Surat Smart City Development Limited
ADDENDUM AND CORRIGENDUM-4
RFP No.: SSCDL-eHealth-RFP-02-2022

RFP for Selection of System Integrator for Development of Integrated IT Infrastructure (HMIS, PACS, QMS, Network Infrastructure) for Hospitals & Health Centres under Surat Municipal Corporation (SMC)

The Bidders are requested to take note of the following changes made in the RFP document, which are to be taken into account while submitting the RFP. They shall be presumed to have done so and submitted the RFP accordingly.

- This Addendum and Corrigendum shall be the part of the RFP documents.
- Content specified in this Addendum and Corrigendum supersede relevant content to that effect as provided in the original RFP documents. All other specifications, terms and conditions of the original RFP document shall remain unchanged.
- All the changes mentioned in this document should be read across the RFP, Addendum & Corrigendum, wherever applicable

The queries raised and given by bidders, but the clarifications are not made in this Addendum and Corrigendum shall be considered to remain unchanged as per the terms and conditions mentioned in the original RFP documents.

The following content supersede relevant content to that effect as provided in the original RFP documents.

4.2 BIDDER'S ELIGIBILITY CRITERIA

The bidder must possess the requisite experience, strength and capabilities in providing services necessary to meet the requirements as described in the RFP document. Keeping in view the complexity and volume of the work involved, following criteria are prescribed as the eligibility criteria for the bidder interested in undertaking the project. The bidder must also possess technical know-how and financial ability that would be required to successfully provide System Integration, Operation and Maintenance services sought by SMC/SSCDL for the entire contract duration. The bids must be complete in all respect and should cover entire scope of work as stipulated in the bid document. This invitation to bid is open to all bidders who qualify the eligibility criteria as given below:

The Pre-Qualification Criteria for the selection of the vendor or consortium are given below. In case of Consortium, please refer the section 7.7.

Note: For evaluation following definition is considered

- The total Project value shall be considered as Capex Cost + Operation & Maintenance Cost.
- OEM experience will not be considered for Pre-Qualification Criteria and Technical Evaluation as bidder's experience unless bidder is also an OEM.
- In case of Consortium only one (1) partner is allowed including Prime Bidder. For more details on Consortium please refer to the section 7.7.

- Sub-contracting is allowed only for the activity enlisted under the RFP through sub-contractor meeting the minimum eligibility criteria.
- R&R refers to roles & responsibilities mentioned in Consortium Agreement.

4.2.1 ROLES & RESPONSIBILITY BIFURCATION

The following table clearly bifurcating the roles and responsibility in case the bidder is sole bidder or bidding in consortium and the activity which can be sub-contracted. The bidder is required to make sure that the minimum eligibility criteria is met by respective entity based on the roles & responsibility.

Roles & Responsibility Bifurcation					
Biding Options	**SITC & Maintenance of complete HMIS Solution**	**SITC & Maintenance of complete PACS Solution**	**SITC & Maintenance of complete QMS Solution**	**SITC and Maintenance of IT Hardware & Network Infrastructure**	**Deployment of onsite Manpower for Maintenance Support post Go-Live**
	(1)	(2)	(3)	(4)	(5)
Prime Bidder without Consortium Partner	Prime Bidder	Prime Bidder or Sub-contractor	Prime Bidder or Sub-contractor	Prime Bidder or Sub-contractor	Prime Bidder
Prime Bidder with One Consortium Partner	Prime Bidder or Consortium Member	Prime Bidder or Consortium Member or Sub-contractor	Prime Bidder or Consortium Member or Sub-contractor	Prime Bidder or Consortium Member or Sub-contractor	Prime Bidder or Consortium Member
In case of consortium, each member must be assigned atleast one responsibility out of (1), (2), (3) and (4) above and the same must reflect in the Consortium Agreement.					

4.2.2 PRE-QUALIFICATION CRITERIA

#	Pre-Qualification Criteria	Proof Document Required	Applicable to Prime Bidder / Sole Bidder	Applicable to Consortium Partner	Applicable to Sub-contractor
1.	The Bidder should be: • A company incorporated in India under the Companies Act, 1956 (and subsequent amendments thereto) and in operation for at least 5 years as on publication of bid. OR Registered LLP as per the schedule 3 of the LLP Act 2008 and in operation for at least 5 years as on publication of bid.	Certificate of Incorporation / Registration Certificate	Yes	Yes	Yes

2.	The prime bidder should have average turnover of minimum INR 10 crores in last three financial years i.e., 2018-19 2019-20 & 2020-21.	Financial Capability Statement as in Section-10 Form –1.5	Yes	No	No
3.	In case of consortium, the second member of consortium or the sub-contractor should have average turnover of minimum INR 5 crores in last three financial years i.e., 2018-19 2019-20 & 2020-21.	Financial Capability Statement as in Section-10 Form –1.5	No	Yes	Yes
4.	The Bidder (all Members in case of a consortium) must have positive net worth as on 31st March 2021.	Certificate from the statutory auditor / CA towards positive net worth of the company as in Section-9 Form – 1.4	Yes	Yes	Yes
5.	The Bidder (all members in case of consortium) or the sub-contractor should be registered for GST number in India.	Copy of GST Registration Certificate	Yes	Yes	Yes
6.	Sole Bidder / Primer Bidder or Consortium member (if proposed for SITC and Maintenance of HMIS Solution) should have implemented HMIS solution for minimum three (3) clients in India in last 10 years from the date of issuance of RFP out of which one (1) should be Government (State or Central) / Public Sector Units/ ULB customer. HMIS application component should be of minimum Rs. 1 crore (excluding hardware & other licensed software components) under each project.	- Work order of projects for HMIS Solution - Any client document that clearly specifies the project completion/go-live date and value of HMIS application component. - Note: In case of an ongoing project, the complete project must have achieved UAT and must have achieved a value of Rs. 1 crore from financial perspective at the time of RFP issuance. In this regard, a certificate from the client is required to be submitted.	Yes	Yes	Not allowed
7.	Sole Bidder / Primer Bidder or Consortium member (if proposed for SITC and Maintenance of HMIS Solution) should have implemented atleast three (3) projects involving HMIS solution implementation in	- Work order of projects for HMIS Solution - Any client document that	Yes	Yes	Not Allowed

	India in last 10 years from the date of issuance of RFP of which one project must have been implemented for 300 bedded hospital and remaining two must have been implemented for 100 bedded hospital each.	clearly specifies the project completion/go-live date and value of HMIS application component. - Note: In case of an ongoing project, the complete project must have achieved UAT at the time of RFP issuance. In this regard, a certificate from the client is required to be submitted. - Any client document that clearly specifies hospital bed capacity where HMIS solution has been deployed.			
8.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) taking responsibility for SITC and Maintenance of HMIS Solution, should have an active SEI CMMI Level 3 (as on date of issuance of Bid).	Copy of original CMM / CMMi Certificate	Yes	Yes	Not Allowed
9.	Sole Bidder / Any member of consortium (Prime Bidder or Consortium member) taking responsibility other then SITC and Maintenance of HMIS Solution, should be Certified as CMM / CMMi Level 3 Company OR Shall be certified ISO 9001 company. The certification should cover Software Services business of the bidder OR Shall be shall be certified ISO 9001 company, in case Sole Bidder / Any member of consortium taking responsibility of SITC and Maintenance of IT Hardware & Network Infrastructure, it shall be certified ISO 9001 company. (as on date of issuance of Bid).	Copy of original CMM / CMMi Certificate OR Copy of certificate showing that ISO 9001 certification covers Software Services	Yes	Yes	Yes
10.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) taking responsibility for SITC and	Letter from OEM as in Section-9 Form – 1.11	Yes	Yes	Not Allowed

