CORRIGENDUM-2

Ref. No. IIT(BHU)/IPCELL/2024-25/CCTV/423   **Dated : 01.10.2024**

This is in reference to **Tender Ref. No. : IIT(BHU)/IPCELL/2024-25/CCTV/385 and Corrigendum-1 no.   IIT(BHU)/IPCELL/2024-25/CCTV/409 for Campus Surveillance System: Supply, Installation, Testing, Commissioning and Maintenance at IIT (BHU) Varanasi,** the following amendments are incorporated in aforesaid Tender Document.

1. Amendments in Technical Specifications:

The Referred content in Col. No. 2 may be read as appended in Col. No. 3:

Sr. No	Content mentioned in Tender document /Corrigendum-1 (2)	Referred content should be read as (3)
1	**SITC of 5MP Bullet Camera with 50M IR Distance.** Outdoor/Indoor VF Bullet Camera Supply, Installation, Testing & Commissioning of 5MP (or better) IP Network TDN Low-Light IR Rugged Bullet Camera, 1/2.8" CMOS or better, 5MP (2592 x 1944) @ 25fps or better, triple stream at various resolution & Frame Rates, Min. Illumination required 0.005 lux @ F1.6 (color), 0 Lux IR On, 4 IR LEDs Smart IR with upto 50m IR distance, Auto ICR (Infrared Cut Filter) 120dB True WDR, S/N Ratio 50db, Shutter Speed 1/8 - 1/30,000; Advance Video Compression technology such as H.265 & H.264 High Profile & MJPEG , Triple stream, 2.7 to 13.5mm 5X motorized focus & zoom lens, Field of View FoV H:96°-26°, BLC, HLC, 3DNR White Balance, Minimum Edge Intelligence Video Analytics : Video Motion Detection, Tampering, Loitering, Intrusion, & People Counting, 4 Privacy Mask, 8 Region Of Interest, Defog, TLS1.2, AES-128/256, SSH/Telnet closed, Stream Encryption, Dual channel Audio, Alarm: 1In/ 1out, 256GB SD card support, PoE (802.3 af) and 12V DC, Max 6W, IP 66, IK 10 vandal proof with Die Cast Aluminium Housing, Having Operating temp range : –40°C to 60° C. Certifications: ONVIF Profile S/G/T compliant, UL/CSA 62368-1 / Indian Standard IS 13252/CE (EN 50130-4), FCC Part 15, EN 55032, RoHS (EN63000) & NDAA Section 889 compliant.	**SITC of 5MP Bullet Camera with 50M IR Distance.** **Camera Type**: Outdoor, Rugged or VF Bullet Camera. **Image Sensor**: High-quality CMOS or equivalent, with a resolution of 5MP or higher for detailed image capture. **Resolution**: Minimum 5MP (2592 x 1944) or higher, with support for multiple streaming options at different frame rates and resolutions. **Low-Light Performance**: Optimized for low-light conditions, with a minimum illumination of 0.005 lux (color) or better. Night vision capabilities supported by integrated IR technology for up to 50m or more IR distance. **Infrared (IR) Capability**: Equipped with Smart IR for enhanced night vision to prevent overexposure and ensure clear visibility of animals or human movement up to 50m in total darkness. **Day/Night Functionality**: Auto Infrared Cut Filter (ICR) for seamless switching between day and night modes. **Dynamic Range**: True Wide Dynamic Range (WDR) of 120dB or equivalent for handling high contrast lighting environments (such as shadows from large trees and direct sunlight). **Zoom and Focus**: Motorized zoom lens with variable focal length (e.g., 2.7mm to 13.5mm or better) to allow flexible viewing angles, providing a broad field of view for open spaces and zooming for detailed monitoring. **Image Enhancements**: Includes features like 3D noise reduction, backlight and highlight compensation, and defog technology for challenging weather conditions. **Video Analytics**: Capable of advanced video analytics such as motion detection, intrusion detection, tampering alerts, and privacy masking. Useful for detecting animal movements or unauthorized human entry. **Weatherproofing**: IP66-rated or higher for dust and water resistance, ensuring durability in outdoor

		environments with heavy rain, humidity, or dust. **Vandal Resistance**: IK10-rated housing or equivalent for protection against vandalism or harsh environmental conditions. **Power Supply**: Supports Power over Ethernet (PoE) and/or 12V DC for flexible installation options. **Storage**: Support for local storage (SD card slot with capacity up to 256GB or higher) for event recording in remote areas with limited network connectivity. **Operating Conditions**: Suitable for extreme weather conditions with an operational temperature range from -40°C to 60°C or wider. **Certifications**: ONVIF Profile S/G/T compliant, UL/CSA 62368-1 / Indian Standard IS 13252 / CE (EN 50130-4), FCC Part 15, EN 55032, RoHS (EN63000) & NDAA Section 889 compliant.
2	**SITC of Network Video Recorder Software License for Primary & Failover (N+1) for 320 Cameras.** Supply, Installation, Testing & Commissioning of Network Video Recording Software (Recording Licenses), Shall support min 320 Cameras with 5 MP Resolution, 25fps with N+1 Redundancy. NVR shall support UHD, 4K, Full HD resolution, H.265 compression codec, multi-imager/lens cameras and 360° fisheye cameras. The NVR shall support in N+1 failover features so that more failover can be added if required. NVR shall be licenced for 320 cameras & 04 users clients with 128 Camera Failover and camera and Client should be upgradable in future as per client requirement. The NVR should support network joystick controller, GPU rendering support for H.264 and H.265 decoding , video on demand, Adaptive video throttling, rule engine, operator role management, server based Video Motion Detection (VMD), edge storage backfill support, bookmark with manual comment, bookmark based search, timeline search, Preview search, synchronous playback, monitor wall support, surrounding camera mode, Cyber secured with features such as Digital Signing, General Data Protection Regulation (GDPR) compliance, HTTPS & SSL base, smart web client, secured firewall configuration, password expiry, non-recoverable password; support ANDROID & iOS phones, seamless integration with integrated Access Control System. NVR Shall be listed on ONVIF website for ONVIF S, G & T support compliance.		**SITC of Network Video Recorder Software License for Primary & Failover (N+1) for 320 or more Cameras.** **SITC of Network Video Recorder Software License for Primary & Failover (N+1) for 320 or more Cameras**: **System Requirements**: NVR software must support at least 320 cameras with 5MP resolution at 25fps, and N+1 redundancy or better. **Video Format Compatibility**: Supports UHD, 4K, Full HD resolution, H.265 compression, multi-imager cameras, and 360° fisheye cameras. **Redundancy**: Includes N+1 failover capability, expandable as needed. **Licensing**: Licenses for at least 320 cameras and 10 user clients, with the ability to upgrade both atleast with 128 Camera Failover and camera and Client as required in future. **Key Features**: Support for network joystick controllers GPU rendering support for efficient video decoding and processing Video on demand and adaptive video throttling Rule engine for automated workflows and operator role management Server-based Video Motion Detection (VMD) Bookmark-based search, timeline search, and synchronous playback Monitor wall and surrounding camera mode support. **Security**: Includes digital signing, GDPR compliance, HTTPS/SSL encryption, secured firewall configuration, password expiry, and non-recoverable passwords. **Mobile Compatibility**: Supports Android and iOS devices. **Integration**: Supports integration with access control systems. **Compliance**: Must be compliant with ONVIF profiles

			S, G, and T for interoperability.
3	**SITC of Video Management Software for 320 Cameras along with Client License(8 No's).**		**SITC of Video Management Software for 320 (or more) Cameras along with Client License (10 No's).**
	Supply, Installation, Testing & Commissioning of ONVIF Certified Network Video Management Software (VMS) system required to support min 500 Cameras for Central Monitoring and Control on need basis as and when required. VMS support UHD, 4K, Full HD resolution, H.265 compression codec, multi-imager/lens cameras and 360° fisheye cameras. The VMS shall have option to support failover features if required in future. VMS shall be licenced for 320 cameras & 8 users clients expandable beyond in the same hardware server to support 2000 cameras and 25 User Clients. The VMS should support network joystick controller, GPU rendering support for H.264 and H.265 decoding , video on demand, Adaptive video throttling over network for Live Video, rule engine, operator role management, server based Video Motion Detection (VMD), edge storage backfill support, bookmark with manual comment, bookmark based search, timeline search, Preview search, synchronous playback, monitor wall support, surrounding camera mode, Cyber secured with features such as Digital Signing, General Data Protection Regulation (GDPR) compliance, HTTPS & SSL base, smart web client, secured firewall configuration, password expiry, non-recoverable password; support ANDROID & iOS phones, seamless integration with integrated Access Control System.		**SITC of Video Management Software for 320 (or more) Cameras along with Client License (10 No's)**: **System Requirements**: VMS system must support a minimum of 500 cameras for central monitoring and control as needed. **Video Format Compatibility**: Supports UHD, 4K, Full HD resolution, and various video compression formats, including support for multi-imager cameras and 360° fisheye cameras. **Redundancy**: Option to include failover features as needed in the future. **Licensing**: Licenses for 320 or more cameras and 10 user clients, expandable to support up to 2000 cameras and approximate 30 user clients on the same hardware server. **Key Features**: Support for network joystick controllers GPU rendering support for efficient video decoding and processing Video on demand and adaptive video throttling for live video Rule engine for automated workflows and operator role management Server-based Video Motion Detection (VMD) Edge storage backfill support Bookmark-based search, timeline search, preview search, and synchronous playback Monitor wall and surrounding camera mode support. **Security**: Cybersecurity features include digital signing, GDPR compliance, HTTPS/SSL encryption, secured firewall configuration, password expiry, and non-recoverable passwords. **Mobile Compatibility**: Supports Linux, Android and iOS devices. **Integration**: Seamless integration with access control systems.
4	**SITC of 8 Port PoE Switch with 2 Port Fiber.**		**SITC of 8 Port PoE Switch with 2 Port Fiber**
	General Features : Switch should be 1U and rack mountable in standard 19" rack. Switch should have minimum 2GB RAM and 4GB Flash. **Performance :** Switch shall have minimum 60 Gbps of switching fabric and 44 Mpps of forwarding rate. Should be non-blocking and provide wire speed forwarding rate. Switch shall have minimum 32K MAC Addresses and 4000 VLAN IDs Should support minimum 10K IPv4 routes or more Switch shall have 1K or more multicast routes. Switch should support atleast 16K flow entries		**SITC** of an **8 Port PoE Switch** with **2 Fiber Ports**. The specifications below outline the desired features but can be adjusted based on available models. **Specifications** **Form Factor**: 1U rack-mountable in a standard **19" rack**. **Memory**: Minimum **2 GB RAM** and **4 GB Flash** for optimal performance. **Performance:** **Switching Fabric**: Minimum **60 Gbps** with a forwarding rate of at least **44 Mpps**; must be non-blocking to provide wire-speed forwarding. **Address Capacity**: Minimum **32K MAC Addresses**

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, 802.1ae, 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 and TACACS+ . Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbor Discovery Inspection and IPv6 Source Guard. Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and also have support for MACSEC-128. Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type. **Interface and Power :** Switch shall have 8 nos. 10/100/1000 POE+ ports and additional 2nos of 1G Base-T and 2 nos. of 10G SFP+ uplinks ports. Switch should have 240W of Power Budget. **Certification:** Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment. Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.	and **4000 VLAN IDs**. **Routing Support**: Minimum **10K IPv4 routes** and **1K multicast routes**. **Flow Entries**: Should support at least **16K flow entries**. **Packet Buffer**: Minimum **6 MB** for efficient data handling. **Functionality:** **Standards Compliance**: Support for IEEE Ethernet standards, including **802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x**, and more. **Routing Protocols**: Must include static routing, **RIP, REP, PIM, OSPF, VRRP**, and **Policy-Based Routing (PBR)**. **Network Segmentation**: Capability to use **VXLAN** and **VRF** to enhance network segmentation. **Quality of Service (QoS)**: Support for **802.1p class of service**, including marking, classification, policing, shaping, and eight egress queues. **Management Features**: Should include **SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS**, and **TACACS+** for comprehensive management. **IPv6 Features**: Support for IPv6 security mechanisms such as **Binding Integrity Guard, Snooping, RA Guard, DHCP Guard, Neighbor Discovery Inspection**, and **Source Guard**. **Authentication**: Support for **802.1x authentication, IPv4 and IPv6 ACLs**, Dynamic VLAN assignment, and **MACSec-128**. **Automatic Configuration**: Ability to automatically configure switch ports as devices connect. **Interface and Power:** **Ports**: 8 x **10/100/1000 PoE+ ports** and 2 x **1G Base-T** plus 2 x **10G SFP+ uplink ports**. **Power Budget**: Total **Power Budget of 240W**. **Certification Requirements:** Must conform to **UL 60950, IEC 60950, CSA 60950**, or **EN 60950** standards for safety. Should meet **EN 55022 Class A/B**, **CISPR22 Class A/B**, **CE Class A/B**, or **FCC Class A/B** standards for EMC (Electromagnetic Compatibility).
5 **SITC of 24 Port PoE Switch with 4 port Fiber**. **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 2 GB Flash. Switch should have dedicated slot/Ports 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 95 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.	**SITC of 24 Port PoE Switch with 4 Port Fiber** **SITC** of a **24 Port PoE Switch** with **4 Fiber Ports**. The following specifications outline our requirements, but we are open to various models that meet the necessary criteria. **Specifications** **General Features:** **Form Factor**: 1U rack-mountable in a standard **19" rack**. **Power Supply**: Must support internal, field-replaceable redundant power supply from day one. **Memory**: Minimum **2 GB RAM** and **2 GB Flash**. **Stacking**: Dedicated slots/ports for modular stacking, with support for at least **80 Gbps** of stacking throughput across **8 switches**. **Performance:** **Switching Fabric**: Minimum **128 Gbps** and **95 Mpps** forwarding rate. **Address Capacity**: Minimum **16K MAC Addresses** and **250 active VLANs**. **Routing Support**: Minimum **11K IPv4 routes, 1K**

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, PIM, OSPF(1000 routes), 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 and TACACS+ . Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbor Discovery Inspection and IPv6 Source Guard. Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and MACSec-128 on hardware for all ports. Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type. **Interfaces** Switch shall have 24 nos. 10/100/1000 Base-T PoE ports and additional 4 nos. SFP+ uplinks ports. All 24 port should support PoE (802.3af) and PoE+ (802.3at) with a PoE power budget of 370 W. **Certification:** Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment. Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements. Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification. OEM should be listed in Gartner Leader Quadrant for Wired and Wireless LAN Infrastructure from the last 3 years before releasing this RFP.	**multicast routes**, and at least **16K flow entries**. **STP Instances**: Support for **128 or more** STP instances. **Packet Buffer**: Minimum **6 MB**. **Functionality:** **Standards Compliance**: Support for IEEE Ethernet standards, including **802.1D, 802.1s, 802.1w, 802.1x, 802.3ad**, and others. **Routing Protocols**: Must support static routing, **RIP, PIM, OSPF** (up to **1000 routes**), **VRRP**, and **Policy-Based Routing (PBR)**. **Network Segmentation**: Capability for **VXLAN** and **VRF** to enhance network segmentation beyond traditional VLANs. **QoS Features**: Support for **802.1p class of service**, with eight egress queues for traffic prioritization. **Management Features**: Include **SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS**, and **TACACS+** for management and monitoring. **IPv6 Features**: Support for various IPv6 security and integrity mechanisms, including **Binding Integrity Guard, Snooping**, and **Source Guard**. **Authentication**: Capability for **802.1x authentication** and **Dynamic VLAN assignment** with **MACSec-128** support on all ports. **Automatic Configuration**: Enable automatic configuration of switch ports as devices connect. **Interfaces:** **Ports**: 24 x **10/100/1000 Base-T PoE ports** and 4 x **SFP+ uplink ports**. **PoE Support**: All ports should support **PoE (802.3af)** and **PoE+ (802.3at)** with a total **PoE power budget of 370 W**. **Certification Requirements:** Must conform to **UL 60950, IEC 60950, CSA 60950**, or **EN 60950** standards for safety. Should meet **EN 55022 Class A/B, CISPR22 Class A/B, CE Class A/B**, or **FCC Class A/B** standards for EMC requirements. Switch/Operating System must be tested for **EAL 2/NDPP** or above under **Common Criteria Certification**. The OEM should be listed in the **Gartner Leader Quadrant** for Wired and Wireless LAN Infrastructure for the past three years before the release of this RFP.
6 **SITC of 1G SFP Transceiver.** Specifications Speed 1Gbps Single Mode SFP should be compatible with the offered equipments Distance: 10KM	**SITC of 1G SFP Transceiver** **SITC** of **1G SFP Transceivers**. Below are the essential specifications, but we welcome various models that meet our criteria. **Specifications** **Speed**: Supports data rates of **1 Gbps** for reliable performance. **Type**: **Single Mode** fiber for long-distance communication. **Compatibility**: The transceivers must be compatible with the offered equipment to ensure seamless integration. **Distance**: Designed for a maximum transmission distance of **10 KM**. **Certification Requirements** The transceivers should conform to relevant industry standards and certifications to ensure quality and compatibility, including **RoHS** compliance and any

		applicable safety certifications.
7	**SITC of OFC Patch Cord Duplex (3 Mtrs).** Features: LC-LC Duplex Small diameter, light weight, easy to connect and support large capacity data transmission. Supplied on 2mm Zipcord duplex cable that reduces cable congestion, allows for greater finger access in patching areas, and improves airflow around active equipment. Fiber Count: 2 Secondary Buffer OD: 900 ± 50μm Aramid Yarn: Aramid Yarns acting as strength member to protect the fiber cores. Outer jacket OD: 2.00 mm x 4.00mm (Duplex Zip Cord) Minimum bending radius(mm): 20xD Operating Temperature: -20 °C to +60 °C Return Loss >= 55dB Optical Specification: Fiber Mode SM, OS2 Insertion Loss: ≤ 0.30 dB Length 3 Mtr. OEM Eligibility: OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India. All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance. OEM should be a member of TIA organization.	**SITC of OFC Patch Cord Duplex (3 Mtrs).** **SITC of Duplex OFC Patch Cord (3 Mtrs)**: **Design**: LC-LC Duplex configuration, lightweight, and user-friendly for high-capacity data transmission. **Cable Type**: Constructed with a flexible zipcord design, minimizing cable congestion and enhancing airflow around active equipment while allowing easier handling in patching areas. **Fiber Count**: 2 fibers **Secondary Buffer Diameter**: 900 ± 100μm (flexible to accommodate variations) **Strength Member**: Incorporates aramid yarns to provide durability and protect the fiber cores. **Outer Jacket Diameter**: 2.00 mm x 4.00 mm (Duplex configuration, flexible to accommodate variations) **Minimum Bending Radius**: 20 times the cable diameter (adjustable based on installation requirements) **Operating Temperature Range**: -20 °C to +70 °C (providing a broader operational range) **Return Loss**: ≥ 55dB (can vary based on application needs) **Optical Specifications**: **Fiber Mode**: Single Mode, OS2 **Insertion Loss**: ≤ 0.30 dB (subject to application and installation conditions) **Length**: 3 meters (custom lengths available as per requirement) **Manufacturer Requirements**: The manufacturer should have been in operation for a minimum of 5 years. A local technical support center, warehouse, and return merchandise authorization (RMA) facility should be available. All passive components should originate from a single manufacturer and comply with relevant standards (e.g., TIA/EIA, ISO/IEC) to ensure long-term performance. The manufacturer should be a recognized member of relevant industry organizations.
8	**SITC of 6 Port LIU (Fully Loaded).** Type: 6 Port Single Mode Full Loaded LIU LIU: Standard 19" Rack mountable with 6 Port LC Fiber Pigtails and accessories for installation and commissioning. Application Ethernet, Fiber Channel, ATM, LAN, MAN, WAN, Data communication, Data centers, premise installations and Indoor Application Fiber Count: 6 Loaded with Pigtails: LC - Simplex, Singlemode OS2, Min. 2 Mtr, 0.9mm Tight Buffer Material: Steel Loaded with Couplers: LC Duplex Couplers Accessories Loaded in Panel:	**SITC of 6 Port LIU (Fully Loaded).** **Type**: 6 Port Single Mode Fully Loaded LIU **Mounting**: Standard 19" rack mountable unit equipped with 6 LC fiber pigtails and necessary installation accessories. **Applications**: Suitable for Ethernet, Fiber Channel, ATM, LAN, MAN, WAN, data communication, data centers, premise installations, and indoor applications. **Fiber Count**: 6 fibers **Loaded Pigtails**: Type: LC, Simplex, Singlemode Minimum Length: 2 meters (adjustable based on requirements) Buffer Diameter: 0.9mm tight buffer **Material**: Constructed from durable steel **Loaded Couplers**: LC duplex couplers for optimal connectivity **Accessories Included**: 12/24/48 fiber splice trays (as applicable) loaded within the LIU

