - 1 x mGig 2.5 Gbps & 1 x 1Gbps
10. Power - 802.3af/at PoE or DC power adapter
11. 5 Years of 8 x 5 X NBD warranty.
 |  |  |  |
| **Sr. No.** | **Description– Wi-Fi APs – 2 Radios** **Outdoor Wireless Access Point**  | **Yes** | **No** | **Deviation** |
|  | 1. Ruggedized Outdoor Wireless Access Point with WIFI 6 2. Should be Centrally managed through Wireless Controller / cloud 3. Radio Specification Dual band (2.4 GHz & 5GHz) 4. Spatial streams 2x2:2 + 4x4:45. UL/DL-OFDMA, TWT support, BSS coloring 6. SU-MIMO, UL/DL MU-MIMO support7. Maximal ratio combining (MRC) and beamforming 8. Aggregate frame rate – Minimum 2.9 Gbps9. Interface- Port 1Gbps SFP & 2.5Gbps Rj-4510. Power - 802.3af PoE or DC power adapter 11. 5 Years of 8 x 5 X NBD warranty |  |  |  |
| **Sr. No.** | **Description– Cloud Wireless Controller** | **Yes** | **No** | **Deviation** |
| 1 | The offered Access Points should be managed by Cloud based WLC of same OEM and the Cloud based WLC should support advanced policy capabilities for guest access and BYOD as well as advanced analytics for smarter decision making. |  |  |  |
| 2 | Cloud based WLC should support Multi-site management, Multi-tenancy services, Auto Provisioning, Application visibility and control. |  |  |  |
| 3 | Cloud based WLC should support Real-time monitoring and analysis of critical network performance indicators through intuitive visual widgets. |  |  |  |
| 4 | It should support Geo-location node map to shows nodes and device status in geographical context using Google map. |  |  |  |
| 5 | It should support real-time detailed topology for each tenant across multi-site deployment. |  |  |  |
| 6 | It should have feature to show Network Topology and Geo Location topology view. |  |  |  |
| 7 | It should support Layer 2 VPN IPSec encryption and tunneling services between AP and cloud based WLC. |  |  |  |
| 8 | It should have provisioning for Administrative management to be secured over HTTPS/SSL with different levels of administration. |  |  |  |
| 9 | It should provide insight in the network health with advanced graphical analytics on most problematic switches based on device state (CPU, memory, temperature etc.) |  |  |  |
| 10 | It should support IoT Inventory assisted with cloud- based Endpoints fingerprinting service gives a full spectrum visibility of all connected devices across the network with complete contextual information |  |  |  |
| 11 | It should support Contextual information of all connected devices including key attributes such as device type, vendor, hardware version, network location and time information |  |  |  |
| 12 | It should support IoT Policy Enforcement with access role profiles automates network-wide access based on IoT classification |  |  |  |
| 13 | The offered Cloud based WLC solution should be Compliant with General Data Protection Regulation (GDPR) & California Consumer Privacy Act (CCPA) |  |  |  |
| 14 | The offered Cloud based WLC solution should be Compliant with ISO/IEC certifications for cloud security. |  |  |  |
| 15 | Cloud based WLC solution should be ISO 27001, 27017, 27002 certified. |  |  |  |
| 16 | It should support Mobile apps for Device on-boarding and geo location tagging. |  |  |  |
| 17 | WLC, AP, Switches and NMS should be from same OEM |  |  |  |
| 18 | It should provide application analytics for network wide application inventory, monitoring and use, allowing a better understanding of bandwidth consumption between business critical and non- professional applications. |  |  |  |
| 19 | It should Improve user experience and business outcome with embedded analytics engine, showing in depth application use reports and key measurement indicators |  |  |  |
| 20 | It should allow centralized policy enforcement and application- use policy by applying QoS policy enforcement such as rate limiting, blocking and application prioritization |  |  |  |
| 21 | Five Year Subscription license for Aps and cloud controller , , onsite NBD support , Piece to piece replacement for 5 Years |  |  |  |

1. **SERVER ROOM FACILITIES.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Description -Server Racks**  | **Yes** | **No** | **Deviation** |
| 1. | Rack 42U/600/1200 with Heavy grade Aluminum vertical profiles connected to rigid steel end frames at top and bottom Fully recessible 19inch mounting angle pairs at front & rear with U marking , Cable management systems attach to equipment mounting rails inside enclosure that align with mounting U space and provide channel for routing and managing cables . Cable access slot at top and bottom panel with removable gland plates. Removable side panel with slam latches and indents for improved strength, Rack in total complete knock down structure -**Black Colour** |  |  |  |
| 2. | Front fully Perforated Door 42U/600, Hexagonal perforation and maximum cell opening ratio with improved strength. – 1 Nos |  |  |  |
| 3. | Rear Spilt fully Perforated Door 42U/600, Hexagonal perforation and maximum cell opening ratio with improved strength and 3 point Lock – 1 Nos 1Ph 230V, 32A, Zero U, Standard Vertical Rack Mount Power Distribution Unit with 12 x Indian Round Pin socket, 5/15A, 32A MCB, 7.36 KVA rating, 3 meter Power cord, Unterminated |  |  |  |

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| **Sr. No.** | **Description - 2 Post Open Racks** | **Yes** | **No** | **Deviation** |
| 1. | 3 in (76 mm) Channel x 7ft (2134 mm) H - 19 in (482.6 mm) AI Equipment Rack (45U) 12-24 Tapped Rails, Black |  |  |  |
| 2. | Vertical Cable Management Kit, 6in X 84in (152mm X 2134mm) Double Sided, With Doors, Silver |  |  |  |
| 3. | Ladder Kit 1 Mtr With Accessories Cable Runway 1 Mtr – RUNWAY MOUNTING KIT - 01 No, LADDER CLOSING BKT - 02 Nos, WALL BKT SET OF 2 - 01 No, RUNWAY JOINING BKT RIGHT ANGLE - 04 Nos |  |  |  |
| 4. | 1Ph 230V, 16A, 2U, Standard Rack Mount Power Distribution Unit with 6 x Indian Round Pin socket, 5/15A, 16A MCB, 3.6 KVA rating, 3 meter Power cord with Indian Plug |  |  |  |