	Maintenance of HMIS Solution to provide the Manufacturer's Authorization Form (MAF) to be eligible to bid for the proposed HMIS solution.				
11.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) or sub-contractor taking responsibility for SITC and Maintenance of PACS Solution to provide the Manufacturer's Authorization Form (MAF) to be eligible to bid for the proposed PACS solution.	Letter from OEM as in Section-9 Form – 1.11	Yes	Yes	Yes
12.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) or sub-contractor taking responsibility for SITC and Maintenance of QMS Solution to provide the Manufacturer's Authorization Form (MAF) to be eligible to bid for the proposed QMS Solution.	Letter from OEM as in Section-9 Form – 1.11	Yes	Yes	Yes
13.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) or sub-contractor taking responsibility for SITC and Maintenance of IT Hardware & Network Infrastructure to provide the Manufacturer's Authorization Form (MAF) to be eligible to bid for the proposed IT components.	Letter from OEM as in Section-9 Form – 1.11	Yes	Yes	Yes
14.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) or sub-contractor taking responsibility should have experience of implementing PACS solution for atleast three (3) sites in India in last 10 years (as on date of issuance of bid) of which one installation should be for minimum 200 bedded hospital in India.	• Work order for PACS solution deployment • Any client document that clearly specifies hospital bed capacity where PACS solution has been deployed. • Any client document that clearly specifies the project completion/go-live date.	Yes	Yes	Yes
15.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) or sub-contractor taking responsibility for SITC and Maintenance of IT Hardware & Network Infrastructure should have executed at least one project of SITC based work related to DC/DR IT infrastructure	• Copy of work order / Contract • Any client document that clearly specifies the project completion/go-live date. Note: In case of an ongoing project, the	Yes	Yes	Yes

	components like server/storage/network equipment and/or LAN/WAN/Wi-Fi infrastructure in last 10 years as on Bid Submission date of value not less than INR 1.5 Crore in India. OR at least two projects of SITC based work related to DC/DR IT infrastructure components like server/storage/network equipment and/or LAN/WAN/Wi-Fi infrastructure in last 10 years as on Bid Submission date of value not less than INR 1 Crore in India. OR at least three projects of SITC based work related to DC/DR IT infrastructure components like server/storage/network equipment and/or LAN/WAN/Wi-Fi infrastructure in last 10 years as on Bid Submission date of value not less than INR 75 lakh in India	project must have achieved the respective value for activities pertaining to SITC of IT and IT Infrastructure. In this regard, a certificate from the client is required to be submitted.			
16.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) or sub-contractor taking responsibility for SITC and Maintenance of IT Hardware & Network Infrastructure must have local office in Surat or should undertake to open the same in Surat within six months of award of work.	Shop Establishment Certificate issued by Surat Municipal Corporation OR Undertaking on Company's Letterhead duly signed and stamped by authorized signatory to open the office in Surat within 6 months of award of work	Yes	Yes	Yes
17.	Sole Bidder / Any member of consortium (Primer Bidder or Consortium member) or sub-contractor taking responsibility for SITC and Maintenance of QMS solution must have executed at least one project for QMS implementation for any government/semi-government /PSU client or client belonging to Healthcare / Finance /Utility sector.	1 Work order for QMS solution deployment 2 Any client document that clearly specifies hospital bed capacity where QMS solution has been deployed. 3 Any client document that clearly specifies the project	Yes	Yes	Yes

		completion/go-live date.			
18.	The Bidder (All Members in case of a consortium) or sub-contractor should not have been blacklisted by Central Government/State Government or any other autonomous institution presently nor any proceedings for blacklisting has been initiated by Central Government/State Government or any other autonomous institution against the bidder and should not have been convicted for any criminal offence.	Undertaking as per Section-10 Form –1.6	Yes	Yes	Yes

Note:

1. **The number of consortium members cannot exceed two, including the Prime Bidder**
2. **A Bidder applying individually or as consortium member shall not be entitled to submit another application either individually or as a member of any other consortium, as the case may be.**
3. **For Point-8 above, Bidder whose CMMi certification is currently under renewal can be considered eligible only if the respective CMMi Level certification was successfully obtained for last 5 years and the application for renewal of the same is under process. The bidder needs to submit the supporting document clearly indicating the past certification details and documents related to renewal along with certificate from the appointed certifying authority that the certification renewal is under process.**

11. IT Infrastructure Requirements

11.2 MINIMUM TECHNICAL SPECIFICATION

- The bidder can quote for each item meeting or exceeding the below mentioned minimum specification. Separate sheet needs to be attached if more than one product is quoted.
- The specifications mentioned below are minimum specification. The bidder can quote the products equivalent or higher depending upon the sizing for the entire solution.
- The bidder must clearly specify the features of the offered product vis-à-vis specification and deviation if any in the Column-C and Column-D respectively.
- The technical spec sheet and the product brochure of the product offered should also be submitted along with technical bid.

11.2.1 Desktop All in One Computer (i3 Based)

Required Make: HP/DELL/LENOVO

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification / Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Processor	Intel® 12th generation Core™ i3-12100 Processor (3.30 GHz Performance-core Base Frequency, 12MB Cache, 4 core) or higher		
2.	Memory	8 GB DDR4 RAM @ 2666 MHz or		

		higher with 1 DIMM slot free. (Single Module Should be supplied)		
3.	Hard Disk Drive	500 GB NVMe PCIe M.2 SSD or higher (should have provision to properly mount additional SATA HDD)		
4.	Optical Drive	Internal DVD Writer		
5.	NIC	**Wired Communication:** Integrated Gigabit Ethernet **Wireless Communication:** Integrated Wireless LAN 802.11 ac and Bluetooth 4.0 or higher		
6.	Screen Size	21.5" or higher wide screen LED Backlit based TFTs, should have any 2 nos. of distinct ports out of VGA / HDMI / Display port, Resolution – 1920 x 1080 or better, TCO Displays 7.0 and Energy Star 6.0 certified or better; Monitor should be of same make of offered PC Brand. [Specify the part no.]		
7.	Keyboard	Standard Full Size 104 key USB Keyboard (should be regular in size and not be slim type) (Same Make of PC) [Specify the part no.]		
8.	Mouse	Two button scroll USB optical mouse (Same Make of PC) with pad		
9.	Interfaces/Port	- Minimum 7 USB Ports (min. 3 USB ports in front and 4 USB ports in back) of which • Min. 2 USB 3.2/3.1 ports (front) • Min. 2 USB 3.2/3.1 ports (back) - Minimum 1 no. of HDMI port - Minimum 1 no. of VGA / Display Port - Minimum 1 no. of headphone/microphone combo (front) - Minimum 1 no. of audio-out (rear)		
10.	PCI Slots	Minimum 2 PCIe slots (minimum 1*PCIeX1 and 1*PCIeX16 slot)		
11.	Operating System	Factory Pre-loaded/Pre-installed and activated licensed Window 10 Professional 64 bit upgradable to windows 11 professional 64 bit version or Windows 11 professional 64 bit version with latest updates with online / cloud based Restore/ Recovery No software that are trial version or		

		unlicensed in nature should be pre-installed on the system.		
12.	Warranty	5 years comprehensive onsite back-to-back OEM warranty for Desktop, Monitor, Keyboard and mouse including service and parts. Warranty details should be verifiable on OEM's official website by entering device serial number.		
13.	Form Factor	Tower Model (no SFF or micro or ultra)		
14.	Specify the proposed make			
15.	Specify the proposed model			