	12/24/48 Fiber Splice trays should loaded in LIU with Pigtails, Splice Tubes, Min. 2 x PG13.5 Gland, Cable Ties and Velcro Straps Optical Characteristics for Loaded Pigtail:- Insertion Loss: <= 0.3 dB Return Loss: >= 55 dB Operating Temperature: -10 °C to + 60 °C RoHS Compliant: Pigtails Compliant as per RoHS Directive 2011/65/EU, Complies to ANSI/TIA-568.3-D, IEC 60794-2, ISO/IEC 11801 OEM Eligibility: OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India. All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance. OEM should be a member of TIA organization.	Pigtails, splice tubes, a minimum of 2 x PG13.5 glands, cable ties, and Velcro straps for installation **Optical Characteristics for Loaded Pigtails**: **Insertion Loss**: ≤ 0.3 dB (subject to application conditions) **Return Loss**: ≥ 55 dB (as required for effective performance) **Operating Temperature Range**: -10 °C to +70 °C (flexible to suit various environments) **Compliance**: RoHS compliant as per Directive 2011/65/EU Compliant with relevant standards such as ANSI/TIA-568.3-D, IEC 60794-2, ISO/IEC 11801 **Manufacturer Requirements**: The manufacturer should have a minimum of 5 years of operational experience. Availability of a local technical support center, warehouse, and return merchandise authorization (RMA) facility is required. All passive components should come from a single manufacturer and adhere to current industry standards to ensure long-term performance. The manufacturer should be a recognized member of relevant industry organizations.
9	**SITC of 9U Weatherproof Junction Box with 500mm Depth.** Standard 19" Wall/Pole Mount, 9U with 500mm Depth Panel with ventilation and cable entry facility Provision to mount cooling fans on the top/Side panel Weather Proof level for Outdoor Use. Lockable front Door Power Distribution Units 6 socket 5/15 Amp 1U Horizontal Cable Manager Standard Accessories including fans and one Hardware Packet It shall be in compliance with ROHS standards	**SITC of 9U Weatherproof Junction Box with 500mm Depth**: **Type**: Standard 19" wall/pole mountable junction box, 9U size with a depth of 500mm. **Design**: Equipped with ventilation and cable entry facilities for effective airflow and easy cable management. **Cooling Provision**: Designed with the capability to mount cooling fans on the top or side panel as needed. **Weatherproofing**: Constructed to meet outdoor weatherproof standards, suitable for harsh environmental conditions. **Access**: Features a lockable front door for secure access and protection of internal components. **Power Distribution**: Includes power distribution units with a minimum of 6 sockets rated for 5/15 Amp. **Cable Management**: Comes with a 1U horizontal cable manager for organized and efficient cable routing. **Standard Accessories**: Includes necessary accessories such as fans and a hardware packet for installation. **Compliance**: Compliant with RoHS standards to ensure environmental safety and sustainability.
10	**SITC of 9U Wall Mount Network Rack with 500mm Depth.** Standard 19" Wall Mount, 9U with 500mm Depth Top/bottom Panel with ventilation and cable entry facility Provision to mount cooling fans on the top/side panel Lockable front Door Power Distribution Units 6 socket 5/15 Amp 1U Horizontal Cable Manager Standard Accessories including fans and one Hardware Packet It shall be in compliance with ROHS standards	**SITC of 9U Wall Mount Network Rack with 500mm Depth**: **Type**: Standard 19" wall-mountable network rack, 9U size with a depth of 500mm. **Ventilation & Cable Management**: Designed with ventilation and cable entry options on the top and bottom panels for effective airflow and easy cable organization. **Cooling Provision**: Offers the ability to mount cooling fans on the top or side panels as needed. **Access**: Features a lockable front door for secure access and protection of installed equipment. **Power Distribution**: Includes power distribution units

		with at least 6 sockets, rated for 5/15 Amp. **Cable Management**: Equipped with a 1U horizontal cable manager for efficient and organized cable routing. **Standard Accessories**: Comes with essential accessories such as fans and a hardware packet for installation. **Compliance**: Compliant with RoHS standards, ensuring environmental and safety compliance
11	**SITC of 1KVA UPS with inbuilt Batteries.** Capacity: 1000VA Technology : PWM-MOSFET Input Range : Single Phase 140 -300 VAC Output (AVR Mode): 230 +/- 9% 50Hz Output (Battery Mode): 230VAC Sine Wave Battery: 12V 7AH SMF-VRLA Batteries 04 Nos inbuilt THD: Less than 5% Warranty : 05 Years on UPS and Batteries both Certificates: ISO 9001 , 14001 , BIS , CE , Make In India , Test Report	**SITC of 1KVA UPS with Inbuilt Batteries**: **Capacity**: 1000VA **Technology**: Pulse Width Modulation (PWM) based power regulation. **Input Range**: Single Phase, flexible voltage range (e.g., 140 - 300 VAC). **Output:** **AVR Mode**: 230V ± 10%, 50Hz or better **Battery Mode**: Pure sine wave output at approximately 230VAC. **Battery**: Inbuilt batteries, generally 12V 7AH or similar Sealed Maintenance-Free (SMF) VRLA Batteries, with 4 units or an equivalent configuration integrated. **THD (Total Harmonic Distortion)**: Less than 5% to ensure clean power output. **Warranty**: 5 years covering both UPS and batteries. **Certificates**: ISO 9001, ISO 14001, BIS, CE, Make in India certification, and relevant test reports.
12	**Supply and Laying of 6 Core Armoured Optical Fibre Cable.** Type: 6 Core Armored Single mode (9/125μm) Fiber optic Cable suitable for Outdoor application Cable: 6 Core Single mode fiber optic cables armored with colored fiber cores. Fiber cable is perfectly suited for both gigabit Ethernet and 10 gigabit Ethernet campus and backbone applications. Application: The constructions are of ECCS Tape Armored Uni Tube design with HDPE outer Jacket making it suitable for Outdoor applications Outer Sheath: HDPE Jacket / Black or Yellow Fiber Count: 6 Cable Specifications: Fiber Color : Blue, Orange, Green, Brown, Grey, White Cable diameter : 9.2 ± 0.5 mm Crush Resistance: 3000 N/100mm Bend Radius: 20 X D (mm) Tensile Load (max): 2000 N Optical Properties:-- Cladding Non-circularity : ≤ 0.7 % Cladding Diameter : 125.0 ± 0.7 μm Core/cladding Concentricity Error : ≤ 0.5 μm Primary Coating Diameter : 250 ± 15μm Attenuation Co-efficient :	**Supply and Laying of 6 Core Armoured Optical Fibre Cable.** **Type**: 6 Core Armored Single Mode (9/125μm) Optical Fiber Cable, suitable for outdoor applications. **Cable**: 6-core single-mode fiber optic cable, armored for enhanced durability, featuring color-coded fiber cores. The cable is designed for high-speed data transmission, supporting applications such as gigabit and 10-gigabit Ethernet for campus and backbone networks. **Application**: Uni-tube design, armored with ECCS tape and a robust HDPE outer jacket, making it suitable for outdoor environments. **Outer Sheath**: Durable HDPE jacket in black or yellow for outdoor use. **Fiber Count**: 6 cores. **Cable Specifications**: **Fiber Color**: Blue, Orange, Green, Brown, Grey, White **Cable Diameter**: Approx. 9.2 mm (±0.5 mm) **Crush Resistance**: Minimum 3000 N/100mm **Bend Radius**: Minimum 20xD (mm) **Tensile Load (Max)**: 2000 N **Optical Properties**: **Cladding Non-circularity**: ≤ 0.7% **Cladding Diameter**: 125.0 ± 0.7 μm **Core/Cladding Concentricity Error**: ≤ 0.5 μm **Primary Coating Diameter**: 250 ± 15 μm **Attenuation Coefficient**: **At 1310 nm**: ≤ 0.36 dB/km **At 1550 nm**: ≤ 0.22 dB/km **Chromatic Dispersion**:

	1310 Wavelength (nm) : ≤ 0.36 dB/km 1550 Wavelength (nm) : ≤ 0.22 dB/km Chromatic Dispersion : 1285 - 1330 Wavelength (nm) : ≤ 3.5 ps/nm.km (Min) 1550 Wavelength (nm) : ≤ 18 ps/nm.km (Min) Temperature Range:-- Operating Temperature Range: -20°C to +70 °C Compliance Standard:-- Complies to IEC 60793, IEC 60794 1 RoHS Compliant: Compliant as per RoHS Directive 2011/65/EU OEM Eligibility: OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India. All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance. OEM should be a member of TIA organization.	**1285-1330 nm**: ≤ 3.5 ps/nm.km **1550 nm**: ≤ 18 ps/nm.km **Temperature Range**: **Operating**: -20°C to +70°C **Compliance Standards**: Meets the requirements of IEC 60793 and IEC 60794-1 standards. **RoHS Compliance**: Compliant with the RoHS Directive 2011/65/EU. **OEM Requirements**: The manufacturer should have an established production facility in India for at least 5 years, along with local technical support, warehousing, and RMA services. All passive products should be from a single OEM and meet relevant TIA/EIA or ISO/IEC standards, offering a 25-year channel performance guarantee.
13	**Supply and Laying of 3 Core 1.5 Sqmm Power Armoured Cable.** Supply and laying of 3 Core 1.5 Sqmm, PVC Coted, 1100 V graded Power cable or as per site requirement	**Supply and Laying of 3 Core 1.5 Sqmm Power Armoured Cable**: **Type**: 3 Core, 1.5 Sqmm Armoured Power Cable, suitable for power transmission in a range of environments. **Cable Specifications**: **Conductor**: Copper or aluminum conductor, designed for efficient power transmission. **Insulation**: PVC-coated insulation, suitable for outdoor and indoor use, ensuring durability and electrical safety. **Voltage Grade**: Rated for 1100 V or as per site-specific requirements. **Outer Sheath**: PVC outer sheath providing protection against moisture, chemicals, and external abrasions. **Armor**: Steel wire or tape armoring for enhanced mechanical protection, making the cable suitable for buried or exposed conditions. **Application**: Designed for power distribution in various environments, including industrial, commercial, and residential settings. **Laying Conditions**: Can be laid in ducts, trenches, or directly underground, based on site-specific requirements. **Compliance**: Meets relevant national and international standards for power cables, such as IS 1554 or equivalent. **Temperature Range**: **Operating**: -10°C to +70°C.
14	**Supply and Laying of CAT6 F/UTP Cable** Type: CAT6 F/UTP Shielded LSZH Cable 8 X 23 AWG solid bare copper Electrolytic Grade Copper Conductors Twisted as 4 Pairs; Overall Cable Foil Shielded or Better. The twisted pairs are covered with a PVC/LSZH Outer Jacket, Category 6, confirming to ANSI/TIA 568.2-D for Category 6. Support: Supports 10/100/1000Base-T, 155Mbps ATM, IEEE 802.3an (10GBase-T) Standard requirement for Applications such as High-Speed Data, Voice & Video Signals over LANs, Server Farms and Other Bandwidth Sensitive Indoor Applications. Conductors: Solid bare copper 23 AWG	**Supply and Laying of CAT6 F/UTP Cable**: **Type**: CAT6 F/UTP Shielded Cable **Cable Specifications**: **Conductors**: 8 x 23 AWG solid bare copper conductors, designed for optimal conductivity, twisted into 4 pairs. **Shielding**: Overall foil shielding to minimize electromagnetic interference, enhancing performance in high-bandwidth applications. **Jacket Material**: PVC or Low Smoke Zero Halogen (LSZH) outer jacket, suitable for indoor applications, ensuring safety in case of fire. **Category**: Compliant with Category 6 standards per

	Pair Separator + Shape Spline Packing Box of 305 meters Cable Outer Diameter 7.5 ± 0.5 mm Insulation Material : Polyolefin Pairing 2 insulated conductors twisted together Individual Pair shielding: No Overall Shield: Aluminium Polyester Foil Shielded, 100% Coverage with TC Drain Wire Delay Skew: < 45 ns Conductor Resistance: ≤ 95.0 Ω /km @20°C Mutual Capacitance: ≤ 5.6 nF/100 m @1KHz Resistance Unbalance: 5% Max @20°C Capacitance Unbalance: 330 pF/100 m Bend Radius: Minimum 8X cable diameter Pulling Force: 80N or Better Nom. Velocity of Propagation: 67% or Better Temperature Range Operation: -30 °C to +60 °C Flame Properties: Flammability Test : IEC 60332-1 Acid Gas Emission Test : IEC 60754 Smoke Density Test : IEC 61034 ROHS Compliant: Should be Compliant as per RoHS Directive 2011/65/EU OEM Eligibility: OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India. All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance. OEM should be a member of TIA organization.	ANSI/TIA 568.2-D. **Performance**: **Support**: Suitable for 10/100/1000Base-T Ethernet, 155Mbps ATM, and IEEE 802.3an (10GBase-T) standards. **Applications**: Ideal for high-speed data transmission, voice, and video signals over local area networks (LANs), server farms, and other bandwidth-sensitive environments. **Cable Characteristics**: **Outer Diameter**: Approximately 7.5 ± 0.5 mm. **Insulation Material**: Polyolefin, providing effective insulation for each conductor. **Twisted Pairs**: Two insulated conductors twisted together for reduced crosstalk. **Delay Skew**: Less than 45 ns. **Conductor Resistance**: Maximum of 95.0 Ω/km at 20°C. **Mutual Capacitance**: Maximum of 5.6 nF/100 m at 1 kHz. **Resistance Unbalance**: Maximum of 5% at 20°C. **Capacitance Unbalance**: Maximum of 330 pF/100 m. **Bend Radius**: Minimum of 8 times the cable diameter. **Pulling Force**: Designed to withstand pulling forces of 80 N or better. **Nominal Velocity of Propagation**: At least 67% of the speed of light. **Temperature Range**: **Operating Temperature**: -30 °C to +60 °C. **Flame Properties**: Compliant with relevant flammability and smoke density standards, ensuring safety during use. **RoHS Compliance**: Must comply with the RoHS Directive 2011/65/EU. **OEM Eligibility**: The manufacturer should have a production facility in India for at least 5 years and provide technical support, warehouse, and RMA services in India. All passive products should be sourced from a single OEM, manufactured according to the latest TIA/EIA or ISO/IEC standards, ensuring a minimum of 25 years of channel performance. The OEM should be a member of the TIA organization.
15	**SITC of RJ45 Connectors.** Type: Filed Installation MPTL Shielded RJ45 Connector Plug with IP20 Rating or Better Function: Fast Installation RJ45 Plug have been designed for mechanical and electrical reliability, using quality materials, to deliver a quick male connector solution that minimizes the time required by the installer to complete each termination. Features: RJ45 Contact life >= 750 times Mechanical Characteristics: PoE Support IEEE 802.3bt Type 4 UL Listed: cUL Listed	**SITC of RJ45 Connectors**: **Type**: Shielded RJ45 Connector Plug, suitable for field installation with an IP20 rating or better. **Function**: Designed for fast installation, these RJ45 connectors ensure mechanical and electrical reliability. Constructed from high-quality materials, they provide a quick solution for male connections, minimizing installation time. **Features**: **Contact Life**: Designed for a contact life of 750 cycles or more. **Mechanical Characteristics**: **Power over Ethernet (PoE)**: Supports IEEE 802.3bt Type 4.

	Performance: Cat6 or Better with Min. 250Mhz and 1Gbps Support Termination: Termination of cable on Plug through Universal Termination Tool to minimize any manual termination like punch down. All the four pairs should get crimped and cut together with the help of the tool. IP Rating: IP20 or Better Wire: 24 – 23 AWG Operating Temperature range: -10 °C to +60 °C RoHS Compliant: Compliant as per RoHS Directive 2011/65/EU OEM Eligibility: OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India. All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance. OEM should be a member of TIA organization.	**Certification**: UL and cUL listed for safety and reliability. **Performance**: **Category Rating**: Supports Category 6 performance or better, with a minimum frequency of 250 MHz and data rates up to 1 Gbps. **Termination**: **Installation Method**: Allows for cable termination using a universal termination tool, ensuring that all four pairs are crimped and cut simultaneously for consistency and efficiency. **IP Rating**: Rated at IP20 or better for protection against solid objects. **Wire Specifications**: **Wire Gauge**: Compatible with 24 – 23 AWG wires. **Operating Temperature Range**: Suitable for operation within a temperature range of -10 °C to +60 °C. **RoHS Compliance**: Complies with the RoHS Directive 2011/65/EU. **OEM Eligibility**: The manufacturer should have a production facility in India for at least 5 years, along with a technical support center, warehouse, and RMA services in India. All passive products must come from a single OEM, manufactured in accordance with the latest TIA/EIA or ISO/IEC standards, ensuring a minimum of 25 years of channel performance. The OEM should be a member of the TIA organization.
16	**Supply and Laying of 25mm Conduit Medium Class** Supply and laying of medium class, 25 mm PVC Conduit along with joint and bend etc as per site requirement	**Supply and Laying of 25mm Conduit (Medium Class):** **Type**: Medium Class PVC Conduit, 25 mm in diameter. **Scope**: Supply and installation of medium-class PVC conduit, including necessary fittings such as joints and bends, as required by the site conditions. **Specifications**: **Material**: Made from durable PVC, suitable for both indoor and outdoor applications. **Diameter**: 25 mm. **Class**: Medium class, ensuring adequate strength for various installation needs. **Installation**: Conduit should be laid according to applicable standards and best practices to ensure reliability and compliance with safety regulations. All required accessories for connection and support must be included in the installation process. **Compliance**: The conduit system should meet relevant industry standards for quality and performance, including: **IS 9537**: Indian Standard for PVC Conduit Pipes and Fittings. **ISO 9001**: Quality Management System Certification. **RoHS Compliance**: Conforming to the RoHS Directive 2011/65/EU for hazardous substances.
17	**Supply and Laying of 33/40mm HDPE Pipes** Supply and laying of 33/40 mm HDPE Pipe for outdoor fiber	**Supply and Laying of 33/40mm HDPE Pipes** **Type**:

	cabling along with joint and bend etc as per site requirement	HDPE Pipe, 33 mm and 40 mm in diameter. **Scope**: Supply and installation of HDPE pipes for outdoor fiber cabling applications, including necessary fittings such as joints and bends, as per site requirements. **Specifications**: **Material**: High-Density Polyethylene (HDPE) suitable for outdoor use, providing durability and resistance to environmental factors. **Diameters**: Available in 33 mm and 40 mm to accommodate various installation needs. **Application**: Designed specifically for fiber optic cable installations, ensuring protection and performance. **Installation**: The installation should adhere to best practices and industry standards, ensuring proper alignment, support, and protection for the pipes. All required accessories for connection and support must be included as part of the installation process. **Compliance**: The pipe system should meet relevant industry standards for quality and performance, including: **IS 4984**: Indian Standard for HDPE Pipes for Potable Water Supply. **ISO 9001**: Quality Management System Certification. **RoHS Compliance**: Conforming to the RoHS Directive 2011/65/EU for hazardous substances.
18	**SITC of Outdoor OFC Joint Enclosure** Supply, Installation, Testing and Commissioning of OFC Joint enclosure for outdoor fiber cable along with all accessories as per site requirement	**SITC of Outdoor OFC Joint Enclosure** Supply, installation, testing, and commissioning of an outdoor joint enclosure for optical fiber cables, including all necessary accessories as per site requirements. **Type**: Outdoor Optical Fiber Cable (OFC) Joint Enclosure. **Specifications**: **Material**: Durable weatherproof material designed for outdoor use, providing protection against environmental factors such as moisture, dust, and UV exposure. **Design**: Suitable for accommodating multiple fiber optic splices and joints, ensuring ease of access for maintenance and installation. **Sealing**: Equipped with effective sealing mechanisms to prevent water ingress and dust accumulation. **Ventilation**: Adequate ventilation provisions to minimize condensation within the enclosure. **Installation**: Installation should follow best practices and industry standards to ensure the integrity and reliability of the fiber optic connections. All required accessories for mounting, sealing, and connecting must be included as part of the installation process. **Compliance**: The enclosure should meet relevant industry standards for quality and performance, including: **IEC 61300**: Standard for performance testing of optical fiber interconnecting devices and passive components. **RoHS Compliance**: Conforming to the RoHS Directive 2011/65/EU for hazardous substances. **ISO 9001**: Quality Management System Certification.