11.2.2 Desktop All in One Computer (i5 Based)

Required Make: HP/DELL/LENOVO

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification / Remarks if Any
A	B	C	D	E
1.	Processor	Intel® 12th generation Core™ i5-12500 Processor (3.00 GHz Performance-core Base Frequency, 18MB Cache, 6 core) or higher		
2.	Memory	16 GB DDR4 RAM @ 2666 MHz or higher with 1 DIMM slot free. (Single Module Should be supplied)		
3.	Hard Disk Drive	1 TB 7200 rpm SATA II hard disk or higher		
4.	Optical Drive	Internal DVD Writer		
5.	NIC	**Wired Communication:** Integrated Gigabit Ethernet **Wireless Communication:** Integrated Wireless LAN 802.11 ac and Bluetooth 4.0 or higher		
6.	Screen Size	21.5" or higher wide screen LED Backlit based TFTs, should have any 2 nos. of distinct ports out of VGA / HDMI / Display port, Resolution – 1920 x 1080 or better, TCO Displays 7.0 and Energy Star 6.0 certified or better; Monitor should be of same make of offered PC Brand. [Specify the part no.]		
7.	Keyboard	Standard Full Size 104 key USB Keyboard (should be regular in size and not be slim type) (Same Make of PC [Specify the part no.]		
8.	Mouse	Two button scroll USB optical mouse (Same Make of PC) with pad		
9.	Interfaces/Port	- Minimum 7 USB Ports (min. 3		

		USB ports in front and 4 USB ports in back) of which • Min. 2 USB 3.2/3.1 ports (front) • Min. 2 USB 3.2/3.1 ports (back) - Minimum 1 no. of HDMI port - Minimum 1 no. of VGA / Display Port - Minimum 1 no. of headphone/microphone combo (front) - Minimum 1 no. of audio-out (rear)		
10.	PCI Slots	Minimum 2 PCIe slots (minimum 1*PCIeX1 and 1*PCIeX16 slot)		
11.	Operating System	Factory Pre-loaded/Pre-installed and activated licensed - Window 10 Professional 64 bit upgradable to windows 11 professional 64 bit version or - Windows 11 professional 64 bit version with latest updates with online / cloud based Restore/ Recovery. No software that are trial version or unlicensed in nature should be pre-installed on the system.		
12.	Warranty	5 years comprehensive onsite back-to-back OEM warranty for Desktop, Monitor, Keyboard and mouse including service and parts. Warranty details should be verifiable on OEM's official website by entering device serial number.		
13.	Form Factor	Tower Model (no SFF or micro or ultra)		
14.	Specify the proposed make			
15.	Specify the proposed model			

11.2.3 Laser Jet Black and White Printer

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Cartridge Technology	Composite Cartridge		
2.	Print Technology	Laser		
3.	Type of Printing	Mono		
4.	Paper Size (Original/Image)	A4 / Legal		
5.	Memory (MB)	64 or Higher		

6.	Minimum Speed per Minute as per ISO/IEC 24734 in A4 Size-Mono	28 or Higher		
7.	Scanning Feature Availability	No		
8.	Duplexing Feature Availability	Yes		
9.	Networking Feature Availability	Yes		
10.	Wi-Fi Availability	Yes		
11.	If yes, Wi-Fi Type	Wi-Fi 802.11 b/g/n		
12.	Number of Main Paper Tray	1		
13.	Warranty	5 years comprehensive onsite back-to-back OEM warranty including service and parts. Warranty details should be verifiable on OEM's official website by entering device serial number.		
14.	Specify proposed make			
15.	Specify proposed model			

11.2.4 Multi-Function Mono Printer

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Type of Machine	Multifunction Machine		
2.	Print Technology	Laser		
3.	Type of Printing	Mono		
4.	Cartridge Technology	Composite Cartridge		
5.	Platen/Flatbed Size	A4		
6.	Paper Size (Original/Image)	A4/Legal		
7.	RAM size (MB)	64 or Higher		
8.	Minimum Speed per Minute as per ISO/IEC 24734 in A4 Size-Mono	28 or Higher		
9.	Scanning Feature Availability	Yes		
10.	Duplexing Feature Availability	Yes		
11.	Networking Feature Availability	Yes		
12.	Wi-Fi Availability	Yes		
13.	If yes, Wi-Fi Type	Wi fi 802.11 b/g/n & Wi-Fi Direct		
14.	Number of Main Paper Tray	1		
15.	Bypass Facility	Preferrable		

16.	Warranty	5 years comprehensive onsite back-to-back OEM warranty including service and parts. Warranty details should be verifiable on OEM's official website by entering device serial number.		
17.	Specify proposed make			
18.	Specify proposed model			

11.2.5 Barcode Printer

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Type	Desktop		
2.	Printing Technology	Thermal Transfer		
3.	Resolution (dpi)	200 or Higher		
4.	Print Speed (mm/sec.)	56 or Higher		
5.	Maximum Print Width (mm)	60		
6.	Maximum Print length (mm)	224		
7.	Media Type	black and white		
8.	Media Form	Roll		
9.	Media Width (mm)	22		
10.	Media Length (mm)	33		
11.	Media Thickness (mm)	75		
12.	Maximum Media Roll Diameter(mm)	274		
13.	Media Core Diameter (mm)	241		
14.	Ribbon Length (mm)	231		
15.	Ribbon Width (mm)	215		
16.	Ribbon Capacity	274		
17.	Processor (bits)	301		
18.	RAM Size (MB)	245		
19.	Compatible Barcode Symbologies	(Linear, PDF-417, Maxicodes, etc)		
20.	USB 2.0	Available		
21.	USB 3.0	Available		
22.	Serial Port	Available		
23.	Parallel Port	Available		
24.	Wi-Fi Availability	Yes		
25.	If yes, Wi-Fi Type	Wi fi 802.11 b/g/n		

26.	BIS Registration under CRS of Meity	Yes		
27.	On Site OEM Warranty (Year)	5 years comprehensive onsite back-to-back OEM warranty including service and parts.		
28.	Specify proposed make			
29.	Specify proposed model			

11.2.6 Barcode Reader

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Form Factor	Handheld		
2.	Scan System	Laser		
3.	Scan Rate (Scans per second/frames per second)	270		
4.	Communication Interface	USB		
5.	Print Contrast Ratio (%)	35		
6.	Resolution (mil)	5		
7.	Bar Code Density (mil)	5		
8.	Minimum Depth of Field (mm)	35		
9.	Maximum Depth of field (mm)	300		
10.	Ambient Light Immunity (Lux)	100000		
11.	Compatible Bar code Symbologies: (UPC-A/UPC-E, EAN 13, JAN-13, CODABAR, ADD-ON-2, code-93, Industrial Codes, Interleaved 2 or 5, EAN 128 etc)	Yes		
12.	Compatible Bar code Symbologies : (Micro PDF, PDf- 417, Data Matrix, QR Code/UCC, EAN Composites, Aztec etc)	Yes		
13.	BIS Registration under CRS of Meity	Yes		
14.	On Site OEM Warranty	5 years comprehensive onsite back-to-back OEM warranty including service and parts.		
15.	Specify proposed make			

16.	Specify proposed model			

Technical Specification for Active devices and Passive Devices (LAN & Wi-Fi)

General Criteria

#	General Requirement
1.	Switches: All Switches (Core, Distribution and Access) and Transceivers should be of same OEM.
2.	All Active components and passive components and Operations and maintenance services should be quoted with minimum 5 years warranty including 24X7 Technical Assistance support.
3.	NMS should be provided to manage all the switches and Wi-Fi Aps
4.	All Core switches must have dual redundant hot-swappable power supply.
5.	All switches should have in built support for 802.3az/Energy Efficient Ethernet/Green Ethernet.
6.	All Switches should be configured to provide Wire-Speed Non-Blocking Switching.
7.	OEM must have direct support center in India and must have direct support Infrastructure.
8.	OEM shall have ISO 9001 certification

11.2.7 48 Port 10 G/40G Core Switch

Required Make: CISCO/ HPE/Juniper/Extreme Networks

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	High Availability	· Core Switch should be configurable in a High Availability (Active-Active) mode with support for dual homing		
2.	Switching Capacity	· Switching Capacity of minimum 1280 Gbps or Higher		
3.	Ports	· Should have minimum 48 X 10G BASE-SFP+ SR/LR ports.		
		· Should have minimum 4 X 40G BASE-QSFP+ LR4/SR4 ports		
4.	Switch type	· Fully Managed & Advanced Layer 3 Core/Data Centre Switch & Non-Chassis Based/ Modular with slots		
5.	Backplane	· Properly sized Switching fabric capacity (as per network configuration to meet performance requirements of wire speed switching for the connected devices)		
6.	Layer-2 Features	· Switch should Support IEEE 802.1Q VLAN encapsulation & must have feature to configure minimum 4000 VLAN IDs.		

		· The switch must support dynamic VLAN Registration or equivalent and Dynamic Trunking protocol or equivalent (Optional)		
		· Switch should Support Ether Channeling - IEEE 802.3ad or port aggregation technologies (support of LACP)		
		· Switch should Support IEEE 802.3x flow control for full-duplex mode ports.		
		· Switch should Support IEEE 802.1s/w Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP)		
		· Support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors.		
		· IGMP snooping v1, v2 and v3		
		· Should support 30K or more ARP/MAC Address table		
		· Should support Loop protection and Loop detection.		
7.	Layer-3 Features	· Must have Static, OSPFv3, BGP4, RIPv1, RIPv2 and Policy based routing protocols with IPV4 & IPv6 supported.		
		· Unicast & Multicast Routing		
		· Should support Dual IP stack which Maintains separate stacks for IPv4 and IPv6		
		· Should support Virtual Router Redundancy Protocol (VRRP).		
		· Should support Equal-Cost Multipath (ECMP) which provides equal-cost links in a routing environment to increase link redundancy.		
		· Support 802.1D, 802.1S, 802.1w, Rate limiting.		
		· Inter-VLAN IP routing for full Layer 3 routing between 2 or more VLANs.		
		· Inbuilt Feature of Dynamic Host Configuration Protocol (DHCP) Sever which simplifies the management of large IP networks and supports client and server system.		
		· L2/L3 VXLAN and EVPN support for virtualized environments		
8.		· Standard 802.1p CoS and DSCP.		

	Network Security & QoS	· Must have Network traffic filtering and network control using MAC and IP Binding based ACLs		
		· Support for Asynchronous/Synchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping or its equivalent function.		
		· Should support TACACS+ and RADIUS authentication		
		· Broadcast storm control to help eliminate network traffic storms		
		· IEEE 802.1x to allow dynamic, port-based security, providing user authentication (Optional)		
		· VLAN ACLs (VACLs) on all VLANs to prevent unauthorized data flows from being bridged within VLANs. Port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports		
		· Standard/Extended IP security router ACLs to define security policies on routed interfaces for control- and data-plane traffic.		
		· Unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address.		
		· Unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.		
		· Support for SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet/SSH and SNMP sessions.		
		· Private VLAN or equivalent to provide security and isolation between switch ports, helping ensure that users cannot snoop on other users' traffic.		
		· MAC address management to allow administrators for analysis of users added to or removed from the network.		

		· Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
		· IPv6 Host, Management, multicast and QoS.		
9.	Management	· Easy-to-use, Web-based management interface through either external GUI based software utility from the same switching OEM (Necessary software to be provided along with valid licenses & Subscriptions) or using in built standard HTTP/HTTPS web browser interface which Supports configuration, system dashboard, system maintenance, and monitoring and for easier software/firmware upgrade through network.		
		· Should have accessibility using Telnet/SSH, Console access.		
		· Intuitive web interface to upload/download Configurations to and from the switch.		
		· Provision of Dual flash/Dual Partition images to provide independent primary and secondary operating system files for backup while upgrading.		
		· Availability of Port statistics through industry-standard RMON		
		· SNMPv1/SNMPv2 and SNMPv3.		
10.	Warranty:	· 5 years comprehensive onsite back-to-back OEM warranty including service and parts. Warranty and support pack with necessary part/product code must be clearly mentioned from the OEM accompanied with datasheet		
11.	Chassis:	· Device must have 1+1 redundant AC power input supply and must be included with switch from day 1 with necessary mounting kit.		
12.	Specify the proposed Make			
13.	Specify the proposed Model No			

11.2.8 24 Port 10G/40G Core Switch

Required Make: CISCO/ HPE/ Juniper/Extreme Networks

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from

				Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	High Availability	· Core Switch should be configurable in a High Availability (Active-Active) mode with support for dual homing		
2.	Switching Capacity	· Switching Capacity of minimum 640 Gbps or Higher		
3.	Ports	· Should have minimum 24 X 10G BASE-SFP+ SR/LR ports.		
		· Should have minimum 2 X 40G BASE-QSFP+ LR4/SR4 ports		
4.	Switch type	· Fully Managed & Advanced Layer 3 Core/Data Centre Switch & Non-Chassis Based/Modular with slots.		
5.	Backplane	· Properly sized Switching fabric capacity (as per network configuration to meet performance requirements of wire speed switching for the connected devices)		
6.	Layer-2 Features	· Switch should Support IEEE 802.1Q VLAN encapsulation & must have feature to configure minimum 4000 VLAN IDs.		
		· The switch must support dynamic VLAN Registration or equivalent and Dynamic Trunking protocol or equivalent (Optional)		
		· Switch should Support Ether Channelling - IEEE 802.3ad or port aggregation technologies (support of LACP)		
		· Switch should Support IEEE 802.3x flow control for full-duplex mode ports.		
		· Switch should Support IEEE 802.1s/w Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP)		
		· Support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors.		