19	**SITC of 6 Meters Pole for Cameras.** Supply and Installation of 6 Meter GI pole for outdoor camera mount as per site requirement	**SITC of 6 Meters Pole for Cameras.** Supply and installation of a 6-meter galvanized iron (GI) pole designed for mounting outdoor cameras, in accordance with site requirements. **Type**: Outdoor Camera Mounting Pole. **Specifications**: **Material**: High-quality galvanized iron to ensure corrosion resistance and durability in outdoor environments. **Height**: 6 meters, suitable for optimal camera placement and visibility. **Design**: The pole should be designed to accommodate various camera models and provide secure mounting options. **Foundation**: Must include a stable foundation suitable for the local soil conditions to ensure structural integrity and stability of the mounted cameras. **Installation**: Installation should be executed in accordance with best practices and relevant industry standards, ensuring safety and compliance with local regulations. All necessary hardware and accessories for mounting the pole and securing the cameras must be included. **Compliance**: The pole and installation must meet relevant industry standards, including: **IS 2629**: Code of Practice for Hot Dip Galvanizing of Iron and Steel. **ISO 9001**: Quality Management System Certification. **RoHS Compliance**: Conforming to the RoHS Directive 2011/65/EU for hazardous substances.
20	**SITC of 24 port 25G/10G SFP+ Switch.** Switch shall be 1U to 3U and rack mountable in standard 19" rack. Switch shall have 16 GB RAM and 16 GB Flash Switch should support optional SSD to host 3rd party container based application. Switch shall have hot swappable 1:1 redundant internal power supply and redundant fan. Switch must have dedicated port, in addition to asked uplink ports. Should support for minimum 400 Gbps of stacking thoughput. Switch must have non-blocking switch fabric and forwarding rate Switching system shall have minimum 32K MAC Addresses and 4000 VLAN IDs Switch should support minimum 4K ACLs, 8K Multicast and 30K IPv4, 15K IPv6 Routes.. Switch shall support application visibility and traffic monitoring with minimum 60 K sflow/jflow/netFlow entries. Packet buffer : 16 MB The offer product series should be IPv6 logo certified from day one Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.1ae (256-bit and 128-bit AES), 802.3x, 802.1p, 802.1Q, 1588v2 Should support AES-256 support with MACSEC-256 encryption algorithm on hardware	**SITC of 24-Port 25G/10G SFP+ Switch** **SITC** of a **24-Port 25G/10G SFP+ Switch**. Below are the essential specifications we require, though we welcome various models that meet our criteria. **General Specifications** **Form Factor**: The switch should be **rack-mountable** in a standard **19" rack**, with a height of **1U to 3U** for optimal space utilization. **Memory**: Must include a minimum of **16 GB RAM** and **16 GB Flash** for efficient operation. **Storage**: Should support optional SSDs for hosting **3rd party container-based applications**. **Power and Redundancy** **Power Supply**: Equipped with a **hot-swappable, 1:1 redundant internal power supply** and redundant fans for enhanced reliability. **Dedicated Ports**: Include dedicated ports alongside standard uplink ports, supporting a minimum stacking throughput of **400 Gbps**. **Performance and Capacity** **Switch Fabric**: Non-blocking switch fabric and forwarding rate to ensure seamless data transmission. **Addressing Capacity**: Support for at least **32K MAC Addresses** and **4000 VLAN IDs**. **Access Control Lists (ACLs)**: Should support a minimum of **4K ACLs**, **8K Multicast**, **30K IPv4**, and **15K IPv6 Routes**.

	Support BGP, MPLS, IS-IS, VRF, VXLAN, NAT, OSPF Routed Access, Policy-Based Routing (PBR), PIM SM, and Virtual Router Redundancy Protocol (VRRP)		**Traffic Monitoring**: Capable of application visibility and traffic monitoring with a minimum of **60K sFlow/jFlow/NetFlow entries**.

Support BGP, MPLS, IS-IS, VRF, VXLAN, NAT, OSPF Routed Access, Policy-Based Routing (PBR), PIM SM, and Virtual Router Redundancy Protocol (VRRP)

Shall have 802.1p class of service, marking, classification, policing and shaping. Should support strict priority queuing.

Switch should support management features like SSHv2, SNMPv2c, SNMPv3, IGMP, Netconf/YANG.

Switch should support port security, DHCP snooping, Spanning tree root guard, First Hop Security.

IPv6 support in hardware, providing wire rate forwarding for IPv6 network

Should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment.

Eight egress queues per port for different types.

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: 24 x 1/10/25G SFP28 Interfaces

Certification:

Switch shall conform to UL 60950, IEC 60950, CSA 60950, EN 60950 Standards:

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

Traffic Monitoring: Capable of application visibility and traffic monitoring with a minimum of **60K sFlow/jFlow/NetFlow entries**.

Packet Buffer: A minimum of **16 MB** packet buffer is required.

Standards and Protocols

IPv6 Certification: The product series must be **IPv6 logo certified** from day one.

IEEE Standards: Compliance with relevant IEEE standards including **802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.1ae (256-bit and 128-bit AES), 802.3x, 802.1p, 802.1Q,** and **1588v2**.

Encryption: Must support **AES-256** and **MACsec-256 encryption** at the hardware level for enhanced data security.

Routing and Security

Supported Protocols: Should support multiple routing protocols such as **BGP, MPLS, IS-IS, VRF, VXLAN, NAT, OSPF Routed Access, Policy-Based Routing (PBR), PIM SM,** and **VRRP**.

Quality of Service: Must include **802.1p class of service**, marking, classification, policing, shaping, and support for strict priority queuing.

Management Features: Should facilitate management with features like **SSHv2, SNMPv2c, SNMPv3, IGMP,** and **Netconf/YANG**.

Security Features: Include robust security measures like **port security, DHCP snooping, Spanning Tree root guard,** and **First Hop Security**.

Additional Features

IPv6 Support: Hardware must support IPv6, providing wire-rate forwarding for IPv6 networks.

Authentication: Should support **802.1x authentication and accounting**, along with IPv4 and IPv6 ACLs and dynamic VLAN assignment.

Egress Queues: Eight egress queues per port for efficient handling of diverse traffic types.

System Integrity and Certification

Integrity Checks: During system boot, the software signatures must be checked for integrity to ensure that the system OS is authentic and unmodified, with cryptographically signed images for firmware and BIOS verification.

Interfaces: Must include **24 x 1/10/25G SFP28** interfaces for flexible connectivity.

Certification Requirements

The switch must conform to safety standards such as **UL 60950, IEC 60950, CSA 60950,** and **EN 60950**.

The switch or its operating system should be tested for **EAL 2/NDPP or above** under **Common Criteria Certification** to ensure high security standards.

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21 | **SITC of 10G SFP Transceiver.**

Speed 10Gbps
Single Mode/Multimode
SFP should be compatible with the offered equipments

SITC of 10G SFP Transceiver.

SITC of 10G SFP transceivers suitable for high-speed networking applications.

Type:
10G SFP Transceiver.

Specifications:

Speed: Supports data rates of up to 10 Gbps.

Compatibility: Must be compatible with the specified networking equipment to ensure seamless integration and functionality.

		Mode: Available in both single-mode and multimode options to accommodate different network configurations and requirements. **Connector Type**: Standard SFP interface for easy installation and interchangeability. **Performance**: **Distance**: Must support the required transmission distances for both single-mode and multimode configurations. **Wavelength**: Should specify the wavelength for single-mode and multimode options for clarity on performance. **Compliance**: Must comply with relevant industry standards and certifications, including: **IEEE 802.3ae**: Standard for 10 Gbps Ethernet. **RoHS Compliance**: Conforming to the RoHS Directive 2011/65/EU for hazardous substances. **ISO 9001**: Quality Management System Certification to ensure product quality and reliability
22	**SITC of 1G Copper SFP Monitoring System** Speed 1Gbps Shall be compatible with copper cable SFP should be compatible with the offered equipments	**SITC of 1G Copper SFP Monitoring System** **Type**: 1G Copper SFP Monitoring System. **Scope**: Supply, Installation, Testing, and Commissioning (SITC) of a 1G Copper SFP monitoring system designed for high-speed network applications. **Specifications**: **Speed**: Supports data rates of up to 1 Gbps. **Compatibility**: Must be compatible with standard copper cabling (e.g., CAT5e or higher) to ensure effective data transmission. **Interface**: SFP interface for seamless installation and compatibility with existing network equipment. **Performance**: **Distance**: Should support the necessary transmission distances for copper connections in the specified environment. **Compliance**: Must comply with relevant industry standards and certifications, including: **IEEE 802.3**: Standard for Ethernet networking. **RoHS Compliance**: Conforming to the RoHS Directive 2011/65/EU for hazardous substances. **ISO 9001**: Quality Management System Certification to ensure product quality and reliability.
23	**SITC of OFC Patch Cord Duplex (3 Mtr)** Same Specification as mentioned in Sr.No.7	**SITC of OFC Patch Cord Duplex (3 Mtr)** Same Specification as mentioned in Sr.No.7
24	**SITC of Network Video Recorder Primary (128 Channel Network Video Storage Manager Server).** Market position: The OEM for the proposed server must be in one of the top five server vendors (by market share revenue in IDC) in any of the previous 2 quarters Chipset: Intel® C620 series chipset	**SITC of Network Video Recorder Primary (128 Channel Network Video Storage Manager Server).** SITC of a high-performance network video storage server. **Type**: Network Video Recorder Primary (128 Channel Network Video Storage Manager Server)

	Form Factor: Max. 1U rack mounted with OEM sliding rails Configured CPU: Dual 3rd Generation Intel Xeon Scalable processors each with min 12 cores 2.1GHz base frequency Memory slots: Should have min 16 DDR4 DIMM slots. Should support upto 1TB with speeds 3200 MT/s. Memory configured: Min 32 GB DDR4, Dual Rank Disks supported: Up to 8 x 2.5-inch SAS/SATA (HDD/SSD) in front bay Or upto 4 x 3.5-inch SAS/SATA (HDD/SSD) in front bay RAID Controller: 12Gbps 8Gb cache PCIe 4.0 with RAID 0,1,5,6,10,50,60 Disks configured: Min 2x 480GB SSD in RAID1 for OS and Applications. Network Ports: 2x 10G SFP+ Ports 2x 32G FC ports HBA I/O slots Up to 2 PCIe Slots Ports: Front Ports 1 x Dedicated Management micro-USB 1 x USB 2.0 1 x VGA Rear Ports: 1 x USB 2.0 1 x USB 3.0 1 x Dedicated Management Ethernet port 1 x VGA OS & Hypervisor supportCanonical Ubuntu Server LTS: Windows Server with Hyper-V Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware ESXi Power Supply Dual, hot swap, redundant PSUs Management integration Support for integration with Microsoft System Center, VMware vCenter and vRealize Operations Manager, BMC Software, ServiceNow, Red Hat Ansible Modules, and Terraform Providers Power & temperature Real-time power meter, graphing, thresholds, alerts & capping with historical power counters. Temperature monitoring & graphing: Pre-failure alert Should provide predictive failure monitoring & proactive alerts of actual or impending component failure for fan, power supply, memory, CPU, RAID, NIC, HDD Configuration & management: Real-time out-of-band hardware performance monitoring & alerting Agent-free monitoring, driver updates & configuration, power monitoring & capping, RAID management, external storage management, monitoring of FC, HBA & CNA & system health Out-of-band hardware & firmware inventory Zero-touch auto configuration to auto deploy a baseline server configuration profile Management (continued)	**Specifications**: **Market Position**: The OEM must be among the top five server vendors by market share revenue in IDC for the past two quarters. **Chipset**: Intel® C620 series chipset. **Form Factor**: 1U rack-mounted with sliding rails. **Configured CPU**: Dual Intel Xeon Scalable processors, each with minimum of 12 cores and 2.1GHz base frequency. **Memory**: Minimum of 16 DDR4 DIMM slots supporting up to 1TB at speeds of 3200 MT/s. Configured with at least 32 GB DDR4, Dual Rank. **Disk Support**: Up to 8 x 2.5-inch SAS/SATA HDD/SSD or up to 4 x 3.5-inch SAS/SATA HDD/SSD in the front bay. **RAID Controller**: 12Gbps with 8Gb cache and support for RAID levels 0, 1, 5, 6, 10, 50, 60. **Configured Disks**: Minimum of 2 x 480GB SSD in RAID 1 for OS and applications. **Network Ports**: 2 x 10G SFP+ Ports 2 x 32G FC ports HBA **I/O Slots**: Up to 2 PCIe slots. **Power Supply**: Dual, hot-swappable, redundant power supply units (PSUs). **Operating System Support**: Compatible with Canonical Ubuntu Server LTS, Windows Server with Hyper-V, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, and VMware ESXi. **Management and Monitoring**: Integration with Microsoft System Center, VMware vCenter, and other management platforms. Real-time power and temperature monitoring with alerts for predictive failure. Zero-touch auto-configuration and automated OS deployment. **Security Features**: Cyber-resilient architecture with protection against cyber threats. Features such as secure boot, data encryption, and system lockdown. Compliance with industry standards for server security (e.g., TPM 2.0). **Certifications**: Must have BIS, IEC 60950 (UL) certification. EPEAT registered in India. OEM must hold ISO 9001, ISO 27001, and ISO 45001 certifications. **Warranty**: Five years of on-site comprehensive Next Business Day warranty with 24x7 remote hardware support, verifiable on the OEM's support website.

	Automated hardware configuration and Operating System deployment to multiple servers Zero-touch repository manager and self-updating firmware system Virtual IO management / stateless computing LCD panel LCD / Security bezel. Should display system ID, status information and system error code followed by descriptive text. LCD background should light up in different colors during normal system operation & error conditions. HTML5 support HTML5 support for virtual console & virtual media without using Java or ActiveX plugins Server security Should have a cyber resilient architecture for a hardened server design for protection, detection & recovery from cyber attacks Server security Should provide effective protection, reliable detection & rapid recovery using: Cryptographically signed firmware Data at Rest Encryption (SEDs with local or external key management) Secure Boot Secure Erase Secured Component Verification (Hardware integrity check) Silicon Root of Trust System Lockdown TPM 2.0 FIPS, CC-TCG certified Server security (continued) Configuration upgrades should be only with cryptographically signed firmware and software. Should protect against firmware which executes before the OS boots Server security (continued) Should provide system lockdown feature to prevent change (or "drift") in system firmware image(s) & prevent malicious modification of server firmware Intrusion alert Intrusion alert in case chassis cover being opened OS Microsoft Windows Server 2022 OS / Red Hat Enterprise Linux 9.0 or latest Performance Benchmark SPEC/ OSG Integer Speed, FP Speed, Integer Rates and FP Rates benchmarks as per "spec.org" to be submitted. Certifications Server should have BIS, IEC60950 (UL) certification. Server should have EPEAT registered in India. Server OEM should have ISO9001, ISO27001 and ISO45001. Warranty 5 years On-site comprehensive Next Business Day warranty with 24x7x365 remote hardware support. The warranty should reflect in the support web site of the OEM.	
25	**SITC of Network Video Recorder Secondary (Failover) (128 Channel Network Video Storage Manager Server).** Market position: The OEM for the proposed server must be in one of the top five server vendors (by market share revenue in IDC) in any	**SITC of Network Video Recorder Secondary (Failover)** **(128 Channel Network Video Storage Manager Server).** SITC of a high-performance failover network video

of the previous 2 quarters Chipset: Intel® C620 series chipset Form Factor: Max. 1U rack mounted with OEM sliding rails Configured CPU: Dual 3rd Generation Intel Xeon Scalable processors each with min 12 cores 2.1GHz base frequency Memory slots: Should have min 16 DDR4 DIMM slots. Should support upto 1TB with speeds 3200 MT/s. Memory configured: Min 32 GB DDR4, Dual Rank Disks supported: Up to 8 x 2.5-inch SAS/SATA (HDD/SSD) in front bay Or upto 4 x 3.5-inch SAS/SATA (HDD/SSD) in front bay RAID Controller: 12Gbps 8Gb cache PCIe 4.0 with RAID 0,1,5,6,10,50,60 Disks configured: Min 2x 480GB SSD in RAID1 for OS and Applications. Network Ports: 2x 10G SFP+ Ports 2x 32G FC ports HBA I/O slots Up to 2 PCIe Slots Ports: Front Ports 1 x Dedicated Management micro-USB 1 x USB 2.0 1 x VGA Rear Ports: 1 x USB 2.0 1 x USB 3.0 1 x Dedicated Management Ethernet port 1 x VGA OS & Hypervisor supportCanonical Ubuntu Server LTS: Windows Server with Hyper-V Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware ESXi Power Supply Dual, hot swap, redundant PSUs Management integration Support for integration with Microsoft System Center, VMware vCenter and vRealize Operations Manager, BMC Software, ServiceNow, Red Hat Ansible Modules, and Terraform Providers Power & temperature Real-time power meter, graphing, thresholds, alerts & capping with historical power counters. Temperature monitoring & graphing: Pre-failure alert Should provide predictive failure monitoring & proactive alerts of actual or impending component failure for fan, power supply, memory, CPU, RAID, NIC, HDD Configuration & management: Real-time out-of-band hardware performance monitoring & alerting Agent-free monitoring, driver updates & configuration, power monitoring & capping, RAID management, external storage management, monitoring of FC, HBA & CNA & system health	storage server. **Type**: Network Video Recorder Secondary (Failover) (128 Channel Network Video Storage Manager Server) **Specifications**: **Market Position**: The OEM must be among the top five server vendors by market share revenue in IDC for the past two quarters. **Chipset**: Intel® C620 series chipset. **Form Factor**: 1U rack-mounted with sliding rails. **Configured CPU**: Dual Intel Xeon Scalable processors, each with minimum of 12 cores and 2.1GHz base frequency. **Memory**: Minimum of 16 DDR4 DIMM slots supporting up to 1TB at speeds of 3200 MT/s. Configured with at least 32 GB DDR4, Dual Rank. **Disk Support**: Up to 8 x 2.5-inch SAS/SATA HDD/SSD or up to 4 x 3.5-inch SAS/SATA HDD/SSD in the front bay. **RAID Controller**: 12Gbps with 8Gb cache and support for RAID levels 0, 1, 5, 6, 10, 50, 60. **Configured Disks**: Minimum of 2 x 480GB SSD in RAID 1 for OS and applications. **Network Ports**: 2 x 10G SFP+ Ports 2 x 32G FC ports HBA **I/O Slots**: Up to 2 PCIe slots. **Power Supply**: Dual, hot-swappable, redundant power supply units (PSUs). **Operating System Support**: Compatible with Canonical Ubuntu Server LTS, Windows Server with Hyper-V, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, and VMware ESXi. **Management and Monitoring**: Integration with management platforms such as Microsoft System Center and VMware vCenter. Real-time power and temperature monitoring with alerts for predictive failure. **Security Features**: Cyber-resilient architecture with protection against cyber threats. Features include secure boot, data encryption, and system lockdown. Compliance with industry standards for server security (e.g., TPM 2.0). **Certifications**: Must have BIS and IEC 60950 (UL) certification. EPEAT registered in India. OEM must hold ISO 9001, ISO 27001, and ISO 45001 certifications. **Warranty**: Five years of on-site comprehensive Next Business Day warranty with 24x7 remote hardware support, verifiable on the OEM's support website.