		· IGMP snooping v1, v2 and v3		
		· Should support 30k or more ARP/MAC Address table		
		· Should support Loop protection and Loop detection.		
7.	Layer-3 Features	· Must have Static, OSPFv3, BGP4, RIPv1, RIPv2 and Policy based routing protocols with IPV4 & IPv6 supported.		
		· Unicast & Multicast Routing		
		· Should support Dual IP stack which Maintains separate stacks for IPv4 and IPv6		
		· Should support Virtual Router Redundancy Protocol (VRRP).		
		· Should support Equal-Cost Multipath (ECMP) which provides equal-cost links in a routing environment to increase link redundancy.		
		· Support 802.1D, 802.1S, 802.1w, Rate limiting.		
		· Inter-VLAN IP routing for full Layer 3 routing between 2 or more VLANs.		
		· Inbuilt Feature of Dynamic Host Configuration Protocol (DHCP) Sever which simplifies the management of large IP networks and supports client and server system.		
		· L2/L3 VXLAN and EVPN support for virtualized environments		
8.	Network Security & QoS	· Standard 802.1p CoS and DSCP.		
		· Must have Network traffic filtering and network control using MAC and IP Binding based ACLs		
		· Support for Asynchronous/Synchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping or its equivalent function.		
		· Should support TACACS+ and RADIUS authentication		
		· Broadcast storm control to help eliminate network traffic storms		

		· IEEE 802.1x to allow dynamic, port-based security, providing user authentication (Optional)		
		· VLAN ACLs (VACLs) on all VLANs to prevent unauthorized data flows from being bridged within VLANs. Port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports		
		· Standard/Extended IP security router ACLs to define security policies on routed interfaces for control- and data-plane traffic.		
		· Unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address.		
		· Unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.		
		· Support for SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet/SSH and SNMP sessions.		
		· Private VLAN or equivalent to provide security and isolation between switch ports, helping ensure that users cannot snoop on other users' traffic.		
		· MAC address management to allow administrators for analysis of users added to or removed from the network.		
		· Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
		· IPv6 Host, Management, multicast and QoS.		

9.	Management	· Easy-to-use, Web-based management interface through either external GUI based software utility from the same switching OEM (Necessary software to be provided along with valid licenses & Subscriptions) or using in built standard HTTP/HTTPS web browser interface which Supports configuration, system dashboard, system maintenance, and monitoring and for easier software/firmware upgrade through network.		
		· Should have accessibility using Telnet/SSH, Console access.		
		· Inbuilt Intuitive web interface or through external management software from same switching OEM (Necessary software to be provided along with valid licenses & Subscriptions) to upload/download Configurations to and from the switch.		
		· Provision of Dual flash/Dual Partition images to provide independent primary and secondary operating system files for backup while upgrading.		
		· Availability of Port statistics through industry-standard RMON		
		· SNMPv1/SNMPv2 and SNMPv3.		
10.	Warranty:	· 5 years comprehensive onsite back-to-back OEM warranty including service and parts. · Specify the warranty and support pack with necessary part/product code.		
11.	Chassis:	· Device must have 1+1 redundant AC power input supply and must be included with switch from day 1 with necessary mounting kit.		
12.	Specify the proposed Make			
13.	Specify the proposed Model No			

11.2.9 40G QSFP+ LR4 Transceiver Module for Core Switch

(Must be compatible and from the same OEM as proposed for the Core Switch for Item No. 11.2.7 & Item No. 11.2.8)

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**

1.	Ports	40G QSFP+ BASE- LR4 port		
2.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
3.	Specify the proposed Make			
4.	Specify the proposed Model No			

11.2.10 40G QSFP+ DAC (5M Length) for Core Switch

(Must be compatible and from the same OEM as proposed for the Core Switch for Item No. 10.2.7 & Item No. 10.2.8)

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Ports	(Minimum 5M Length) 40G DAC for 40G QSFP+ Slots of Core Switch offered		
2.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
3.	Specify the proposed Make			
4.	Specify the proposed Model No			

11.2.11 10G-BASE TX RJ-45 Connector

(Must be compatible and from the same OEM as proposed for the Core Switch for Item No. 11.2.7 & Item No. 11.2.8)

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Type of Transceiver	SFP-BaseT 10G		
2.	Supported Protocol	10GBASE-T		
3.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
4.	Specify the proposed Make			
5.	Specify the proposed Model No			

11.2.12 10G SFP+ LR Transceiver Module for Core Switch

(Must be compatible and from the same OEM as proposed for the Core Switch for Item No. 11.2.7 & Item No. 11.2.8)

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	Ports	10G BASE-LR port; Duplex: full only		
2.	Wavelength	SM-1310 nm		
3.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
4.	Specify the proposed Make			
5.	Specify the proposed Model No			

11.2.13 48 ports (1G/10G) L3 Lite Web Managed Switch

Required Make: CISCO/ HPE/ Juniper/Extreme Networks

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	Ports	The switch shall have minimum 48 x RJ-45 auto-sensing/negotiating 1G ports		
2.		Either Minimum 2 x 10G SFP+ ports and 2 x 10G BASE-T RJ-45 ports Or Minimum 4 x 10G SFP+ ports with 2 x 10G BASE-T RJ-45 SFP+ Transceivers Modules Supplied with Product from Day one in addition to above fixed 48 ports.		
3.		Minimum 176 Gbps Switching Capacity		
4.		Should support 2k active VLANs and 15K MAC addresses.		
5.		Auto-negotiation for speed, duplex mode and flow control.		
6.		Auto-MDI/MDIX.		
7.		IEEE 802.3X flow control.		
8.		Integrated LEDs for improved visual monitoring and analysis.		
9.	Switch Management	Must have IEEE 802.1Q Static & Trunk VLAN (4000 VLAN IDs) & Port-based VLAN.		
10.		Spanning Tree Protocol (STP) to support standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP).		