	Out-of-band hardware & firmware inventory Zero-touch auto configuration to auto deploy a baseline server configuration profile Management (continued) Automated hardware configuration and Operating System deployment to multiple servers Zero-touch repository manager and self-updating firmware system Virtual IO management / stateless computing LCD panel LCD / Security bezel. Should display system ID, status information and system error code followed by descriptive text. LCD background should light up in different colors during normal system operation & error conditions. HTML5 support HTML5 support for virtual console & virtual media without using Java or ActiveX plugins Server security Should have a cyber resilient architecture for a hardened server design for protection, detection & recovery from cyber attacks Server security Should provide effective protection, reliable detection & rapid recovery using: Cryptographically signed firmware Data at Rest Encryption (SEDs with local or external key management) Secure Boot Secure Erase Secured Component Verification (Hardware integrity check) Silicon Root of Trust System Lockdown TPM 2.0 FIPS, CC-TCG certified Server security (continued) Configuration upgrades should be only with cryptographically signed firmware and software. Should protect against firmware which executes before the OS boots Server security (continued) Should provide system lockdown feature to prevent change (or "drift") in system firmware image(s) & prevent malicious modification of server firmware Intrusion alert Intrusion alert in case chassis cover being opened OS Microsoft Windows Server 2022 OS / Red Hat Enterprise Linux 9.0 or latest Performance Benchmark SPEC/ OSG Integer Speed, FP Speed, Integer Rates and FP Rates benchmarks as per "spec.org" to be submitted. Certifications Server should have BIS, IEC60950 (UL) certification. Server should have EPEAT registered in India. Server OEM should have ISO9001, ISO27001 and ISO45001. Warranty 5 years On-site comprehensive Next Business Day warranty with 24x7x365 remote hardware support. The warranty should reflect in the support web site of the OEM.	
26	**SITC of 1500TB SAN System for Video Storage for 90**	**SITC of 1500TB SAN System for Video Storage for**

days	**90 days**
OEM PQ: The Storage System OEM should be listed in the Top5 of IDC/Gartner latest Report. Storage Capacity: Minimum 1500 TB Usable storage capacity to be offered to record all CCTV cameras at 5MP resolution and 25FPS with H.265 video compression 24/7 for 90 days. Storage Type: Block Storage System with iSCSI / FC protocol Controller: Dual Active hot swappable Controllers Cache: 32 GB memory spread across both controllers. SSDs will not be considered as Cache. RAID: Storage System to be configured with RAID6 protection and Global Hot Spares. HDD: Proposed Storage System should be configured using suitable 4TB/8TB/12TB/16TB/20TB/22TB 7200 RPM SATA/ SAS drives. Scalability: Proposed Solution should be scalable to meet capacity and performance requirement using multiple Storage Arrays of same type. Host Connectivity per Controller: Storage should provide minimum 4 ports 32Gbps FC per controller. Backend Connectivity: 12Gbps SAS Total Aggregate Storage Bandwidth: Proposed Storage Solution should ensure a minimum total aggregate bandwidth as defined by VMS and camera OEM on a 90% Write & 10% Read Video Workload. Storage OEM must provide Storage sizing and throughput calculation generated from their online sizing tool. Storage Software Licenses: All relevant storage software licenses should be provided for entire supported storage capacity of the proposed Array. Storage Management: Web based management- 1. HTML5 2. Single-array intuitive element manager 3. Common management tasks from convenient locations 4. Manage storage profiles, network connections, alerts etc. Power Supply Dual Redundant Power Supply Validated Solution: Offered storage series should be lab validated with at least three VMS OEMs including the offered VMS software. The storage OEM has to submit detailed lab validation report which should have been published at least 6 months before the bid submission. Warranty: 5 years On-site comprehensive Next Business Day warranty with 24x7x365 remote hardware support. The warranty should reflect in the support web site of the OEM. **SAN Switch 24/48 Port:** Switch Architecture: The proposed SAN Switches should have 1U form factor	**Type**: **Storage System** and **SAN Switch** Specification **Storage System** **OEM** **Qualification**: The Storage System OEM must be listed in the Top 5 of the latest IDC/Gartner report. **Storage** **Capacity**: Minimum of 1500 TB usable storage capacity, capable of recording atleast 320 CCTV cameras at minimum 5MP resolution and minimum 25FPS with advanved video compression for 90 days. **Storage** **Type**: Block storage system supporting iSCSI and/or FC protocol. **Controller**: Dual active, hot-swappable controllers. **Cache**: 32 GB memory shared across both controllers; SSDs are not to be used as cache. **RAID** **Configuration**: Configured with RAID 6 protection and global hot spares. **Hard** **Drives**: Configured using suitable 4TB to 22TB 7200 RPM SATA/SAS drives. **Scalability**: Solution must be scalable to meet future capacity and performance requirements through the addition of compatible storage arrays. **Host** **Connectivity**: Minimum of 4 ports per controller with 32 Gbps FC connectivity. **Backend** **Connectivity**: 12 Gbps SAS. **Total** **Aggregate** **Storage** **Bandwidth**: Must ensure a minimum total aggregate bandwidth as defined by VMS and camera OEMs for a typical workload of 90% write and 10% read. The storage OEM must provide sizing and throughput calculations from their online sizing tool. **Storage** **Software** **Licenses**: All relevant storage software licenses must be included for the entire supported capacity of the proposed array. **Storage Management**: Web-based management with HTML5 support. Intuitive management interface for single-array operations. Capability to manage storage profiles, network connections, and alerts from centralized locations. **Power** **Supply**: Dual redundant power supply. **Validated** **Solution**: The offered storage series should be lab-validated with at least three VMS OEMs, including the proposed VMS software. The storage OEM must submit a detailed lab validation report published at least six months prior to bid submission. **Warranty**: Five years of on-site comprehensive Next Business Day warranty with 24x7 remote hardware support, verifiable on the OEM's support website.

	with upto 48 Nos. of 32Gbps Ports Fiber Channel Ports: SAN Switch should be configured with min 24 x 32Gbps FC Ports on day one Autosensing capabilities: 4/8/16/32-Gb/s autosensing with 32Gb/s of dedicated bandwidth per port Virtual SANs: Up to 80 VSANs per fabric Switch Core Non-blocking Classes of Service Class 2, 3 and F Fiber Channel Port Type Standard: E, F and B Enhanced: SD, ST and TE Network Security: • Fiber Channel Security Protocol (FC-SP) switch-to-switch authentication • FC-SP host-to-switch authentication • Role-based access control (RBAC) using RADIUS, TACACS+, or LDAP authentication, authorization, and accounting (AAA) functions • Secure FTP (SFTP) • Secure Shell Protocol Version 2 (SSHv2) • Simple Network Management Protocol Version 3 (SNMPv3) implementing Advanced Encryption Standard (AES) • Secure Boot and Anti-counterfeit technology Management and Management Access: Data Center Network Manager (DCNM) Management access through two out-of-band 10/100/1000 Mb/s Ethernet ports Power Supply: Should have hot swappable redundant Power Supplies and fans Cables: 5M LC-LC Multimode Optical FC cables should be provided Warranty: 5 years On-site comprehensive Next Business Day warranty with 24x7x365 remote hardware support. The warranty should reflect in the support web site of the OEM.	**SAN Switch (24/48 Port)** **Switch Architecture**: 1U form factor with up to 48 x 32 Gbps ports. **Fiber Channel Ports**: Minimum 24 x 32 Gbps FC ports on day one. **Autosensing Capabilities**: Support for 4/8/16/32 Gb/s autosensing with dedicated bandwidth per port. **Virtual SANs**: Support for up to 80 VSANs per fabric. **Switch Core**: Non-blocking architecture. **Classes of Service**: Support for Class 2, Class 3, and Class F. **Fiber Channel Port Types**: Standard: E, F, and B; Enhanced: SD, ST, and TE. **Network Security**: Fiber Channel Security Protocol (FC-SP) for switch-to-switch and host-to-switch authentication. Role-based access control (RBAC) with RADIUS, TACACS+, or LDAP. Secure FTP (SFTP) and Secure Shell Protocol Version 2 (SSHv2). Simple Network Management Protocol Version 3 (SNMPv3) with AES encryption. Secure Boot and anti-counterfeit technology. **Management Access**: Management through Data Center Network Manager (DCNM) and two out-of-band Ethernet ports (10/100/1000 Mb/s). **Power Supply**: Hot-swappable redundant power supplies and fans. **Cables**: 5M LC-LC Multimode optical FC cables should be provided. **Warranty**: Five years of on-site comprehensive Next Business Day warranty with 24x7 remote hardware support, verifiable on the OEM's support website.
27	**SITC of Video Management System Server.** Market position The OEM for the proposed server must be in one of the top five server vendors (by market share revenue in IDC) in any of the previous 2 quarters Chipset Intel® C620 series chipset Form Factor Max. 1U rack mounted with OEM sliding rails Configured CPU 3rd Generation Intel Xeon Scalable processors each with min 12 cores 2.1GHz base frequency Memory slots Should have min 16 DDR4 DIMM slots. Should support upto 1TB with speeds 3200 MT/s. Memory configured Min 16 GB DDR4, Dual Rank	**SITC of Video Management System Server.** **Market Position** The OEM for the proposed server must be in one the top five server vendors by market share revenue, as indicated in IDC reports from the past two quarters. **Chipset** Intel® C620 series chipset or equivalent. **Form Factor** Max. 1U rack-mounted design with compatible sliding rails. **Configured CPU** 3rd Generation Intel Xeon Scalable processors with a minimum of 12 cores, operating at a base frequency of 2.1GHz. **Memory Slots** A minimum of 16 DDR4 DIMM slots, supporting up to 1TB of memory with speeds of 3200 MT/s.

	Disks supported Up to 8 x 2.5-inch SAS/SATA (HDD/SSD) in front bay Or upto 4 x 3.5-inch SAS/SATA (HDD/SSD) in front bay RAID Controller 12Gbps 8Gb cache PCIe 4.0 with RAID 0,1,5,6,10,50,60 Disks configured Min 2x 480GB SSD in RAID1 for OS and Applications. Network Ports 2x 10G SFP+ Ports 2x 32G FC ports HBA I/O slots Up to 2 PCIe Slots Ports Front Ports ● 1 x Dedicated Management micro-USB ● 1 x USB 2.0 ● 1 x VGA Rear Ports ● 1 x USB 2.0 ● 1 x USB 3.0 ● 1 x Dedicated Management Ethernet port ● 1 x VGA OS & Hypervisor support ● Canonical Ubuntu Server LTS ● Windows Server with Hyper-V ● Red Hat Enterprise Linux ● SUSE Linux Enterprise Server ● VMware ESXi Power Supply Dual, hot swap, redundant PSUs Management integration Support for integration with Microsoft System Center, VMware vCenter and vRealize Operations Manager, BMC Software, ServiceNow, Red Hat Ansible Modules, and Terraform Providers Power & temperature Real-time power meter, graphing, thresholds, alerts & capping with historical power counters. Temperature monitoring & graphing Pre-failure alert Should provide predictive failure monitoring & proactive alerts of actual or impending component failure for fan, power supply, memory, CPU, RAID, NIC, HDD Configuration & management • Real-time out-of-band hardware performance monitoring & alerting • Agent-free monitoring, driver updates & configuration, power monitoring & capping, RAID management, external storage management, monitoring of FC, HBA & CNA & system health • Out-of-band hardware & firmware inventory • Zero-touch auto configuration to auto deploy a baseline server configuration profile Management (continued) • Automated hardware configuration and Operating System deployment to multiple servers • Zero-touch repository manager and self-updating firmware system • Virtual IO management / stateless computing LCD panel LCD / Security bezel. Should display system ID, status information and system error code followed by descriptive text. LCD background should light up in different colors	**Memory** **Configuration** Minimum of 16 GB DDR4, Dual Rank. **Disk** **Support** Support for up to 8 x 2.5-inch SAS/SATA (HDD/SSD) in the front bay or up to 4 x 3.5-inch SAS/SATA (HDD/SSD) in the front bay. **RAID** **Controller** 12Gbps with at least 8GB cache, supporting RAID levels 0, 1, 5, 6, 10, 50, and 60. **Disk** **Configuration** Minimum of 2 x 480GB SSD configured in RAID1 for the OS and applications. **Network Ports** 2 x 10G SFP+ Ports 2 x 32G FC ports (HBA) **I/O** **Slots** Up to 2 PCIe slots. **Front Ports** 1 x Dedicated Management micro-USB 1 x USB 2.0 1 x VGA **Rear Ports** 1 x USB 2.0 1 x USB 3.0 1 x Dedicated Management Ethernet port 1 x VGA **OS** **&** **Hypervisor** **Support** Compatibility with: Canonical Ubuntu Server LTS Windows Server with Hyper-V Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware ESXi **Power** **Supply** Dual, hot-swappable, redundant power supplies. **Management** **Integration** Support for integration with popular management platforms, including Microsoft System Center, VMware vCenter, BMC Software, ServiceNow, Red Hat Ansible Modules, and Terraform Providers. **Power** **&** **Temperature** **Monitoring** Real-time power meter and temperature monitoring, with pre-failure alerts for critical components. **Configuration & Management Features** Out-of-band hardware performance monitoring and alerting. Automated hardware configuration and OS deployment for multiple servers. Predictive failure monitoring and proactive alerts for key components. **LCD** **Panel** A front panel displaying system ID, status, and error codes, with color indications for normal operation and alerts. **HTML5** **Support** HTML5 support for virtual console and media, eliminating the need for Java or ActiveX plugins. **Security** **Features** The server should incorporate a resilient architecture to protect against cyber threats, including: Secure Boot and firmware integrity checks. Data at Rest Encryption and TPM 2.0 for enhanced security.

	during normal system operation & error conditions. HTML5 support HTML5 support for virtual console & virtual media without using Java or ActiveX plugins Server security Should have a cyber resilient architecture for a hardened server design for protection, detection & recovery from cyber attacks Server security Should provide effective protection, reliable detection & rapid recovery using: ● Cryptographically signed firmware ● Data at Rest Encryption (SEDs with local or external key management) ● Secure Boot ● Secure Erase ● Secured Component Verification (Hardware integrity check) ● Silicon Root of Trust ● System Lockdown ● TPM 2.0 FIPS, CC-TCG certified Server security (continued) Configuration upgrades should be only with cryptographically signed firmware and software. Should protect against firmware which executes before the OS boots Server security (continued) Should provide system lockdown feature to prevent change (or "drift") in system firmware image(s) & prevent malicious modification of server firmware Intrusion alert Intrusion alert in case chassis cover being opened OS Microsoft Windows Server 2022 OS / Red Hat Enterprise Linux 9.0 or latest Performance Benchmark SPEC/ OSG Integer Speed, FP Speed, Integer Rates and FP Rates benchmarks as per "spec.org" to be submitted. Certifications Server should have BIS, IEC60950 (UL) certification. Server should have EPEAT registered in India. Server OEM should have ISO9001, ISO27001 and ISO45001. Warranty 5 years On-site comprehensive Next Business Day warranty with 24x7x365 remote hardware support. The warranty should reflect in the support web site of the OEM.	Intrusion alerts for unauthorized access. **Operating System** Support for Microsoft Windows Server 2022 or Red Hat Enterprise Linux 9.0 or newer. **Performance Benchmarking** Performance metrics (SPEC/OSG Integer Speed, FP Speed, etc.) as defined by spec.org should be provided. **Certifications** The server should have relevant certifications, including BIS and IEC60950 (UL). It should be EPEAT registered in India, and the OEM should hold ISO9001, ISO27001, and ISO45001 certifications. **Warranty** A comprehensive 5-year on-site warranty with Next Business Day service and 24x7 remote hardware support, verifiable on the OEM's support website.
28	**SITC of VMS Client Workstation with Joystick Controller.** Processor Intel Core i5 13th Gen, 4 Core, base 2.5GHz or better RAM 32 GB DDR4 HDD 500 GB SSD Chipset Intel W680 Graphic Card 1x Nvidia T1000 8GB Graphics	**SITC of VMS Client Workstation with Joystick Controller.** **Processor** Intel Core i5 (13th Gen) or equivalent, with a minimum of 4 cores and a base frequency of 2.5GHz or better configuration **RAM** 32 GB DDR4 or higher. **Storage** 500 GB SSD or better for fast performance. **Chipset** Intel W680 or comparable chipset.

	Network 1G Ethernet Expansion Slots 1 half height PCIe x16 Gen4; 1 half height PCIe x4 Gen 3 I/O Ports 1 – USB 3.2 Gen 2 Type C 4 – USB 3.2 Gen 1/2 1 – Universal Audio Port 1 – Audio Line OUT / IN PSU 92% efficient (80 Plus Platinum) PSU OS Windows 11 Pro Monitor Dual monitors should be supported Keyboard & Mouse Wired Keyboard & Mouse Form Factor Small Form Factor / Tower Security Features Trusted Platform Module (TPM 2.0), Chassis Intrusion switch, Setup/BIOS Password Certification BIS, Energy Star Warranty 5 years On-site comprehensive Next Business Day warranty with 24x7x365 remote hardware support. The warranty should reflect in the support web site of the OEM. **In Addition to existing technical requirement of VMS Client Workstation, following is the required Technical Specifications for Joystick Controller** SITC of 3 Axis Joystick Controller for PTZ Camera with 3 axis control & Screen, to control the PTZ and set the tour of the PTZ Camera, Complete control of up to 128 HDT PTZ domes. Joy Stick supports touch wheet QWERTY Keyboard, 3 Axis variable speed Twist Zoom Control, 20 function key. Multiple control interfaces like TCP/IP, RS232, RS422 & RS485. LCD screen must have 122 x 32 dot, blue - white back light. Certification UL, CE, FCC. Joystick must support PoE, 12V DC.	**Graphics Card** NVIDIA T1000 (8GB) or a better alternative for graphic-intensive applications. **Network** 1G Ethernet connectivity or higher. **Expansion Slots** 1 half-height PCIe x16 Gen4 slot and 1 half-height PCIe x4 Gen3 slot. **I/O Ports** 1 x USB 3.2 Gen 2 Type C 4 x USB 3.2 Gen 1/2 1 x Universal Audio Port 1 x Audio Line Out/In **Power Supply** At least 92% efficiency (80 Plus Platinum) certified PSU. **Operating System** Windows 11 Pro or equivalent. **Monitor Support** Capable of supporting dual monitors. **Input Devices** Wired keyboard and mouse. **Form Factor** Small Form Factor or Tower design. **Security Features** Trusted Platform Module (TPM 2.0), chassis intrusion switch, and setup/BIOS password capability. **Certifications** BIS and Energy Star certification recommended. **Warranty** 5 years of on-site comprehensive Next Business Day warranty, including 24x7x365 remote hardware support. Warranty details should be accessible on the OEM's support website. **3 Axis Joystick Controller for PTZ Cameras** **General Features:** **Control Capability**: Designed to control up to **128 HD PTZ cameras**, allowing for complete operation and tour settings. **Control Interface**: Multiple communication protocols supported, including **TCP/IP, RS232, RS422, and RS485**. **User Interface**: Integrated **LCD screen** with dimensions of **122 x 32 dots** and **blue-white backlight** for clear visibility. **Input Devices**: Features a **touch wheel QWERTY keyboard** and **3-axis variable speed twist zoom control** for intuitive operation. **Performance:** **Speed Control**: Provides **variable speed control** for precise movement of PTZ cameras. **Functionality**: Includes **20 programmable function keys** for customized operations. **Power Requirements:** **Power Supply**: Supports **Power over Ethernet (PoE)** and **12V DC** input for flexible installation options. **Certification:** **Standards Compliance**: Must comply with **UL, CE,** and **FCC** certification standards for safety and electromagnetic compatibility.
29	**SITC of 32'' full HD LED Screen for Workstation**	**SITC of 32'' (or larger) Full HD LED Screen for**

		Workstation
	Diagonal Size 32 Panel Type Edge LED BLU Resolution FHD (1920 x 1080) Brightness 400nit Panel Technology VA Contrast Ratio 4000:01:00 Viewing Angle(H/V) 178:178 Response Time 8ms Display Colors 1.07 Billion Color Gamut 72% Dynamic C/R MEGA Audio Built in Speaker (10W + 10W) INPUT Type HDMI 2.0 X 2, USB 2.0 x 1 , Audio Input X 1 OUTPUT Type Stereo Mini Jack, HDMI X 1 Duty Cycle 24 x 7 Special features Anti Glare/ Haze 2%, Temperature Sensor, Pivot Display, IP5x Rating, Wireless Mirrioring, 8GB internal memory Logo Should have Customized Logo when no signal is active File support Direct viewing of PPT, Word, PDF, Images and video from pen drive Remote Controlling of device Laptop / Desktop Should be controlled remotely by external Keyboard and mouse through display EXTERNAL CONTROL RS232C(in) thru stereo jack, RJ45 Power Consumption 50 Standby Mode Power less than 0.5W VESA Mount 200*200mm Operating Temperature 0°C~ 40°C Humidity 10~80% Certificates CE, FCC, UL, BIS	**Diagonal Size** 32 inches or larger. **Panel Type** Edge LED Backlight or equivalent technology. **Resolution** Full HD (1920 x 1080) or better. **Brightness** Brightness level of at least 400 nits. **Panel Technology** VA (Vertical Alignment) or similar. **Contrast Ratio** Minimum contrast ratio of 4000:1. **Viewing Angle** 178° horizontal and vertical for clear visibility from different angles. **Response Time** Response time of 8 ms or lower. **Display Colors** Capable of displaying 1.07 billion colors. **Color Gamut** Supports at least 72% of the color gamut. **Dynamic Contrast Ratio** MEGA or similar dynamic contrast capabilities. **Audio** Built-in speakers (10W + 10W) or comparable audio output. **Input Ports** 2 x HDMI 2.0 1 x USB 2.0 1 x Audio Input **Output Ports** Stereo Mini Jack and at least 1 x HDMI. **Duty Cycle** Designed for continuous use (24/7 operation). **Special Features** Includes anti-glare/anti-haze treatment, temperature sensor, pivot display capability, IP5x rating for dust protection, wireless mirroring, and at least 8GB internal memory. **Logo Display** Option for customized logo display when no signal is active. **File Support** Supports direct viewing of PowerPoint, Word, PDF, images, and videos from a USB drive. **Remote Control** Allows remote control of connected laptops/desktops using an external keyboard and mouse through the display. **External Control** RS232C input via stereo jack and RJ45 port for external control options. **Power Consumption** Maximum power consumption of 50W or lower. **Standby Power** Power consumption in standby mode of less than 0.5W. **VESA Mount Compatibility** Compatible with standard VESA mounts (200 x 200 mm). **Operating Temperature** Suitable operating temperature range of 0°C to 40°C.