11.		IEEE 802.3ad Link Aggregation Control Protocol (LACP).		
12.		IPv6 Host, Management, multicast and QoS.		
13.		SNMPv1/SNMP v2c, and v3.		
14.		Built-in switch Web-based GUI configuration utility for easy browser-based device configuration (HTTP/HTTPS) which Supports configuration, system dashboard, system maintenance, and monitoring.		
15.		Should support Integrated Standard based Command Line Interface (CLI), Telnet/SSH, TFTP and secure communications to the management interface and system through SSL, Secure Shell (SSHv2) And If Switch is not having Telnet/SSH feature than OEM is required to provide Bulk Switch Management Software for switches offered along with requisite perpetual licenses for all switches purchased under this contract for bulk Switch Configuration back-up & bulk firmware update feature without an additional cost to SSCDL/SMC.		
16.		IPv6 Host, Management, multicast and QoS		
17.		Layer 3 IPv4 and IPv6 static Routing.		
18.		Provision of Dual flash images to provide independent primary and secondary operating system files for backup while upgrading.		
19.		Intuitive web interface to upload/download the Switch software to the switch.		
20.		Intuitive web interface to upload/download Configurations to and from the switch.		
21.		Availability of Port statistics through industry-standard RMON		
22.		Jumbo frame support for packets.		
23.		Broadcast storm control to help eliminate network traffic storms.		
24.		Must have Network traffic filtering and network control using MAC and IP-Binding based Access Control.		
25.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
26.	Chassis	1U, rack-mounting kit must be included		
27.	Power	Power supply AC 230 V (50/60 Hz)		
28.	Specify the proposed Make			
29.	Specify the proposed Model No			

11.2.14 24 ports (1G/10G) L3 Lite Web Managed Switch

Required Make: CISCO/ HPE/ Juniper/Extreme Networks

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	Ports	The switch shall have minimum 24 x RJ-45 auto-sensing/negotiating 1G ports		
2.		Either Minimum 2 x 10G SFP+ ports and 2 x 10G BASE-T RJ-45 ports Or Minimum 4 x 10G SFP+ ports with 2 x 10G BASE-T RJ-45 SFP+ Transceivers Modules Supplied with Product from Day one in addition to above fixed 24 ports.		
3.		Minimum 128 Gbps Switching Capacity		
4.		Should support 2K active VLANs and 15K MAC addresses.		
5.		Auto-negotiation for speed, duplex mode and flow control.		
6.		Auto-MDI/MDIX.		
7.		IEEE 802.3X flow control.		
8.		Integrated LEDs for improved visual monitoring and analysis.		
9.	Switch Management	Must have IEEE 802.1Q Static & Trunk VLAN (4000 VLAN IDs) & Port-based VLAN.		
10.		Spanning Tree Protocol (STP) to support standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP).		
11.		IEEE 802.3ad Link Aggregation Control Protocol (LACP).		
12.		IPv6 Host, Management, multicast and QoS.		
13.		SNMPv1/SNMP v2c, and v3.		
14.		Built-in switch Web-based GUI configuration utility for easy browser-based device configuration (HTTP/HTTPS) which Supports configuration, system dashboard, system maintenance, and monitoring.		
15.		Should support Integrated Standard based Command Line Interface (CLI), Telnet/SSH, TFTP and secure communications to the management interface and system through SSL, Secure Shell (SSHv2)		

		And If Switch is not having Telnet/SSH feature than OEM is required to provide Bulk Switch Management Software for switches offered along with requisite perpetual licenses for all switches purchased under this contract for bulk Switch Configuration back-up & bulk firmware update feature without an additional cost to SSCDL/SMC.		
16.		IPv6 Host, Management, multicast and QoS		
17.		Layer 3 IPv4 and IPv6 static Routing.		
18.		Provision of Dual flash images to provide independent primary and secondary operating system files for backup while upgrading.		
19.		Intuitive web interface to upload/download the Switch software to the switch.		
20.		Intuitive web interface to upload/download Configurations to and from the switch.		
21.		Availability of Port statistics through industry-standard RMON		
22.		Jumbo frame support for packets.		
23.		Broadcast storm control to help eliminate network traffic storms.		
24.		Must have Network traffic filtering and network control using MAC and IP-Binding based Access Control.		
25.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
26.	Chassis	1U, rack-mounting kit must be included		
27.	Power	Power supply AC 230 V (50/60 Hz)		
28.	Specify the proposed Make			
29.	Specify the proposed Model No			

11.2.15 24 ports (1G/10G) L3 Lite Web Managed POE+ Switch

Required Make: CISCO/ HPE/ Juniper/Extreme Networks

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Ports	The switch shall have minimum 24 x RJ-45 auto-sensing/negotiating POE+ (802.3 at) 1G ports		
2.		Either		

		Minimum 2 x 10G SFP+ ports and 2 x 10G BASE-T RJ-45 ports Or Minimum 4 x 10G SFP+ ports with 2 x 10G BASE-T RJ-45 SFP+ Transceivers Modules Supplied with Product from Day one in addition to above fixed 24 ports.		
3.		Access Switch should have Power Budget of minimum 370 Watts shared across all Ports.		
4.		Should support 2k active VLANs and 15K MAC addresses.		
5.		Auto-negotiation for speed, duplex mode and flow control		
6.		Auto-MDI/MDIX.		
7.		IEEE 802.3X flow control.		
8.		Integrated LEDs for improved visual monitoring and analysis.		
9.	Switch Management	Must have IEEE 802.1Q Static & Trunk VLAN (2000 VLAN IDs) & Port-based VLAN.		
10.		Spanning Tree Protocol (STP) to support standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP).		
11.		IEEE 802.3ad Link Aggregation Control Protocol (LACP).		
12.		IPv6 Host, Management, multicast and QoS.		
13.		SNMPv1/SNMP v2c, and v3.		
14.		Built-in switch Web-based GUI configuration utility for easy browser-based device configuration (HTTP/HTTPS) which Supports configuration, system dashboard, system maintenance, and monitoring.		
15.		Should support Integrated Standard based Command Line Interface (CLI), Telnet/SSH, TFTP and secure communications to the management interface and system through SSL, Secure Shell (SSHv2) And If Switch is not having Telnet/SSH feature than OEM is required to provide Bulk Switch Management Software for switches offered along with requisite perpetual licenses for all switches purchased under this contract for bulk Switch Configuration back-up & bulk firmware update feature without an additional cost to SSCDL/SMC.		
16.		IPv6 Host, Management, multicast and QoS		
17.		Layer 3 IPv4 and IPv6 static Routing.		
18.		Provision of Dual flash images to provide independent primary and secondary operating system files for backup while upgrading.		

19.		Intuitive web interface to upload/download the Switch software to the switch.		
20.		Intuitive web interface to upload/download Configurations to and from the switch.		
21.		Availability of Port statistics through industry-standard RMON		
22.		Jumbo frame support for packets.		
23.		Broadcast storm control to help eliminate network traffic storms.		
24.		Must have Network traffic filtering and network control using MAC and IP-Binding based Access Control.		
25.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
26.	Chassis	1U, rack-mounting kit must be included		
27.	Power	Power supply AC 230 V (50/60 Hz)		
28.	Specify the proposed Make			
29.	Specify the proposed Model No			

11.2.16 10G SFP+ LR Transceiver Module for Access Switch

(Must be compatible and from the same OEM as proposed for the Core Switch for Item No. 11.2.13, Item No. 11.2.14 & Item No. 11.2.15)

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	Ports	10G BASE-LR port; Bi-Directional Duplex: full only		
2.	Wavelength	SM-1310 nm		
3.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
4.	Specify the proposed Make			
5.	Specify the proposed Model No			

11.2.17 Indoor WIFI Access Points (AP)

Required Make: CISCO/HPE/Juniper/Extreme Networks

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification / Remarks if Any
A	B	C	D	E
1.	Architecture	The Access Point should support IEEE 802.11b/g/n/ac/ac Wave 2 standards		
2.		Frequency of Radio 1 shall be 2.4 GHz b/g/n 20/40 MHz (2x2:2 stream)		

3.		Frequency of Radio 2 shall be 5 GHz b/g/n/ac/ac Wave 2 20/40/80 MHz (2x2:2 stream)		
4.		Should have minimum 2 Internal Antennas		
5.		Should have minimum 1x GE RJ45		
6.		Radio 1 should minimum Throughput: 280 Mbps		
7.		Radio 2 should minimum Throughput: 1200 Mbps		
8.		Should support minimum 20 dBm Transmission Power on both Radio		
9.		The Max Transit Power of the AP+ Antenna should be as per WPC norms for indoor Access Point defined by WPC & SACFA, Department of Telecommunications, Govt of India. OEM requires to provide undertaking letter stating that AP will be configured as per WPC guidelines for Indoor AP and also submit the WPC certificate showing approval.		
10.		AP should be able to handle minimum 100 concurrent users/devices.		
11.		AP should be IPv6 ready from day one.		
12.	Mobility	Should support wireless controller discovery		
13.		Should support minimum 16 SSIDs		
14.	Security	User/Device Authentication with WPA and WPA2 with 802.1x, local authentication, support for RADIUS and active directory.		
15.		Solution should have support for Captive portal for guest authentication in association with Wireless Controller.		
16.		Solution should support devices authentication/Access List based on MAC address Filtering.		
17.		Should detect and suppress Rogue APs from day one		
18.		Solution should have security for application-level filtering based on IP/Users/Group		
19.		APs should support spectrum analysis to detect RF Interference in indoor area.		
20.	Management	It should be able to managed by virtual/physical wireless controller.		
21.		Should support web-based secured management interface HTTP/HTTPS, CLI (Telnet/SSH), SNMP v1/2, 3.		
22.		Support Wall mounting option and necessary mounting kit should be provided with product.		
23.		AP mounting kit should be with locking mechanism so that AP cannot be removed without using special tools.		

24.		It should support Operating Temperature 0°C to 40°C		
25.		It should be WI-FI Alliance Certified and RoHS Compliant or Green AP Energy Efficiency.		
26.	Warranty	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts with support & subscription of all modules/software/components/features required to utilize the product/solution with all features enabled and as per requirement of RFP. • Specify the warranty and support pack with necessary part/product code.		
27.	Specify the proposed Make			
28.	Specify the proposed Model No			

11.2.18 Wireless LAN Controller for Indoor WI-FI Access Point

Required Make: CISCO/HPE/Juniper/Extreme Networks

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Hardware	It Must be standalone Hardware based Solution. (VM Based Solution will not be accepted)		
2.		Access Point & Wireless Controller must be of Same Make/OEM and work as WI-FI unified Solution		
3.		Redundancy Features: Controller Must support Active- Active and Active-Passive.		
4.		Should Support minimum 200 x 802.11 ac Wave2 base WIFI Access Points quoted for above with all required licenses		
5.		Should support minimum Concurrent 20000 clients/users/devices		
6.		Should Support minimum 4000 VLANs		
7.		Minimum 10 Gbps Throughput		
8.		Should have minimum 2 x 10G RJ45 Port or Should have minimum 2 x 10G SFP+ Ports with 10G SFP+ LR Transceivers (1310 nm) supplied with product from day 1.		
9.		Should have minimum 2 x 1G RJ45 Port		
10.		Should have minimum 1 x Management/Console Port		
11.	General Feature Requirements	Ability to map SSID to VLAN.		
12.		The Solution should have Built-in Wireless/RF optimization feature.		
13.		Should support automatic channel selection – interference avoidance.		

14.		Should provide real-time charts/log showing interferers per access point, on a per- radio, per-channel basis.		
15.		The controller should support Hitless Failover and automated load balancing. User sessions and AP traffic should be load balanced to optimize network utilization during peak periods and maximize availability during unplanned outages.		
16.		Wireless solution should have the technology to eliminate sticky clients and boosts Wi-Fi performance by ensuring that clients associate with the best access point.		
17.		Controller should provide air-time fairness between different speed clients – slower clients should not be starved by the faster clients and faster clients should not adversely affected by slower clients.		
18.		Should support an ability to dynamically adjust channel and power settings based on the RF environment.		
19.		Should have System Internal Captive Portal for guest management.		
20.		Controller should support Spectrum Analysis feature to detect interference from different sources.		
21.		Controller Should provide real-time charts showing interference for access point, on a per-radio, per-channel basis.		
22.		Should support IPv6.		
23.	System Architecture	Centralized MAC addresses filtering		
24.		Should support onboard/ external DHCP server		
25.		Controller should support Onboard / External AAA server		
26.		The proposed architecture should be based on controller-based Architecture within AP deployment. While Encryption / decryption of 802.11 packets should be performed at the AP or controller.		
27.		Support seamless roaming between various access points deployed on same subnet and different subnets.		
28.	QoS features	Per user bandwidth Rate Limiting		
29.		Self-healing (on detection of RF interference or loss of RF coverage)		
30.		Should support per user, per device, and per application/TCP-port prioritization		
31.		Dynamic load balancing to automatically distribute clients to the least loaded 802.11 channel and AP; load balancing must not require any client specific configurations or software		
32.		Adaptive RF management that provides the		

		capability to pause channel scanning / adjust RF scanning intervals based on application and load presence.		
33.		Support for configuring media streams with different priority to identify specific video streams for preferential quality-of-service treatment.		
34.	RF Management	Should be able to load balance clients across channels and access points		
35.		Should be able to load balance clients		
36.		Should be able to load balance clients based on effective throughput on AP or support client band steering and load balancing.		
37.		Should be able to use client and throughput as a measure to load balance between bands or support band steering.		
38.	Inline Security Features	Should allow authenticated client devices to roam securely from one access point to another, within or across subnets, without any perceptible delay Security during re association.		
39.		Controller should support AES-128 and AES-256 encryption or its equivalent encryption technology.		
40.		WLC should support WIDS/WIPS with functionality / equivalent functionality for security including Rogue AP detection and prevention, Evil-twin/AP spoofing detection and Ad-Hoc detection, jamming attack, SSID spoofing, Same network rogue AP, MAC spoofing.		
41.		WLC should support WIDS/WIPS with functionality / equivalent functionality to detect Management Frame flood, Probe request flood, Null probe flood, EAP handshake flood, ARP Replay, Rogue client impersonation, Rogue authorization.		
42.		WIPS/WIDS future should have functionality / equivalent functionality to be able to detect Rogue stations and association to rogue AP, Active probing, DE authentication Flood, Disassociation Flood, RTS abuse, CTS abuse, Unencrypted data Frames, Unauthorized encryption schemes.		
43.		WLC should support WIPS/WIDS with functionality / equivalent functionality for Classification type mentioned below. 1)Detect RF-based DoS. 2)Detect Traffic injection-based DoS DE authentication Flood 3)Detect Traffic injection-based DoS Disassociation Flood. 4)Detect P2P wireless bridge		

		5)Detect unencrypted data frames		
44.		WIPS/WIPS feature should have functionality / equivalent functionality to take following protection measures to prevent wireless attacks. a) Spoofing De-Authentication frames towards Rogue AP clients. b) Block a client after repeat authentication failures.		
45.	Warranty:	• 5 years comprehensive onsite back-to-back OEM warranty including service and parts with support & subscription of all modules/software/components/features required to utilize the product/solution with all features enabled and as per requirement of RFP. • Specify the warranty and support pack with necessary part/product code.		
46.	Specify the proposed Make			
47.	Specify the proposed Model No			