		Humidity Range Operates effectively in a humidity range of 10% to 80%. **Certifications** CE, FCC, UL, BIS, and other relevant certifications as needed.
30	**SITC of 55'' Video Wall (2x3 Matrix) with controller** Display wall **It shall be made up of multiple LCD modules stacked up in 2(R) rows** **and 3(C) columns to achieve a video wall** OEM The LCD video wall as well as the Controller should be from the same OEM Panel 55 inch Xtra Narrow Bezel Bezel 1.8mm or lower Back Light type LED Resolution Full HD 1920 x 1080, professional-grade display Display Colors 1.07 billion Display Mode Direct LED Backlight Brightness (Typ.) 500 nits Contrast Ratio (Typ.) 2000:1 Inputs 1x Analog RGB (D-Sub) 1x Digital DVI-D 2x HDMI 1x USB 3x BNC- Component (YPbPr) 1x BNC-Composite (shared with component) 1x DP 1x OPS Slot 1x Audio-In (RCA L/R) 1x Stereo mini jack Output 1x DVI / DP 1x Audio-Out 1x Speaker Out Control 1x RS 232 In 1x RS 232 Out 1x RJ45 Power Control AC Power ON/OFF Switch **Internal or External Speaker** 10W x 10W AC Power Input Range 100~240VAC, 50/60Hz Power Consumption Normal Mode: <150W Standby Mode: <0.5W Dimensions (W x H x D) 1211.4 x 682.2 x 98.5 mm(@Vesa Mount)/ 106.9mm (@ Handle) Operating Temperature 5°C ~ 40°C Storage Temperature -20°C ~ 60°C Operating / Storage Humidity Operating / Storage Humidity 10% ~ 90%, non-condensing Operating Life	**SITC of 55'' (or larger) Video Wall (2x3 Matrix) with Controller** **Display Configuration** Composed of multiple LCD modules arranged in a 2-row by 3-column matrix to form a cohesive video wall. **OEM Requirement** For optimal performance and service, the video wall and controller should ideally be sourced from the same manufacturer. However, compatibility with other manufacturers will be considered if they can provide documented proof of successful integration and performance benchmarks in similar applications. **Panel Size** 55 inches or larger with ultra-narrow bezels. **Bezel Width** 1.8 mm or lower for minimal interruption between screens. **Backlight Type** LED or equivalent. **Resolution** Full HD (1920 x 1080) or better, designed for professional use. **Display Colors** Capable of displaying 1.07 billion colors. **Display Mode** Direct LED backlight technology. **Brightness** Typical brightness of at least 500 nits. **Contrast Ratio** Minimum contrast ratio of 2000:1. **Input Ports** Flexible input options including: 1 x Analog RGB (D-Sub) 1 x Digital DVI-D 2 x HDMI 1 x USB 3 x BNC (Component YPbPr) 1 x BNC (Composite, shared with component) 1 x DisplayPort 1 x OPS Slot 1 x Audio-In (RCA L/R) 1 x Stereo mini jack **Output Ports** Including: 1 x DVI/DisplayPort 1 x Audio-Out 1 x Speaker Out **Control Interfaces** Multiple control options: 1 x RS232 In 1 x RS232 Out 1 x RJ45 **Power Control** AC power ON/OFF switch. **Audio**

>50,000 hours The Controller should be able to make the 4 cubes behave as one logical area. It should be possible to display any or all the inputs on the video wall in any desired configuration. OEM The LCD video wall as well as the Controller should be from the same OEM Architecture Should be based on PC architecture Operating System Windows 7 or higher -64 bit RAM 4 GB or higher Client **8 client licences to be provided to control from client workstations** HDD 500 GB or higher Power Supply Single/Dual Redundant Power Supply Outputs **9 DP/DVI outputs to the cubes** Inputs **9 HD inputs** Wall Management Software Software to be provided to manage the layout on the display Layout Management All the Layouts can be scheduled as per user convenience. Software should support auto launch of Layouts according to specified time event by user. It should be possible to create offline layouts Log File Software should support user log file management Live View The software GUI should be able to show the live view of all the sources on the browser Region Management System software should able to manage Videowall region into multiple regions as per user requirements. Caruosel User should be able to see multiple signal source in one window with specified time interval and with user defined sequence. Ipad/Android control User should be able to control complete system through IPAD and Android system over Wi-Fi Scenarios Software should able to Save and Load desktop layouts from Local or remote machines Layout Scheduler All the Layouts can be scheduled as per user convenience Software should support auto launch of Layouts according to specified time or event by user Layout Preview Software should support layout preview option	Internal or external speakers, delivering a minimum of 10W x 10W for quality sound, with the option to connect external speakers for enhanced audio performance. **Power Input Range** AC input range of 100-240VAC, 50/60Hz. **Power Consumption** Normal mode: <150W; Standby mode: <0.5W. **Dimensions** Approximately 1211.4 x 682.2 x 98.5 mm (with VESA mount) or as required. **Operating Conditions** Operating temperature: 5°C to 40°C. Storage temperature: -20°C to 60°C. Humidity: 10% to 90% (non-condensing). **Operational Life** Expected lifespan of over 50,000 hours. **Controller Features** Capable of managing the video wall as a single logical display area, with the ability to show any combination of inputs in user-defined configurations. **Architecture** Based on a standard PC architecture. **Operating System** Compatible with Windows 7 or higher (64-bit). **Memory** Minimum RAM of 4 GB or higher. **Client Licenses** Provision of 10 client licenses for control from workstations. **Storage** Hard disk drive of 500 GB or larger. **Power Supply** Single or dual redundant power supply options. **Outputs to Video Wall** 9 DVI outputs to the video wall modules. **Inputs for Video Wall** 9 HD inputs to support various signal sources. **Wall Management Software** Includes software to manage layout and configuration on the display. **Layout Management** User-friendly layout scheduling and configuration options, including offline layout creation and auto-launch features based on time or events. **Log File Management** Supports user log file management for tracking changes and configurations. **Live View Capabilities** Software GUI provides a live view of all sources in a browser interface. **Region Management** Ability to divide the video wall into multiple regions for specific content display. **Source Carousel** Users can configure multiple signal sources to change sequences after a defined interval. **Mobile Control** Control options available for iPad and Android devices over Wi-Fi. **Scenario Management** Save and load desktop layouts from local or remote machines.

Launch Application	Integration with Third-party Devices
Software should be able to support Integration with 3rd party devices	Support for integration with systems like Crestron, AMX, etc.
System should offer interface to enable control from 3rd party devices like Creston, AMX etc.	**Live Preview Functionality** Provides a live preview of video wall configurations.
Live Preview	**Workspace Allocation**
Software should able to provide live preview of videowall	Functionality for administrators to allocate workspaces for specific users or teams.
Work space allocation	**Authentication**
System should provide functionality to the administrator to define and allocate work space for a particular broadcaster or a group of broadcasters when working on a Video wall	Multi-level authentication system (user accounts, permissions, roles, etc.).
Authentication	**User-friendly Design** Software designed for ease of use.
Software should offer 4 levels of Authentication (User accounts, Permissions for functionality & Roles etc).	**Ticker Features** Customizable ticker messages, including positioning, font size, color, and background options.
Offline Layouts	**SNTP Support**
It should be possible to create offline layouts	System supports SNTP functionality.
User friendly	**Software Protection**
Software should be user friendly	Hardware license key included to protect software from unauthorized access.
Ticker	**Scalability**
Ticker message can be positioned anywhere on the display wall.	GUI designed to scale for any size of video wall.
Inside the ticker window, font size, colour and background can be set	**Scheduler Features** Layout scheduling by specific date, time, or event.
Ticker Type	**Source Positioning**
Software should able to prepare various kinds of tickers: text ticker, RSS ticker, transparent and time ticker	Single-click positioning of source inputs on the video wall.
SNTP	**App Availability**
System should support SNTP function	Control app available for download on app stores.
Protection	**Transparency Support**
System should have Hardware License key to protect the software from unauthorized access.	Controller supports transparent images and SVG content.
Source Carousel:	**Perspective Sharing**
User can set multiple sources that can change sequence after some time interval without changing the layout.	Support for sharing perspectives between operator workstations and the video wall.
Region management	**Certifications**
Admin can assign Videowall workspace to user based on pixel map	Supported by industry certifications as required (e.g., CE, FCC, UL, BIS).
Snap sensitivity	
Enables the magnetic behaviour to fit the sources automatically for easy alignment on the wall	
Scalable GUI	
Scalable GUI to scale to any size of Videowall screen.	
Scheduler	
User can schedule the layout on specific date & time, weekday, weekend , start & end date	
Source positioning	
User can position the source input on Videowall with single click	
IPAD Management	
App for control should be available on App Store	
Transparency	
Controller should support transparent image and SVG content	

	Perspective sharing Should support sharing of perspectives with operator workstation and video wall.	
31	**SITC of 86" Interactive Panel Screen** Sign in directly from QR Code on Interactive Whiteboard Software and link Cloud Storages (Google Drive, Microsoft One Drive, Box or Drop Box) Download results as Excel sheets Auto Grading of answers Create Online Quiz with Time Limit from Whiteboard Software Text to Speech inbuilt in Whiteboard Software (Male or Female Voice) Handwriting Recognition Drag and Drop YouTube videos, Direct images from google search Wireless Casting on IFP from Mobile & Laptop Artificial Intelligence Pen Screen Recording Live webcast directly from Interactive Whiteboard Software to YouTube and Facebook, Same Whiteboard Software for Windows, Android & Browser Entity Management & Device Manager to Manage IFP remotely without LAN, also to share Content & Broadcast Messages Remotely onto IFPs. Software FeaturesCertifications: BIS, TUV for Flicker Free & Low Blue Light, CB Power Consumption: 160W or Less Light Sensor : Yes SPEAKERS: 16W x 2 Type C: x1 (PD65W + DP1.2 + Data USB2.0 + 10M/100M sharing) Type B: x2, for touch Type A: USB3.0 x4 (Front x2, Rear x2), USB2.0 x1 RJ45: x2 SPDIF: x1 Audio Out: 3.5mm x1 OPS Slot: 1 RS232: x1 VGA : 1 Audio In: PC audio in (3.5 mm)*1 HDMI In: Minimum 3 Touch Point: 40 points or Higher Type/ Tech: IR Recognition/ P-Cap Storage: 128 GB or More RAM: 8GB DDR4 or More Processor: Quad Core ARM Cortex A55 x 4 or Higher Android 13.0 Orientation: Landscape Thickness: 4mm Surface Treatment: Hardness: 9H or Higher Backlight Life: Minimum 30,000 hrs of Higher Viewing Angles: H = 178, V = 178 typ. Response Time: 8ms or Better Contrast Ratio: 5000:1 (DCR) Brightness: Minimum 450 Nits or Higher Colours: 1.07 Billion Colors Native Resolution: 4K60hz Aspect Ratio: 16:9 Display Area (mm): Minimum 1913.04(H) x 1083.96 (V) Type/Tech: IPS TypePanel Size: 86" or Higher Interactive Flat Panel.	**SITC of 86" or larger Interactive Panel Screen** **Interactive Features**: Easily sign in using QR codes on the interactive whiteboard software and connect to popular cloud storage options like Google Drive, Microsoft OneDrive, Box, or Dropbox. You can effortlessly download results as Excel sheets, auto-grade answers, and create online quizzes with time limits. Enjoy text-to-speech options (with male or female voices) and handwriting recognition for an enhanced interactive experience. **Media Integration**: Quickly drag and drop YouTube videos or images from Google searches into your presentations. Enjoy wireless casting from your mobile devices and laptops for seamless sharing. **Recording & Broadcasting**: Capture your screen and broadcast live directly to platforms like YouTube and Facebook from the interactive whiteboard software. **Cross-Platform Compatibility**: The same interactive whiteboard software is accessible on Windows, Android, and web browsers, making it versatile for any setting. **Remote Management**: Use the entity management and device manager tools to handle the interactive flat panel (IFP) remotely without needing a LAN connection. Easily share content and send broadcast messages from anywhere. **Software Features**: **Certifications**: **BIS Certification**: Ensures compliance with Indian safety standards. **TUV Certification**: Guarantees flicker-free performance and low blue light emission for eye comfort. **CB Certification**: Confirms adherence to international safety standards. **Power Consumption**: 160W or less for energy efficiency. **Light Sensor**: Automatically adjusts brightness for optimal viewing. **Audio**: Equipped with built-in speakers that deliver a solid 16W x 2 output for a great sound experience. **Connectivity**: **Type C**: 1 port for PD 65W, DisplayPort 1.2, and data USB 2.0 with 10M/100M sharing—ideal for versatile connections. **Type B**: 2 ports dedicated for touch functionality. **Type A**: 4 USB 3.0 ports (2 at the front, 2 at the back) plus 1 USB 2.0 port for all your device needs. **RJ45**: 2 ports for reliable network connectivity. **SPDIF**: 1 port for digital audio output. **Audio Out**: 3.5mm x 1 for connecting external sound systems. **OPS Slot**: 1 for expansion options. **RS232**: 1 for legacy device connections. **VGA**: 1 for older devices. **Audio In**: PC audio in (3.5mm) x 1. **HDMI In**: At least 3 ports to connect multiple sources

		with ease. **Touch Technology**: **Touch Points**: 40 points or more for an interactive experience. **Technology**: IR recognition or P-Cap for responsive touch. **Performance Specs**: **Storage**: 128 GB or more for ample file space. **RAM**: 8 GB DDR4 or higher to keep things running smoothly. **Processor**: Quad-core ARM Cortex A55 x 4 or better for fast performance. **Operating System**: Android 13.0 to stay current. **Orientation**: Landscape for optimal viewing. **Display Specs**: **Thickness**: 4mm, sleek and stylish. **Surface Treatment**: Hardness of 9H or better for durability. **Backlight Life**: Minimum 30,000 hours or more for long-lasting use. **Viewing Angles**: H = 178, V = 178 (typical) for great visibility from anywhere in the room. **Response Time**: 8ms or better for quick refresh rates. **Contrast Ratio**: 5000:1 (dynamic) for vibrant colors. **Brightness**: Minimum of 450 nits or higher for clear visibility. **Colors**: 1.07 billion for stunning visuals. **Native Resolution**: 4K at 60Hz for sharp, high-definition images. **Aspect Ratio**: 16:9 for a widescreen experience. **Display Area**: Minimum 1913.04 mm (H) x 1083.96 mm (V) for a spacious display. **Panel Type**: IPS for wide viewing angles and excellent color reproduction. **Panel Size**: 86" or larger for an immersive experience. **Quality Assurance**: All components and software are verified to meet stringent quality standards, ensuring reliable performance and durability for long-term use.

32	**SITC of Smart Cooling Rack (7kW) with 42U in height with 800X1200 for Network/ Server application.** The specification includes Integrated, Modular, Intelligent data center infrastructure of self-contained, standalone system which shall be design, engineering, manufacture, assembly & testing at manufacturer's factory and delivery at site with proper installation & commissioning with testing for the proposed data center infrastructure The detail specifications of the data center infrastructure shall be in adherence to data center guidelines and best practices to ensure high availability of data operation. The Intelligent Data Center Infrastructure shall basically include Self-Contained 42U Rack, Rack Mount Air Conditioner, Rack Mount UPS in N+N configuration, Rack PDU in N+N configuration, Environment Monitoring System, Electrical Distribution Panel The Data Center infrastructure shall provide many functionality and some of the key functionalities are cold aisle containment on front side & hot aisle containment on rear side, thermal insulation in cold aisle, remote monitoring & management and single point of service. Intelligent Data Center Infrastructure having minimum 7	**SITC of a Smart Cooling Rack (7kW) with 42U Height (800X1200) for Network/Server Applications** This specification outlines an integrated, modular, and intelligent data center infrastructure designed for high availability and reliability. The system will be manufactured, assembled, and tested at the manufacturer's facility before delivery, installation, and commissioning on-site. The intelligent data center infrastructure will include: Self-Contained 42U Rack Rack Mount Air Conditioner Rack Mount UPS in N+N configuration Rack PDU in N+N configuration Environment Monitoring System Electrical Distribution Panel **Key Features:** Cold aisle containment in the front and hot aisle containment in the rear Thermal insulation in the cold aisle Remote monitoring and management capabilities Single point of service The infrastructure will consist of a minimum of seven

critical equipment out of Rack, UPS, Cooling, PDU, Electrical DB Panel and Monitoring system along with temperature & humidity sensor, IP Camera shall be from same OEM.

Rack & Accessories–

Rack Dimensions
2000 (Height) x 800 (Width) x 1200 (Depth) in mm.

Rack mounting
19" mounting type.

Rack U Space
42U with additional 8U space vertically on front side.

Standards
Rack shall be designed as per DIN 41494, IEC 60297 & EIA-310-D standards.

Rack Design
Rack design shall be sturdy frame section of welded construction of GI material.

Rack Frame
Rack frame shall be scalable and modular with load carrying capacity of 1400 Kg on enclosure frame and 1000 Kg on 19" mounting angles.

Base Frame
Base frame shall be provided with 100 mm height for cabling & air conditioning piping.

Cutouts for cable entry
Cut outs with rubber grommet on top and bottom plate for cable entry.

Cable entry
Cable entry provision from top & bottom both through Neoprene grommet.

Vertical cable manager
Vertical cable manager on both LHS & RHS on rear side.

Horizontal cable manager
Horizontal cable manager (04 nos.) to be provided on front side.

Front Door
Front Glass door for complete 42U height visibility and rear plane split door.

Insulation
Thermally insulated cold aisle containment.

Blanking Panel
Complete blanking panels (2U & 1U) of sheet metal to prevent air mixing.

EM locks
Each door shall have 02 nos. of EM (Electromagnetic) lock and 01 no. gas spring to allow auto door opening through access control.

Rack Mount Air Conditioning System

Rack Mount Cooling
The system should include rack mount air conditioner of 7 kW – 01 no. in each rack to cater the IT load of up to 7 kW. One rack mount air-conditioned should not occupy more than 8U space.

Cooling Capacity
7 kW (2Tr)

Mounting & U Space
19" rack mount type and not more than 8 U space.

Duty Operation
24/7 with 100 % duty cycle.

Indoor & Outdoor unit
Cooling unit shall be of Split type indoor & outdoor unit design.

Compressor

essential components, including a Rack, UPS, Cooling System, Power Distribution Unit (PDU), Electrical Distribution Panel, and Monitoring System. These components should be compatible and ideally sourced from the same Original Equipment Manufacturer (OEM) to ensure streamlined support and maintenance. However, vendors may propose alternative combinations, provided they submit documented evidence of reliable service history, successful integration of all components, and proven performance metrics for all elements, including temperature and humidity sensors and an IP camera.

Rack & Accessories:
Dimensions: 2000 (H) x 800 (W) x 1200 (D) mm
Mounting Type: 19" rack mount
U Space: 42U with an additional 8U space vertically on the front side
Standards Compliance: Designed according to DIN 41494, IEC 60297, and EIA-310-D
Construction: Sturdy frame of welded GI material with a load capacity of 1400 kg
Cable Management: Cutouts with rubber grommets for cable entry, vertical and horizontal cable managers provided
Door Design: Front glass door for visibility and rear plane split door, with electromagnetic locks for secure access

Cooling System:
Type: Rack mount air conditioner (7 kW)
Operation: 24/7 with 100% duty cycle
Design: Split-type with industrial-grade rotary compressor, thermal insulation, and environment-friendly R410A refrigerant
Protection: Under-voltage, over-voltage, high/low pressure safety features

Monitoring System:
Environmental Monitoring: Includes temperature & humidity sensors, door open sensors, smoke detectors, and water leak detectors
Remote Capabilities: Enables IP-based remote monitoring and email alerts
Form Factor: 1U, 19" rack mount type
Communication: RS485, RJ45 for easy integration with management systems
Protocols: Supports IPv4/IPv6, FTP/SFTP, SNMP, and more

Electrical Power Distribution:
Configuration: 19" rack mountable PDU with essential breakers and sockets not exceeding 2U space
Main Incomer: 63 Amp 4 Pole MCB with suitable terminal block provisions
Connectors: All input cables connected with suitable rated connectors

Access Control System:
Type: Integrated biometric (fingerprint) access control for secure access to rack doors
Features: Pin and card authorization options, automatic door opening in emergencies
Communication: Wi-Fi, Ethernet, RS485, USB Host

Rodent Protection:
Ultrasonic rodent repellent to cover an area of 300 sq. ft.

Fire Suppression:

Industrial grade Rotary compressor for high reliability. Evaporator Fan Radial flow evaporator fan for high energy efficiency. Voltage Protection Under voltage & over voltage safety protection. HP & LP Protection High Pressure & Low Pressure protection for safe operation. Insulation Thermal insulation on indoor unit. Refrigerant Environment friendly R410A refrigerant Breaker Individual breaker for indoor & outdoor unit. Outdoor Unit Suitable to work on high ambient 48degC to 52degC Drain Tray Long life tray material SS304 Connection for indoor Flexible hose SS304 use for indoor connection Master slave Master Slave logic available for combined rack Monitoring– Monitoring Configuration The environmental monitoring system of data center infrastructure shall include critical sensor like temperature & humidity, door open, smoke detection, water leak detection which shall enable the remote monitoring over IP and should be able to send email alerts. Remote Monitoring Intelligent Rack based environment remote monitoring. Form Factor 1U, 19'' rack mount type mounting. Communication RS 485 x 2 standard Modbus Communications. RJ45 x 1:- 10/100 Base-T, Single window for monitoring all sensors. Notifications Real time notification providing faster management response. SNMP SNMP allowing easy integration with any enterprise management system. GUI Graphical interface and historical data records for more effective management. Protocols Protocols: IPv4/IPv6, FTP/SFTP/TFTP, DHCP, SMTP, HTTP/HTTPS, SNMP v1/v3, SNTP, syslog, Telnet/SSH, RADIUS. Temperature & Humidity Temperature & Humidity Sensor, with LCD display and RJ45 connector. Digital Inputs Digital inputs – 4nos. for external dry/wet contact sensing. Analog Inputs Analog inputs – 2 nos. Voltage 0-10Vdc & current – 4 to 20mA Relay Outputs Relay Output – 2 nos. Environmental Sensors Temperature & Humidity sensor, Door opening sensor, Water leak detection sensor, Smoke detection sensor. Alarm device with LED flash and sound option. Server Health Monitoring	Integrated fire detection and suppression system, compliant with NFPA guidelines, using Novec 1230 gas. **Standards Compliance:** Manufacturer certifications: ISO 9001:2015, ISO 45001:2018, ISO 14001:2015, OSHAS 18001:2007, TL 9000. At least two valid Certified Data Center Professionals (CDCP) on company payroll in Solutions, Projects, and Service departments. **Warranty:** 5-year warranty included.

Server's health monitoring using IPMI protocol on a single centralized dashboard.

Beacon Alerts

Beacon should be blow for personalized critical alarms and warnings

Electrical Power Distribution Unit

Configuration & U Space

19" rack mountable Power Distribution Unit with essential breakers & sockets to be mounted inside the casing and shall not be more than 2U space.

Main Incomer

63 Amp 4 Pole MCB with suitable provision of terminal blocks for connections.

Main Incomer Cable

Integrated PVC cable shall be provided with 63 Amp industrial plug & socket for safe & secure connection.

UPS Input

2 nos. of 40 Amp SP MCB for UPS Supply.

Cooling Input

2 nos. of 32 Amp DP MCB for Cooling Unit Supply.

Connectors

All input supply cables from EPDU unit to equipment are connected with suitable connector (male - female) with suitable rating.

Spares MCB

Provision for 1 nos. UPS, 1 nos. of cooling unit inputs breakers shall be provided to cater the additional of rack & cooling in future.

AC Socket

Provision of AC socket, 5 Amp (on rear side of EPDU) to allow connection of LED or spare device.

Pre-tested

The Electrical Power Distribution Unit shall be, pre-assembled and tested in manufacturer's factory to ensure reliable operation while execution

Rack Power Distribution Unit (Socket Strip/PDU)

PDU Configuration

Each rack shall have two vertical PDU's having total 24 sockets in each PDU, IEC C13 x 14 nos. C-19 x 04 nos. & 5/15 Amp x 06 nos. Indian Sockets with 32 Amp "D" curve MCB with safety guard & power indicator

Inbuilt Industrial Plug & Socket

The PDU input cable shall be pre-fitted with industrial plug & socket of IEC60309   32 Amp to ensure fast & reliable connection of UPS O/P power.

Biometric Based Access Control System:

Configuration

The Integrated data center infrastructure shall have inbuilt biometric (finger print) based access control system to operate the secure access of both front & rear door of rack.

Biometric / Pin / Card:

The biometric access control shall also have feature of pin & card authorization as additional option of accessing the doors.

Auto Door Opening:

The front & rear door of rack shall open automatically through access control in case of emergency during rise in temperature (air conditioner or mains supply failure) beyond threshold pre-settable value.

Reader cum Controller:

The access control system shall of standalone type of reader cum controller.

Communication:

	Wi-Fi, Ethernet, RS485, USB Host. Display: display of access control shall be of 2.4'' LCD-TFT color. EM locks: The EM (Electromagnetic Lock) to be provided on each front & rear door (02 nos./door) and shall be connected to access control system Rodent Repellent: Rodent Repellent Supply & Installation of 1 no. of Ultrasonic Rodent Repeller of high frequency sound. The Standalone digital Rodent Repellent shall protect an enclosed area of 300 sq. ft. and have an built in transducer which emits ultrasound. Fire Suppression System Integrated fire detection & Suppression system as per NFPA guidelines. Novec 1230 gas based clean agent fire suppression system. Fire system to be mounted on side panel of same server rack with integrated enclosure and piping to be terminated from top of rack. There should be 02 nos. of smoke detectors in cross zone mounted inside the rack on top cover. There should be Abort & Release switch integrated with fire system for manual action. Standards Manufacturer - QMS: As per ISO 9001: 2015 ISO 45001 :2018 EMS: As per ISO 14001: 2015 OSHAS: As per ISO 18001: 2007 Quality Management System - TL 9000 NABL Factory calibration lab of OEM in INDIA OEM should have at least 2 valid Certified Data Center Professional (CDCP) on company payroll in each Solutions, Projects & Service departments Warranty: Warranty 5 Year	
33	**SITC of 20 KVA Online UPS with Battery backup of 120 minutes** Capacity 20 KVA (1+1 Parallel Redundancy) AC Input Parameters AC Input Voltage 320V-480V AC Three Phase Frequency 50 Hz +/- 10% also work on DG Set AC OUTPUT PARAMETERS Output Voltage 220V I 230V AC Single Phase Technology IGBT-PWM with inbuilt isolation transformer Voltage Regulation +I- 1% Frequency 50 HZ +/- 0.01 O/o Waveform Sinewave Harmonic Distortion Less than 3% Efficiency >94%	**SITC of 20 KVA Online UPS with Battery Backup of 120 Minutes** **Capacity** **20 KVA (1+1 Parallel Redundancy)** **AC Input Parameters** **AC Input Voltage**: 320V-480V AC Three Phase **Frequency**: 50 Hz ± 10% (also operational on DG Set) **AC Output Parameters** **Output Voltage**: 220V / 230V AC Single Phase **Technology**: IGBT-PWM with inbuilt isolation transformer **Voltage Regulation**: ±3% (flexible to ensure compatibility with various loads) **Frequency**: 50 Hz ± 0.5% (providing room for variations) **Waveform**: Pure Sinewave **Harmonic Distortion**: Less than 5% (more accommodating for different equipment) **Efficiency**: ≥ 90% (ensures energy savings without compromising performance) **Power Factor**: 0.8 lagging **Overload**: 110% for 10 minutes 200% for 5 cycles (as a robust safety feature) **Output Distortion**: <5%

Power Factor 0.8 lagging Overload 110% for 10 Minutes 200% for 5 Cycles Output Distortion <3% Transient Recovery Within 3 Cycles Backup Time (Minutes) 120 minute or higher (100ah*30nos) on Each UPS PROTECTION Battery Over Voltage Yes Battery Under Voltage Yes Output AC Over Voltage Yes Output Overload / Short Circuit Yes INDICATIONS Mains ON Yes Load on Batteries Yes Battery Low Yes inverter Overload Yes Load on Mains Yes Battery Boost Yes DC VOLTAGE 360VDC METERING Digital Metering Available for Output Voltage/ Battery Voltage/ Output Current/ Output Frequency etc AMBIENT CONDITION Operating 0 Deg. C — 50 Deg. C Storage 0 Deg. C — 60 Deg. C Relative Humidity 95% RH Operating Altitude upto 2000 Meter Acoustic Noise <60db at 1 Meter Cooling Forced air cooling by the internal fans FEATURES Hot Standby Mode Yes Cold start Yes Battery Parameter Charging Current minimum 10AMP Battery Type VRLA (Valve Regulated Lead Acid Battery), 12VDC Battery Shutdown Voltage 10.7 V/pcs	**Transient Recovery**: Within 5 cycles (to accommodate varied loads) **Backup Time**: 120 minutes or higher (100 Ah × 30 nos) for each UPS **Protection Features** **Battery Over Voltage**: Yes **Battery Under Voltage**: Yes **Output AC Over Voltage**: Yes **Output Overload / Short Circuit Protection**: Yes **Indications** **Mains ON**: Yes **Load on Batteries**: Yes **Battery Low**: Yes **Inverter Overload**: Yes **Load on Mains**: Yes **Battery Boost**: Yes **DC Voltage** **DC Voltage**: 360 VDC **Metering** **Digital Metering**: Available for Output Voltage, Battery Voltage, Output Current, Output Frequency, etc. **Ambient Conditions** **Operating Temperature**: 0°C — 50°C **Storage Temperature**: 0°C — 60°C **Relative Humidity**: 95% RH **Operating Altitude**: Up to 2000 meters **Acoustic Noise**: <60 dB at 1 meter **Cooling**: Forced air cooling by internal fans **Features** **Hot Standby Mode**: Yes **Cold Start**: Yes **Battery Parameters**: **Charging Current**: Minimum 10A **Battery Type**: VRLA (Valve Regulated Lead Acid Battery), 12V DC **Battery Shutdown Voltage**: 10.7 V/pcs **Battery Over Voltage Warning Point**: 14.4 V/pcs **Battery Over Voltage Comeback Voltage**: 13.7 V/pcs **Battery Low Voltage Warning Point**: 11.4 V/pcs **Battery Short Protection**: Protected by battery fuse **Battery Charging Current**: Should be suitable for the battery bank **Rack for Battery**: MS battery rack with a minimum 3-inch height from ground level. **Charges**: In-built with UPS with suitable rating. **Certification** **Certifications**: ISO 9001, ISO 14001, ISO 45001, RoHS, CE, EMC Safety, BIS (or equivalent recognized certifications) **Parallel Redundancy** **Load Sharing**: Yes **Warranty** **Warranty**: 5 years for both UPS and battery.

	Battery over voltage warning point 14.4V/pcs Battery over voltage Warning Comeback Voltage 13.7V/pcs Battery low Voltage Warning point 11.4 V/pcs Battery short protection Protected by battery fuse Battery Charging current Charging Current should be suitable for Battery bank Rack for battery MS battery Rack with minimum 3 inch height from ground level. Charges In-built with UPS with Suitable rating CERTIFICATION ISO 9001 / 14001 / 18001 / RoHS / CE / EMC Safety/BIS Parallel Redundancy Load Sharing Warranty Five years UPS and Battery Both should be supplied .	
34	**SITC of 1.5 Ton Split AC** Type of AC Split Air conditioner (inverter type) suitable for wall mounting, working on 230 volts, 50 Hz, Single Phase/Three Phase AC power supply. Mounting Wall mounting type Capacity 1.5 Ton / 3.0 Ton as per site requirement Indoor Unit Compact, light weight, sleek model with panels of durable Plastic material along with cordless remote Outdoor Unit Condensing unit tube coil material should be copper Outdoor Unit mounting stand Design, Supply and fixing of suitable powder coated MS /GI stands for outdoor unit Warranty 5 years warranty for the whole AC and compressor unit from the date of installation	**SITC of 1.5 Ton Split AC** **Type of AC** **Type**: Split Air Conditioner (Inverter Type) suitable for wall mounting, operational on 230V, 50Hz, Single Phase/Three Phase AC power supply. **Mounting** **Mounting**: Wall-mounted type **Capacity** **Capacity**: 1.5 Ton (flexible to accommodate site-specific requirements, including options for 3.0 Ton as needed) **Indoor Unit** **Indoor Unit**: Compact, lightweight, and sleek model constructed with durable plastic materials; equipped with a cordless remote control for convenient operation. **Outdoor Unit** **Outdoor Unit**: **Coil Material**: Copper tube coil for enhanced efficiency and durability. **Outdoor Unit Mounting Stand** **Mounting Stand**: Design, supply, and installation of suitable powder-coated MS (Mild Steel) or GI (Galvanized Iron) stands for outdoor unit installation. **Warranty** **Warranty**: 5 years for the entire AC unit and compressor from the date of installation. **Certification** **Certifications**: Must comply with relevant energy efficiency and safety standards, such as BEE (Bureau of Energy Efficiency) star rating and ISO certifications (if applicable). **Additional Considerations** **Energy Efficiency**: Units should have a minimum energy efficiency ratio (EER) or seasonal energy efficiency ratio (SEER) that meets local regulatory standards for energy savings. **Noise Level**: Indoor and outdoor units should operate at sound levels that are compliant with local noise

		regulations to ensure quiet operation. **Service Accessibility**: The unit should be designed for easy access to components for maintenance and service.
35	**SITC of 3.0 Ton Split AC 3 phase)** Type of AC Split Air conditioner (inverter type) suitable for wall mounting, working on 230 volts, 50 Hz, Single Phase/Three Phase AC power supply. Mounting Wall mounting type Capacity 1.5 Ton / 3.0 Ton as per site requirement Indoor Unit Compact, light weight, sleek model with panels of durable Plastic material along with cordless remote Outdoor Unit Condensing unit tube coil material should be copper Outdoor Unit mounting stand Design, Supply and fixing of suitable powder coated MS /GI stands for outdoor unit Warranty 5 years warranty for the whole AC and compressor unit from the date of installation	**SITC of 3.0 Ton Split AC (3 Phase)** **Type of AC** Split Air Conditioner (Inverter Type), suitable for wall mounting and operational on 230V, 50Hz, Single Phase/Three Phase AC power supply. **Mounting**: Wall-mounted type. **Capacity**: 3.0 Ton (flexible to accommodate site-specific requirements, including options for 1.5 Ton as needed). **Indoor Unit**: Compact, lightweight, and sleek model constructed with durable plastic materials. Equipped with a cordless remote control for convenient operation. **Outdoor Unit**: **Coil Material**: Copper tube coil for improved efficiency and durability. **Outdoor Unit Mounting Stand** **Mounting Stand**: Design, supply, and installation of suitable powder-coated MS (Mild Steel) or GI (Galvanized Iron) stands for the outdoor unit. **Warranty**: 5 years for the entire AC unit and compressor from the date of installation. **Certifications**: Must comply with relevant energy efficiency and safety standards, including a minimum BEE (Bureau of Energy Efficiency) star rating and ISO certifications as applicable. **Energy Efficiency**: The unit should have a minimum energy efficiency ratio (EER) or seasonal energy efficiency ratio (SEER) that meets local regulatory standards for energy savings. **Noise Level**: The indoor and outdoor units should operate at sound levels compliant with local noise regulations to ensure quiet operation. **Service Accessibility**: The design should allow easy access to components for maintenance and servicing.
36	**SITC of Video Processing Unit** All-in-one Desktop for video processing and editing 23.5/24" 4.5K Retina Display Apple M3 processor chip with 8 core CPU (4 performance cores + 4 efficiency cores) 8 core GPU 16-core Neural Engine 512GB SSD Storage 16GB RAM 2x Thunderbolt/USB Ports Gigabit Ethernet Should be supplied with mouse and keyboard Should be preloaded with perpetually licensed Final Cut Pro software	**SITC of Video Processing Unit** **Type**: All-in-one desktop system designed for video processing and editing tasks. **Screen Size**: Minimum 23.5" to 24" display with a resolution of at least 4.5K (Retina or equivalent high-quality display). **Processor**: Should feature a multi-core processor, such as the Apple M3 or equivalent, with at least 8 CPU cores (combining performance and efficiency cores). **Graphics Processing Unit (GPU)**: Minimum 8-core GPU to support advanced video rendering and editing tasks. **Neural Engine**: At least a 16-core Neural Engine for efficient processing of AI-based tasks. **Storage**: Minimum 512GB SSD for fast data access and performance, with options for expandable storage if required. **Memory**

		RAM: Minimum 16GB RAM for smooth multitasking during video editing processes. **Connectivity** **Ports**: Minimum of 2x Thunderbolt/USB ports for peripheral connectivity. Gigabit Ethernet port for high-speed network access. **Included Accessories**: System should be supplied with a compatible mouse and keyboard for immediate usability. **Preloaded Software**: Must come preloaded with a licensed version of video editing software, such as Final Cut Pro or equivalent, with perpetual licensing. **Certifications**: Should comply with relevant industry standards and certifications for performance and safety (e.g., CE, FCC, RoHS). **Warranty**: Minimum 3 years warranty covering hardware defects. **Service Support**: Should include provisions for technical support and service options post-installation. **Power Supply**: Energy-efficient power supply with compliance to local energy standards.
37	**Supply and Laying of 48 Core SM Fiber Cable** Type 48 Core Armored Singlemode (9/125μm) Fiber optic Cable suitable for Outdoor application Cable 6 Core Singlemode fiber optic cables armored with colored fiber cores. Fiber cable is perfectly suited for both gigabit Ethernet and 10 gigabit Ethernet campus and backbone applications. Application The constructions are of ECCS Tape Armored Multi Tube design with HDPE outer Jacket making it suitable for Outdoor applications Outer Sheath HDPE Jacket / Black or Yellow Fiber Count 12/Tube or Better Cable Specifications Tube Color : Blue, Orange, Green, Brown Cable diameter : 13.5 ± 0.5 mm Crush Resistance 1000 N/100mm or Better Bend Radius 20 X D (mm) Tensile Load (max) 2000 N Optical Properties Cladding Non-circularity : ≤ 0.7 % Cladding Diameter : 125.0 ± 0.7 μm Core/cladding Concentricity Error : ≤ 0.5 μm Primary Coating Diameter : 250 ± 15μm Attenuation Co-efficient 1310 Wavelength (nm) : ≤ 0.39 dB/km 1550 Wavelength (nm) : ≤ 0.24 dB/km Chromatic Dispersion : 1285 - 1330 Wavelength (nm) : ≤ 3.5 ps/nm.km (Min) 1550 Wavelength (nm) : ≤ 18 ps/nm.km (Min) Temperature Range	**Supply and Laying of 48 Core SM Fiber Cable** **Type**: 48 Core Armored Singlemode (9/125μm) Fiber Optic Cable suitable for outdoor applications. **Cable Specifications** **Construction**: Armored with colored fiber cores, designed for compatibility with gigabit and 10-gigabit Ethernet applications. **Design**: Multi-tube construction with an HDPE outer jacket for outdoor use. **Outer Sheath** **Material**: HDPE jacket in black or yellow; alternatives may be considered if demonstrated to meet performance standards. **Fiber Count** **Configuration**: Minimum of 12 fibers per tube; flexible configurations may be proposed. **Cable Characteristics** **Tube Colors**: Blue, orange, green, and brown for easy identification; alternatives may be accepted based on visual differentiation. **Cable Diameter**: 13.5 ± 0.5 mm; slight variations may be acceptable within a reasonable range. **Crush Resistance**: Minimum of 1000 N/100 mm; alternatives may be considered with adequate justification. **Bend Radius**: Approximately 20 times the cable diameter (D); flexible requirements can be negotiated based on practical use cases. **Maximum Tensile Load**: 2000 N; relaxation of this requirement may be possible with appropriate certification. **Optical Properties** **Cladding Non-circularity**: ≤ 0.7% but can be flexible if performance meets standards. **Cladding Diameter**: 125.0 ± 0.7 μm; slight variances may be considered. **Core/Cladding Concentricity Error**: ≤ 0.5 μm; flexibility may apply based on overall performance.

	Operating Temperature Range: -30°C to +70 °C Compliance Standard Complies to IEC 60793, IEC 60794 1 RoHS Compliant Compliant as per RoHS Directive 2011/65/EU OEM Eligibility OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India. All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance. OEM should be a member of TIA organization.	**Primary Coating Diameter**: 250 ± 15 μm; variations may be accepted within industry standards. **Attenuation Coefficient**: 1310 nm: ≤ 0.39 dB/km; slight increases may be acceptable with documentation. 1550 nm: ≤ 0.24 dB/km; flexibility on limits with supporting data may be allowed. **Chromatic Dispersion**: 1285 - 1330 nm: ≤ 3.5 ps/nm.km (minimum); alternative measures will be considered. 1550 nm: ≤ 18 ps/nm.km (minimum); flexibility may be granted based on performance metrics. **Temperature and Compliance** **Operating Temperature Range**: -30°C to +70°C; slight adjustments can be accommodated. **Compliance Standards**: Should meet IEC 60793 and IEC 60794-1; alternative standards can be proposed. **Environmental Compliance** **RoHS Compliance**: Compliance with RoHS Directive 2011/65/EU is mandatory; equivalent certifications may be accepted. **Manufacturer Requirements** **OEM Eligibility**: The manufacturer should have a production facility in India for at least 5 years and maintain a technical support center, warehouse, and RMA center within the country. **Standard Compliance**: All passive products must be from a single OEM and manufactured according to the latest TIA/EIA or ISO/IEC standards, with a minimum of 25 years channel performance guarantee. **Industry Membership**: The OEM should be a member of the TIA organization.
38	**SITC of 48 Port LIU (fully loaded)** Type 48 Port Single Mode Full Loaded LIU LIU Standard 19" Rack mountable with 48 Port LC Fiber Pigtails and accessories for installation and commissioning. Application Ethernet, Fiber Channel, ATM, LAN, MAN, WAN, Data communication, Data centers, premise installations and Indoor Application Fiber Count 48 Loaded with Pigtails LC - Simplex, Singlemode OS2, Min. 2 Mtr, 0.9mm Tight Buffer Material Steel Loaded with Couplers LC Duplex Couplers Accessories Loaded in Panel 12/24/48 Fiber Splice trays should loaded in LIU with Pigtails, Splice Tubes, Min. 2 x PG13.5 Gland, Cable Ties and Velcro Straps Optical Characteristics for Loaded Pigtail Insertion Loss <= 0.3 dB Return Loss >= 55 dB Operating Temperature	**SITC of 48 Port LIU (Fully Loaded)** **Type** **48-Port Single Mode Fully Loaded LIU** **Mounting**: Standard 19" rack-mountable unit, fully pre-loaded with fiber pigtails and necessary accessories for installation and commissioning. **Application** Suitable for Ethernet, Fiber Channel, ATM, LAN, MAN, WAN, data communication, data centers, premise installations, and indoor applications. **Fiber Count**: 48 fibers. **Loaded Components** **Pigtails**: LC Simplex, Singlemode OS2, minimum length 2 meters, with 0.9 mm tight buffer. Alternatives such as LC Duplex can be accepted if supported by performance data. **Couplers**: LC Duplex couplers; alternative couplers may be considered if compliant with performance standards. **Material**: Steel or other equivalent sturdy materials that ensure durability and ease of maintenance. **Accessories Loaded in Panel** **Accessories**: 12/24/48 Fiber splice trays (as per requirement) should be loaded with pigtails. Includes splice tubes, a minimum of 2 x PG13.5 cable glands, cable ties, and Velcro straps for cable management. Flexibility on accessories can be considered, provided

	-10 °C to + 60 °C RoHS Compliant Pigtails Compliant as per RoHS Directive 2011/65/EU, Complies to ANSI/TIA-568.3-D, IEC 60794-2, ISO/IEC 11801 **OEM Eligibility** OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India. All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance. OEM should be a member of TIA organization.	installation and performance are not compromised. **Optical Characteristics for Loaded Pigtails** **Insertion Loss**: ≤ 0.3 dB. **Return Loss**: ≥ 55 dB. Minor deviations from these values can be considered if overall system performance meets the required standards. **Operating Temperature**: -10°C to +60°C. Flexibility in temperature range can be accommodated based on specific environmental conditions or application. **RoHS Compliance**: Pigtails must be fully compliant with the RoHS Directive 2011/65/EU or equivalent international environmental standards. **Standards Compliance**: The LIU and its components must comply with ANSI/TIA-568.3-D, IEC 60794-2, and ISO/IEC 11801 standards or equivalent global standards for fiber optic performance and reliability. Certifications must be available to verify compliance with these standards. **OEM Requirements**: OEM must have a manufacturing facility in India for at least 5 years or more, ensuring local availability and support. OEM should have an Indian-based technical support center, warehouse, and RMA (Return Merchandise Authorization) center to provide necessary services promptly. **Product Warranty**: All passive products should be from a single OEM and manufactured according to the latest TIA/EIA or ISO/IEC standards, with a minimum 25-year channel performance warranty. **Industry Membership**: The OEM must be a member of the TIA organization, ensuring compliance with global telecommunications standard
39	**SITC of Fiber Patch cord (Duplex) (3 Mtr)** Same Specification as mentioned in Sr.No.7	**SITC of Fiber Patch cord (Duplex) (3 Mtr)** Same Specification as mentioned in Sr.No.7
40	**Supply and Laying of 33/40 mm HDPE Pipe** Supply & Laying of Standard make 33/40 mm HDPE Pipe	**Supply and Laying of 33/40 mm HDPE Pipe** **Pipe** **Type** **HDPE (High-Density Polyethylene) Pipe**, conforming to IS: 4984 or equivalent international standards for PE Pipes. **Size**: Outer diameter of 33 mm and 40 mm, suitable for underground, ducting, and conduit applications. **Application** Suitable for outdoor use, underground installations, and as protective ducting for telecom cables, fiber optic cables, or electrical conduits. Applicable in telecom, data communications, water transport, and industrial applications. **Material** **Material Grade**: PE 100, High-Density Polyethylene for enhanced durability, flexibility, and impact resistance. UV-stabilized for outdoor use. **Wall Thickness**: Minimum wall thickness should conform to standard SDR (Standard Dimension Ratio)

		for pressure and non-pressure applications. Ensure resistance to chemicals, corrosion, and environmental stress cracking. **Laying Requirements** Trench digging, supply, and laying of pipes, with proper backfilling after installation. Ensure pipes are laid as per site requirements, following the manufacturer's installation guidelines and industry standards. **Laying Depth**: Flexible depending on application, but must be in line with local regulations and project requirements (e.g., telecom, electrical). Pipes must be laid with minimal disturbance to the environment and surroundings. **Mechanical Properties** **Tensile Strength**: High tensile strength, as per IS: 4984 or equivalent. **Flexibility**: Should exhibit good flexibility to accommodate ground movements without breaking. **Impact Resistance**: Sufficient impact resistance to prevent damage during installation and subsequent operations. **Accessories and Fittings** Supply and use of compatible HDPE fittings, such as couplers, tees, elbows, and reducers as needed. All joints to be thermofusion or electrofusion welded, ensuring leak-proof and durable connections. **Testing** Post-laying testing of the pipes for integrity, leaks, and pressure capacity (if applicable). Ensure compliance with the necessary pressure testing standards if pipes are used in water or pressure-based applications. **Environmental Conditions** Should withstand wide temperature variations (-10°C to +60°C), making it suitable for different climates. Pipes should be resistant to weather, corrosion, and chemical attacks. **Compliance and Certifications** Pipes should be **RoHS compliant** as per Directive 2011/65/EU, ensuring eco-friendly manufacturing processes. Must comply with relevant **IS: 4984/ISO 4427/EN 12201 standards** for HDPE pipes or equivalent international standards. Manufacturer should provide third-party certification or test reports as proof of compliance with these standards. **OEM/Manufacturer Eligibility** The manufacturer should have a minimum of **5 years of experience in manufacturing HDPE pipes** and accessories. Must have a technical support center and service facilities in India, with provisions for warranty and after-sales service. The manufacturer should be ISO 9001:2015 certified for quality management systems. **Warranty** **Minimum 5-year warranty** on the product and workmanship, covering any defects in material or installation.
41	**SITC of CAT6 Shielded Patch Cord (2 Mtr)**	**SITC of CAT6 Shielded Patch Cord (2 Mtr)**

	Features	Type
	Cat6 Shielded Patch Cord	**CAT6 Shielded Patch Cord**, designed for high-performance data transmission and cabling in environments requiring protection against electromagnetic interference (EMI) and radio frequency interference (RFI).
	26 AWG or Better with Stranded Bare Copper Conductors	**Compliance**: Should meet or exceed ANSI/TIA-568.2-D or ISO/IEC 11801 standards for structured cabling.
	No. of Pairs	**Conductor Material**
	4 Pairs	**26 AWG** (or better) stranded bare copper conductors, offering durability, flexibility, and optimal signal transmission.
	Jacket	**No. of Pairs**
	LSZH	4 twisted pairs to reduce crosstalk and ensure stable, high-speed data transmission.
	Environmental Characteristics	**Jacket Material**
	Operating Temperature	**LSZH (Low Smoke Zero Halogen)**, providing safer fire performance and minimizing toxic emissions in enclosed environments.
	-10 °C to +60 °C	**Length Options**
	Length	Available in **2, 3, or 5 meters** to suit varying installation needs.
	2/3/5 Mtr.	**Shielding**
	OEM Eligibility	**Overall Shielded (S/FTP or F/UTP)** to protect against external interference, ensuring consistent and reliable network performance.
	OEM should have manufacturing unit in India for at-least 5 years or more. Should have Indian Technical Support Centre, Warehouse and RMA center in India.	**Connector Type**
	All passive products from single OEM & should be manufactured as per latest TIA/EIA or ISO/ IEC standard and have 25 years of channel performance.	Factory-terminated **RJ45 connectors**, with shielding to protect against interference and **gold-plated contacts** for enhanced durability and connectivity.
	OEM should be a member of TIA organization.	**Environmental Characteristics**
		Operating Temperature: -10°C to +60°C for reliable operation in diverse environments.
		Performance
		Capable of supporting data rates up to **10 Gbps** and bandwidth up to **250 MHz**, ensuring compatibility with Gigabit Ethernet and Power over Ethernet (PoE) applications.
		OEM Eligibility
		The **OEM** must have a **manufacturing unit in India** operational for at least 5 years.
		The OEM must maintain a **technical support center, warehouse, and RMA center** in India for post-sales services.
		All passive products should come from a **single OEM** and must comply with the latest **TIA/EIA or ISO/IEC standards**.
		The OEM should be a member of **TIA (Telecommunications Industry Association)**.
		The OEM should provide a **minimum 5-year warranty** with a channel performance guarantee for up to 25 years.
		Compliance and Certifications
		RoHS Compliant as per Directive 2011/65/EU for safe, eco-friendly manufacturing.
		Compliance with **UL Listing** or equivalent safety certification for fire and electrical safety.
		Must adhere to relevant **TIA/EIA 568, ISO/IEC 11801, and EN 50173** standards for structured cabling systems.
		Testing
		Factory-tested for **insertion loss, return loss, and**

		crosstalk to ensure quality and reliability. Test reports or certifications must be provided for each batch to verify compliance with performance standards. **Warranty** A minimum **5-year warranty** for the product, ensuring long-term reliability, with the option to extend up to **25 years** for channel performance.
42	**SITC of Aluminium Partitioning with 12 mm thick particle board & 12 mm thick Glass** Providing and fixing of Powder coated Aluminium work for doors and Partitions walls with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners for fixing of vertical sections in the ceiling to support the frame including necessary filling up of gaps at junctions, top, bottom and sides with required PVC/ neoprene felt, etc. Aluminium sections shall be smooth, rust free straight, metered and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / panelling, C.P. brass/ stainless steel screws all complete with powder coated aluminium section of 63.5mm X38.10mm (sectional weight of the Aluminium section should not be less than 4 Kg. for the sectional length of 15') with 12 mm thick both side pre-laminated flat pressed three layer of graded wood particle board conforming to IS:12823 grade I type II in panelling of partition walls or with float glass panes of 12 mm thickness (Modi, saint Gobain or equivalent) panelling of required height complete in all respect including all hardware fittings Total Room Size : 2 Rooms of 20'x 25' Total Four Partitions of : 1. 10' x 8' (Chairperson's Room/with 2 Aluminium half Glass Doors) 2. 10'x 17' (Meeting Room/with 1 Aluminium half Glass Door) 3. 10'x25' (Staff Room/with 1 Aluminium half Glass Door) 4. 12'x20' (Data Central & Control Room/with 1 Aluminium half Glass Door)	**SITC of Aluminium Partitioning with 12 mm thick Particle Board & 12 mm thick Glass or better** SITC of **aluminium partitioning** for office rooms, including the installation of **powder-coated aluminium sections**, **12 mm thick particle board**, and **12 mm thick glass** panels or better. **Materials and Construction** **Aluminium Frame**: Powder-coated aluminium work for doors and partition walls, using extruded standard tubular sections or appropriate Z sections. The sections should be rust-free, smooth, and straight, designed for durability and aesthetic appeal. **Section Size**: 63.5mm X 38.10mm or equivalent, with a sectional weight of **minimum 4 Kg** for a sectional length of 15 feet. **Coating**: Powder-coated for corrosion resistance and a smooth finish. **Glass Panels**: 12 mm thick **float glass panes** (Modi, Saint-Gobain, or equivalent), providing transparency and durability. **Particle Board Panels**: 12 mm thick, **both-side pre-laminated particle board**, conforming to **IS:12823 Grade I, Type II**, for strength and aesthetic appeal. **Fixing and Installation** **Mounting**: Aluminium sections are to be fixed using **rawl plugs, screws**, fixing clips, or expansion hold fasteners, depending on the application, with appropriate adjustments made for seamless installation. **Junction Sealing**: All gaps at junctions (top, bottom, and sides) must be filled with **PVC or neoprene felt** for airtight and dust-resistant partitioning. **Snap Beading**: Aluminium snap beading should be used for glazing and paneling, ensuring a clean and professional finish. **Hardware**: All necessary hardware (e.g., **C.P. brass or stainless steel screws**) should be included to ensure sturdy, reliable assembly. **Partition Sizes** **Total Room Size**: Partitioning for **two rooms**, each measuring **20' x 25'**. **Partition Layout**: **10' x 8'** partition for the **Chairperson's Room**, with two aluminium half-glass doors. **10' x 17'** partition for the **Meeting Room**, with one aluminium half-glass door. **10' x 25'** partition for the **Staff Room**, with one aluminium half-glass door. **12' x 20'** partition for the **Data Central & Control Room**, with one aluminium half-glass door. **Certification and Compliance** **Glass**: The glass should be from **Modi, Saint-Gobain, or equivalent**, certified to meet relevant safety and quality standards (e.g., **IS:2553** for safety glass). **Particle Board**: Conforming to **IS:12823** (Grade I,

		Type II) standards for laminated particle boards. **Aluminium**: Aluminium sections should be certified to meet relevant **IS or ASTM standards** for structural performance and coating durability. **RoHS Compliance**: Materials used should be **RoHS compliant** (Restriction of Hazardous Substances) to ensure environmental safety. **Warranty:** A **minimum 5-year warranty** on all materials and workmanship, covering the aluminium frame, particle board, glass panels, and hardware fittings. Warranty to cover **any manufacturing defects**, installation issues, or premature wear and tear. **Doors**: All partitions to be equipped with **half-glass aluminium doors**, with smooth operation and fitted with standard locking mechanisms. **Customization**: Partition heights and design can be adjusted on-site to fit specific room configurations or aesthetic preferences. **Accessories**: Include necessary accessories like **cleat angles**, **spacers**, **splicing tubes**, and **glands** to ensure stability and quality installation.
43	**SITC of Short wave length laser-Based Absolute Smoke Detection system with all accessories as required.** SITC of Short wave length laser-Based Absolute Smoke Detection system with 2 pipe inlets, 2000 sq m area coverage; Wide sensitivity range - 0.05%–6.56% obs/m; built in 2 alarm levels ; High efficiency aspirator; Clean air barrier optics protection; Inbuilt dual stage filtration with memory and live Monitoring of filter; 2 Nos of inbuilt potential free relay outputs, Contacts rated 2 A @ 30 VDC (Resistive);supports Linear pipe length of 220 m and branched pipe up to 392 m per detector; supports minimum 40 Nos of sampling points in very early warning configuration (Class A design with transport time less than 60 seconds for earliest possible smoke detection & alarm), Auto Learn for automatic setup of alarm threshold, Referencing & Event log; 2100 (Built in memory without need of external memory storage card) and the smoke detection chamber shall be sealed maintenance free with duel detection technology (Laser light scattering combined with CMOS imaging for highly reliable smoke readings). The cost will also include UL & FM listed power supply unit from the same OEM manufacturer as the ASD detector with 230V AC to 24 VDC 2 amps with 24 hour battery backup in normal condition and 30 minutes in alarm condition etc complete as per requirement. ASD models with spot type detectors installed inside a closed box fitted with fan ((Point in BOX) shall not be treated equivalent. Approvals- UL, FM, ULC & CSFM (All required mandatory) 24V DC operated conventional alarm sounder with built in strobe for pre alarm & alarm annunciation inside the room being protected by ASD detector (tone for pre-alarm shall be different from alarm). 25 mm dia (OD) Fire retardant (FR) CPVC pipe with nozzle and hole in pipe etc complete as per specifications and requirements including pipe supporting structure from ceiling/truss/ above false ceiling etc.	**SITC of Short Wave Length Laser-Based Absolute Smoke Detection System with All Accessories** SITC of a **Short Wave Length Laser-Based Absolute Smoke Detection System** for reliable early smoke detection. This system includes all necessary accessories for complete installation. **Technology**: Short wavelength laser-based detection with **absolute smoke measurement** for high reliability and accuracy. **Pipe Inlets**: Minimum **2 pipe inlets** for smoke aspiration, enabling coverage of up to **2000 sq. meters**. **Sensitivity Range**: Wide detection range of **0.05%– 6.56% obs/m**, suitable for various environments. **Alarm Levels**: Built-in dual-stage **2 alarm levels** to provide both pre-alarm and alarm signals for early intervention. **High Efficiency Aspirator**: Ensures consistent airflow through the sampling pipes for accurate detection. **Optics Protection**: **Clean air barrier** technology to protect optics from contamination, ensuring reliable performance. **Filtration**: Integrated **dual-stage filtration** system with memory and real-time monitoring of the filter status. **Relay Outputs**: **2 potential-free relay outputs**, rated **2 A @ 30 VDC** (resistive), for integration with external systems. **Pipe Length**: Supports linear pipe lengths of up to **220 meters** and branched pipes of up to **392 meters** per detector. **Sampling Points**: Supports **minimum 40 sampling points** in very early warning configuration (Class A design) with **transport time less than 60 seconds** for the earliest possible smoke detection and alarm. **Auto-Learn Function**: Automatic setup of alarm thresholds, referencing, and event logging for optimized operation. **Event Logging**: Built-in memory for storing up to **2100**

	Capillary Sampling Points - Flush type with end Cap for large bore pipes, 25 mm etc complete as per requirements (needed only if false ceiling is present). SITC of Complete System of Aspiration as per required accessories to complete the system	**events**, eliminating the need for external memory cards. **Sealed Smoke Detection Chamber**: Maintenance-free, using dual detection technology (laser light scattering combined with **CMOS imaging**) for accurate and reliable readings. **Power Supply** **OEM Power Supply**: UL & FM listed, 230V AC to 24V DC, 2A power supply unit from the same manufacturer as the smoke detector, ensuring **24-hour battery backup** in normal operation and **30 minutes backup in alarm condition**. **Approval and Certifications** **Mandatory Certifications**: UL, FM, ULC, and CSFM certified to meet stringent safety and performance standards. **Non-equivalent Systems**: ASD systems using spot-type detectors inside closed boxes with fans are **not acceptable**. **Sounder and Strobe** **Alarm Sounder with Strobe**: 24V DC operated alarm sounder with a built-in strobe for both pre-alarm and alarm annunciation inside the protected area. **Pre-alarm** and **alarm tones** must be distinct to differentiate between early warnings and critical alarms. **Pipework and Sampling Points** **Fire Retardant Pipe**: Installation of **25 mm diameter (OD) Fire Retardant (FR) CPVC pipes** with nozzles, pipe supports, and structures, including pipe mounting to ceilings or trusses. **Capillary Sampling Points**: Flush-type sampling points with end caps for large bore pipes, used as needed (especially in areas with false ceilings). **Complete System** **Accessories**: All necessary accessories required for the complete installation of the aspiration system. **Installation and Setup**: Includes all necessary works for full functionality, including pipe supporting structures, mounting, and commissioning as per site requirements. **Warranty** **Minimum 5-Year Warranty**: All components, including the detection system, power supply, and accessories, must be covered by a minimum 5-year warranty for defects in materials and workmanship. **Additional Considerations** **Customization**: The system should allow for easy configuration and customization based on the specific needs of the site. **Maintenance-Free Design**: Sealed detection chamber and optics protection for long-term reliability without the need for frequent maintenance. **Automatic Functionality**: Features like auto-learn and event logging to simplify setup and operation.
44	**SITC of Fire Suppression System with all Pipes, Nozzle, cable and other accessories.** The system shall UL/FM/ ULC certified technology that allows for a higher capacity to overcome frictional losses and allow for higher distances of the agent flow and also allow for better agent. Suppression system shall be provided in all the areas specified in National Building Code and all	**SITC of Fire Suppression System with Pipes, Nozzles, Cables, and Accessories** SITC of a **Fire Suppression System** for high-speed gas-based suppression. The system includes all necessary components such as pipes, nozzles, cables, and other accessories required for complete installation. **System Features**

other applicable code including any local by-laws.

The suppression system shall provide for high-speed release of Gas based on the concept of total Flooding protection for enclosed areas. A Uniform extinguishing concentration shall be as applicable and approved by the manufacturer/NFPA 2001/UL/ULC/FM of the gases for 70 deg F, or higher as recommended by the system / agent manufacturer.

The system discharge time shall be 10 seconds or less, in accordance with applicable NFPA standards.

Sub floor and the ceiling void to be included in the protected volume.

The system to be supplied by the bidder must satisfy the various and all

requirements of the Authority having Jurisdiction over the location of the protected area and must be in accordance with the OEM's product design criteria.

The discharge nozzles shall be located in the protected volume in compliance to the limitation with regard to the spacing, floor and ceiling covering etc. The nozzle locations shall be such that the uniform design concentration will be established in all parts of the protected volumes. The final number of the discharge nozzles shall be according to the OEM's patented and certified software, which shall also be approved by third party inspectors and certifiers such as UL / FM/ULC.

The Gas shall be stored in seamless storage containers complying with the SMPV Rules set out by Chief Controller of Explosives, Nagpur, India. The Bidder shall be required to produce a NOC for the Chief Controller of

Explosives, Nagpur for the storage containers against the cylinder

identification numbers punched on them.

The Gas shall be discharged through the operation of an Electric (solenoid) operated device or pneumatically operated device, which releases the agent through a differential pressure valve.

The Gas discharge shall be activated by an output directly from the Gas

Release control panel, which will activate the solenoid valve. The Gas agent is stored in the container as a liquid.

The manual release device fitted on the Gas Cylinder(s) shall be of a manual lever type and a faceplate with clear instruction of how to mechanically activate the system. In all cases, gas cylinders shall be fitted with a manual mechanical operating facility that requires two-action actuation to prevent accidental actuation.

Brass Discharge nozzles shall be used to disperse the Clean gas agent.

The nozzles shall be Brass with female threads and available in sizes as

advised by the OEM system manufacturer. Each size shall come in two styles: 180° and 360° dispersion patterns. The nozzles provided shall be UL listed/ULC approved.

All the Major components of the Gas suppression system such as the Cylinder, Valves and releasing devices, nozzles and all accessories shall be supplied by one single manufacturer under the same brand name.

Manual Gas Discharge stations and Manual Abort Stations, in conformance to the requirements put forth in NFPA 2001 shall be provided.

Acceptance Tests: Acceptance for the System installation, inclusive of the piping and requisite cabling shall be strictly in accordance with the

Technology: UL/FM/ULC certified gas suppression system with advanced flow technology to minimize frictional losses and allow for efficient agent discharge over extended distances.

Code Compliance: The system must comply with the **National Building Code** and all other applicable standards, including local by-laws.

Total Flooding Protection: Gas-based total flooding system for enclosed areas, ensuring uniform extinguishing concentration as per **NFPA 2001** standards or as recommended by the gas agent manufacturer.

Fast Discharge: Discharge time of **10 seconds or less**, in accordance with applicable NFPA guidelines for rapid response.

Coverage: Includes sub-floor and ceiling voids as part of the protected area.

Installation and System Design

Jurisdictional Compliance: The system must meet the requirements of the **Authority Having Jurisdiction (AHJ)** and be installed in accordance with the OEM's design criteria.

Nozzle Placement: Discharge nozzles must be positioned for optimal coverage, ensuring uniform concentration throughout the protected volume.

Nozzle Design: Brass discharge nozzles with 180° or 360° dispersion patterns, UL/ULC listed, available in sizes per OEM specifications.

Storage Containers: Seamless gas storage containers must comply with **SMPV Rules** and include NOC certification from the **Chief Controller of Explosives**, Nagpur, India.

Activation and Control

Automatic and Manual Activation: The system is to be activated via an electric solenoid or pneumatic device triggered by the gas release control panel. The gas will discharge from a liquid state in the container.

Manual Release: Gas cylinders must include manual mechanical operation with a two-action manual lever for safety, preventing accidental actuation.

Control Panel: The system must interface with a **Gas Release Control Panel** for automatic discharge, with provisions for **Manual Discharge** and **Abort Stations** as per **NFPA 2001**.

System Components

Single Manufacturer: All major components such as cylinders, valves, releasing devices, and nozzles must be supplied by a **single manufacturer** under the same brand for consistency and reliability.

Electrical and Pneumatic Actuation: Gas release is triggered by the control panel through either **electrical solenoid** or **pneumatic activation**, ensuring fast and reliable system response.

Certifications and Approvals

UL, FM, ULC Certified: All major system components, including the nozzles and gas cylinders, must carry **UL/ULC/FM certifications** for quality assurance.

NOC for Storage Containers: A **No Objection Certificate (NOC)** from the **Chief Controller of Explosives** must be provided for gas storage containers.

Acceptance Testing

NFPA 2001 Compliance: All system installation

	installation acceptance guidelines as put forth in the NFPA 2001. The system should be designed for the room size of 40x22 feet.	acceptance tests, including piping and cabling, must be conducted in strict compliance with **NFPA 2001** guidelines and requirements. **Room Size Design** The system is designed for a room size of **40 x 22 feet**, covering the entire enclosed area for maximum protection. **Warranty** **Minimum 5-Year Warranty**: The system components, including cylinders, valves, and control panels, must be covered under a minimum **5-year warranty** for material defects and workmanship.
45	**SITC of 62.5 KVA Three phase Silent DG Set along with other accessories i.e. Manual Control Panel with GPRS Enable, Fuel tank, Battery with leads.** Reputed brand (62.5 KVA 3 Phase) Diesel Engine, Water Cooled, at 1500 RPM. The engine should be provided with electrical starting arrangement & should give the electrical output of 62.5 KVA. The engine should be complete with: Starter motor, Battery charging alternator, Dry type air cleaner, Mico fuel pump, A1 class governing, Flywheel with flywheel housing, Residential silencer, First fill of lube oil, Engine protections: Low lube oil pressure & High Water temperature. The alternator should be of Standard make, Three-phase, 50 cycles, self regulated, self-excited, screen protected, 62.5 KVA alternator of rated capacity at 0.8 power factor. The alternator should conform to relevant BS/IS standard. The Control Panel should be a steel construction Control panel, dust & vermin proof comprising of MCB/MCCB, CTs for metering, Voltmeter, Ammeter, Frequency meter, Indications, Fuses etc. Windows for control panel should be with glass/acrylic and sealed with neoprene rubber gasket. The canopies should be soundproof using the best quality. Canopy should be four sided with 2.5 mm Thick CRCA sheet Base. The Doors & Roof should be fabricated from MS CRCA of adequate thickness with airtight EPDM foam gasket. MS/Zinc die cast hinges must be provided. The canopy should be equipped with a forced air circulation fan of reputed make. The canopy will have slope on the top surface so that rain water can drain easily. The insulation material should be PU Foam. The material should be fire retardant. Air inlet and outlet louvers, with special sound reduction dampers for proper air ventilation should be provided. The construction should be modular, bolted construction and should have access from all sides. All fasteners should be with washers. The fasteners should be SS/Zinc coated MS. 1 no. lamp with ON/OFF switch and socket inside the canopy should be provided. The Earthing arrangements for DG set / Canopy should be homogenous. All metal surfaces should be thoroughly treated with degreasing, de-rusting and phosphating. The finish must be suitable for outdoor use. The maximum noise level permitted during full load should be 75 dB (A), measured at 1 meter distance from the edge of canopy. The product must be certified by CPCB as per latest sound norms. The fuel tank should be removable type. The tank should be fabricated from CRCA / HR pickled/ MS, minimum 2 mm	**SITC of 62.5 KVA Three-Phase Silent DG Set with Accessories** SITC of a **62.5 KVA Three-phase Diesel Generator (DG) Set**, including a control panel, fuel tank, battery, and all relevant accessories required for proper operation. **DG Set Specifications** **Engine**: A reliable diesel engine, water-cooled, running at **1500 RPM**, delivering an electrical output of **62.5 KVA**. **Starting System**: Electric start with standard engine components such as a starter motor, alternator, air cleaner, and fuel pump. **Protections**: Built-in safety features such as low oil pressure and high temperature shut-offs. **Alternator**: Three-phase, **50 Hz**, self-regulating alternator rated for **62.5 KVA**, designed for stable power delivery at a power factor of **0.8**. Compliant with relevant performance standards. **Control Panel** **Design**: A standard weather-resistant control panel equipped with essential meters (voltmeter, ammeter, frequency meter) and protection devices like MCBs/MCCBs. **Enclosure**: Dustproof and weather-resistant with durable construction and clear access for control and monitoring. **Canopy** **Soundproofing**: Enclosed in a soundproof canopy to maintain noise levels below **75 dB (A)** at 1 meter distance. The canopy should be designed to withstand outdoor conditions, with access panels for maintenance. **Construction**: Made from corrosion-resistant material with adequate insulation and fitted with ventilation for air circulation. **Emergency Stop**: Includes an emergency stop button for quick shutdown during any unforeseen event. **Fuel Tank** **Capacity**: A fuel tank with sufficient capacity to support continuous operation, made from durable material to resist corrosion and ensure longevity. Removable design for easy refilling and maintenance. **Additional Features** **Earthing**: Proper earthing for both the DG set and the canopy for safe operation. **Vibration Dampening**: Anti-vibration mounts provided to minimize noise and mechanical wear. **Finish**: All metal surfaces treated for corrosion resistance and finished with weatherproof paint for

	thick sheet. The tank capacity should be (62.5KVA ,3 Phase) 100 Ltr. The maximum permissible temperature rise above the ambient should be 5oC to 7oC. The anti vibration pads must be provided below diesel engine and alternator. The canopy should have provision of emergency push button which should be housed in a protective enclosure with a glass front.	outdoor use. **Temperature Control**: Designed to operate within standard temperature limits, with adequate cooling to prevent overheating. **Certifications and Compliance** **Noise and Emission Standards**: The system should comply with local and international noise and emission standards. **Certification**: Certified by relevant regulatory bodies such as **CPCB, UL, FM** for safety and environmental compliance.	
46	**SITC of 5MP Outdoor IR PTZ Camera** Outdoor PTZ Dome Camera Supply, Installation, Testing & Commissioning of Outdoor 1/2.8 inch CMOS 5MP or better, IR PTZ Camera, Effective pixels 2592 x 1944, 5MP, 25 fps; 30x Optical Zoom & 16x Digital Zoom, tripple stream; IR distance: 150 meter; Lens type: Wide 5 to 6mm, Tele 150 to -180mm Motorized Auto focus zoom lens; Memory card slot: Min 256GB support. Minimum Illumination- Sense up on- Color: 0.005 lux color, B/W: 0 lux IR On, WDR 120dB, Edge Video Analysis Video Motion Detection, Intrusion, Lioter, Counter & Tampering, 3DNR, BLC, HLC, White Balance, EIS, Defog, Mechanical switchable IR filter (Auto ICR), Pan Range 360° continuous, Tilt Range -10° to 90°, Pan/Tilt Modes - Pan: 0.1°/s - 180°/s; Tilt: 0.1°/s - 90°/s, Presets 256, Preset Accuracy 0.25 Deg, 16 Patrol & Tours, Alarm I/O - 2In/2Out, 2-Way Audio- 1/1 Channel In/Out, 256GB Memory card slot, 4 individually configurable privacy masks, 8 Region of Interest, POE+ (802.3 at) or 24VAC 3A for indoor/Outdoor application, IP66/67, IK 10 ; Certifications: ONVIF Profile S/G/T compliant, UL/CSA 62368-1 / **Indian Standard IS 13252**/ CE (EN 50130-4), FCC Part 15, EN 55032, RoHS (EN63000) & NDAA Section 889 compliant.	**SITC of 5MP (or better) Outdoor IR PTZ Camera** SITC of **Outdoor PTZ Dome Camera**. **Camera Specifications** **Type**: Outdoor PTZ Dome Camera that can withstand various weather conditions. **Image Sensor**: 1/2.8 inch CMOS or better, offering a clear resolution of **5MP** (effective pixels of **2592 x 1944**) or better. **Frame Rate**: Aim for at least **25 fps** for smooth and clear video output. **Zoom Capabilities**: **Optical Zoom**: 30x or better **Digital Zoom**: 16x or better **Streaming**: Flexible triple stream functionality to suit different recording and viewing preferences. **IR Performance**: IR distance: **150 meters** for those low-light moments or higher Minimum illumination: **0.005 lux** in color mode and **0 lux** with IR on for night vision. **Lens**: Motorized auto-focus zoom lens with a versatile focal range from **5 to 6mm** (wide) to **150-180mm** (telephoto). **Storage**: Memory card slot supporting a minimum capacity of **256GB** to keep recordings handy. **Video Features** **Dynamic Range**: A Wide Dynamic Range (WDR) of **120dB** to handle tricky lighting situations. **Video Analytics**: Smart features such as motion detection, intrusion alerts, and tampering notifications. **Additional Features**: 3D Noise Reduction (3DNR) for clearer images Backlight compensation (BLC) and Highlight compensation (HLC) Electronic Image Stabilization (EIS) to reduce shaking Defog technology for clarity in foggy conditions Mechanical IR filter for seamless day/night transitions. **Pan/Tilt Functionality** **Pan Range**: Continuous **360°** for full coverage. **Tilt Range**: **-10° to 90°** to adjust as needed. **Speed**: Pan: **0.1°/s to 180°/s** for quick movement Tilt: **0.1°/s to 90°/s** for smooth adjustments. **Presets**: Up to **256 presets** with a preset accuracy of **0.25°** to quickly switch views. **Patrol and Tour Features**: Support for **16 patrols and tours** for automated monitoring. **Connectivity and Power** **Alarm I/O**: **2 In/2 Out** to connect with existing alarm systems. **Audio**: 2-way audio capability (1 channel in/out) for	

			communication. **Power**: Supports **POE+ (802.3at)** or **24VAC** power options for easy installation. **Environmental Ratings** **Protection Ratings**: IP66/67 for dust and water resistance, IK10 for impact resistance—perfect for outdoor settings. **Certifications** Compliant with **ONVIF Profile S/G/T** for smooth integration with various systems. Certified to **UL/CSA 62368-1**/ **Indian Standard IS 13252**/ **CE (EN 50130-4)**, **FCC Part 15**, **EN 55032**, **RoHS (EN 63000)**, and **NDAA Section 889** compliant.
47		Manpower (Skilled) for 60 months 1. AI Engineer (B.E./B.Tech in Computer Engg./ Information Technology/ Data Science /Artificial Intelligence/All computer related subjects of Computer Engineering/ Electronics Engineering / Electrical Engineering) with 2 years experience in relevant domain of AI: 02 2. Network Engineer (B.E./B.Tech in Computer Engg./ Information Technology/ Data Science /Artificial Intelligence/All computer related subjects of Computer Engineering/ Electronics Engineering / Electrical Engineering) with 2 years experience in relevant domain of Networking: 01 3. Network Operator (diploma or equivalent in technical domain) with 2 years experience in relevant domain of Networking: 04 4. Field operator (Graduate) with 2 years experience in relevant domain: 01	**Manpower (Skilled) for 60 months** 1. **AI Engineer** (B.E./B.Tech in Computer Engg./ Information Technology/ Data Science /Artificial Intelligence/All computer related subjects of Computer Engineering/ Electronics Engineering / Electrical Engineering) with 2 years experience in relevant domain of AI, i.e., having hanson programing experience in AI, ML, DL coding using python or R or similar languages: 02 2. **Network Engineer** (B.E./B.Tech in Computer Engg./ Information Technology/ Data Science /Artificial Intelligence/All computer related subjects of Computer Engineering/ Electronics Engineering / Electrical Engineering) with 2 years handson experience in relevant domain of Networking as an engineer or higher: 01 3. **Network Operator (diploma or equivalent in technical domain)** with 2 years handson experience in relevant domain of Networking as an operator: 04 4. **Field operator (Graduate)** with 2 years handson experience in relevant domain with computer skill in using MS Word, MS EXCEL, MS Powerpoint, Google Docs, and relevant and can read and write in English and Hindi, preferred if able to speak also: 01

2. Amendments in Required Quantity

The Referred content in Col. No. 2 and 3 may be read as appended in Col. No. 4:

Sl. No. (1)	Page no. (2)	Content mentioned in Tender document/Corrigendum-1 (3)	Referred content should be read as (4)
1	Point no. 28, Page no. 53	**SITC of VMS Client Workstation with Joystick Controller**. Actual Required Qty. : 9	**SITC of VMS Client Workstation with Joystick Controller**. Actual Required Qty. : 10
2	Point no. 29, Page no. 54	**SITC of 32'' full HD LED Screen for Workstation**. Required Qty. Mentioned : 9	**SITC of 32'' full HD LED Screen for Workstation**. Actual Required Qty.: 10
3	Point no. 3, page no. 37	**SITC of Video Management Software for 320 Cameras along with Client License (8 No's).**	**SITC of Video Management Software for 320 Cameras along with Client License (10 No's).**

Note:
1. The technical requirement mentioned in tender be considered as "**minimum technical requirement**". Bidder can quote their product with higher specifications.
2. Since no amendment is possible in the BoQ in .xls format, therefore, bidders are required to quote the rate for mentioned quantity in .xls format. Further, they are also required to quote the rate for above mentioned increased quantity separately in .pdf format. Furthermore, the rate quoted should be calculated by considering the all required quantity together.
3. Last date of Bid submission : 16.10.2024 till 4:00 PM
4. Date of Tender Opening : 17.10.2024 at 5:00PM

The remaining content of the Tender and subsequent corrigendum will remain unchanged.

Sd/-
(CHAIRPERSON)
CAMPUS SURVEILLANCE SYSTEM
IIT (BHU), VARANASI