11.2.19 Enterprise Next Generation Firewall/Unified Threat Management

Required Make: Palo Alto/Check Point Software Technologies/ Fortinet

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Basic Criteria	• OEM should have support Centre in India.		
2.	Minimum Hardware Specification	• Minimum 2 x 10GbE SFP+ Ports form day 1 and 2 x 10G SFP+ LR with 1310 nm Transceivers must be supplied/included with product from day 1		
3.		• Minimum 4 x 1GbE SFP Ports from day 1 and with 4 x 1G SFP LR with 1310 nm Transceivers must be supplied/included with product from day 1		
4.		• Minimum 8 x 1GbE RJ45/Copper Ports from day 1		
5.		• Minimum 1 x USB Port		
6.		• 2 x Integrated AC input Power Supply		
7.		• Minimum 1x Console Management Ports (RJ45) & should provide http, https, SSH/Telnet, SNMP based management console for managing and configuring		
8.		• Ports can be configurable for LAN/ WAN/DMZ		
9.		• Device must have 1+1 redundant AC power input supply and must be included/supplied with the product		

		from day 1 with necessary mounting kit.		
10.	Appliance Throughput	• Minimum Firewall throughput of 10 Gbps or higher		
11.		• Minimum 50,000 New Sessions/sec		
12.		• Minimum 10,00,000 Concurrent sessions		
13.		• Minimum 1 Gbps or higher SSL VPN throughput		
14.		• Minimum 1 Gbps or higher Threat Protection/Prevention Throughput with Firewall/Web Filtering+ Application Control+ IPS+ Malware/Antivirus Protection enabled in real world/Enterprise/Production traffic scenario.		
15.		• Minimum 2.5 Gbps or higher IPS Throughput in real world/Enterprise/Production traffic scenario.		
16.		• Minimum 1.5 Gbps or higher NGFW Throughput with Firewall/Web Filtering + Application Control+ IPS enabled in real world/Enterprise/Production traffic scenario.		
17.		• On Device HDD Storage with 250+ GB for inbuilt/on device Centralized Logging & Reporting.		
18.	General Features	• Should be appliance based and rack mountable.		
19.		• The Firewall should support "Route Mode" or "Transparent Mode" and support web proxy/ssl proxy		
20.		• Device in built DNS server for prevention of phishing and pharming scams involving DNS poisoning while reducing time taken for DNS mapping.		
21.		• Intrusion Prevention System		
22.		• Gateway Anti-virus		
23.		• Gateway Anti-spam with DLP functionality		
24.		• Web Content & Application Filtering		
25.		• Application Control		
26.		• Cloud Sandbox/Zero-day prevention		
27.		• Botnet Blocking/Prevention		
28.		• Bandwidth Management/Traffic Shaping capable of setting guarantee bandwidth and maximum bandwidth per firewall policy		

29.		• High Availability with Active-Active & Active-Passive mode		
30.		• The High Availability should be supported in the Firewall from the day one and without any extra license.		
31.		• The Firewall should support Static, Policy Base, Identity based, Multicast routing and dynamic routing for RIP1 & 2, OSPF, OSPFv3, BGP4, RIPing, Server Load Balancing.		
32.		• The Firewall should belong to a family of products that attains industry standard Approved Certification and attains IPv6 Ready Phase 2 & IPv6 Certification		
33.		• Should support IPv6 ACL to implement security Policy for IPv6 traffic.		
34.		• Support for user authentication over SMS and in built two factor authentications without any additional cost.		
35.		• The proposed solution should support integration with Windows NTLM, Active Directory, LDAP, Radius, or Local Database for user authentication.		
36.		• Country Based Blocking, FQDN support and should support MIX mode deployment		
37.		• Should have an integrated wireless controller and should be able to manage multiple wireless access points centrally from web admin console.		
38.		• Should have feature/provision for Virtual System/Appliance/Domain or equivalent feature which splits the physical Appliance/domain into virtual by configuration/Software. (Optional).		
39.		• Should have Feature/module for Device Logging & Reporting and support for appliance/Hardware based Centralized Logging & Reporting Solution deployed additionally.		
40.	Gateway Antivirus, Anti-Spyware and Anti-Spam	• Firewall must be able to scan http, https, IMAP, IMAPs, FTP, FTPs, POP, POPs, SMTP, SMTPs & MAPI protocols with AV signatures		
41.		• Virus, Worm, Trojan Detection and Removal, Automatic Virus signature database update, Real-Time blacklist, Redirect spam mails to dedicated email address, image-spam filter, Spam Notification, Zero-hour Virus outbreak protection.		

42.	Web and Application Filtering	• The proposed solution should be able to enable or disable Web Filter per firewall policy or based on firewall authenticated user groups for both HTTP and HTTPS		
43.		• Should blocks web plug-ins such as ActiveX, Java Applet, and Cookies & Shall include Web URL block, Web keyword block, Web Exempt List		
44.		• The proposed solution must work as a HTTP proxy server with integrated Firewall, Anti-Virus, Anti-Spam, Content filtering, IPS.		
45.		• The proposed solution should be able to enable or disable Web Filter per firewall policy or based on firewall authenticated user groups for both HTTP and HTTPS		
46.		• The solution shall allow administrators to create multiple new local URL filtering categories besides dynamic categories		
47.		• Application Control Solution must provide option to create custom signature for applications & it should able to understand		
48.		• Well-known application like P2P, Voice, etc. without any dependency on the ports		
49.	Intrusion Prevention System (IPS)	• For different attacks like Mail Attack, FTP Attack, HTTP Attack, DNS Attack, ICPM Attack, TCP/IP Attack, DOS and DDOS Attack, Telnet/SSH Attack.		
50.		• Signatures: Custom, IPS Policies: Multiple, Custom, User-based policy creation, Automatic real-time updates.		
51.		• Should have a built-in Signature and Anomaly based IPS engine on the same unit and Anomaly based detection should be based on thresholds.		
52.		• Able to prevent denial of service and Distributed Denial of Service attacks on signature.		
53.		• Administrator shall be able to configure DoS policies that are used to associate DoS settings with traffic that reaches an interface based on defined services, source and destinations IP/Range.		
54.	Advance Threat Protection	• Advanced Threat Protection (Detect and block network traffic attempting to contact command and control servers).		
55.		• It must have facility to block Bot/Botnet attacks from day 1 & also		

		should scan Mobile devices security from day 1.		
56.	Cloud based Zero-day prevention or Sandboxing	• Solution should have support to inspect executables and documents containing executable content including .exe, .com, .dll, .docx, rtx, etc, and malware behaviour analysis and should support cloud based Zero-day prevention or Sandboxing.		
57.	VPN	• L2TP, PPTP, IPsec and SSL must be a part of Basic Appliance.		
58.		• The SSL VPN should be integrated solution and there should be no user-based licensing for SSL VPN with SSL encryption/decryption.		
59.		• Firewall must have at least 400 SSL VPN client in Route mode from the day 1.		
60.		• The system shall support IPSEC site-to-site VPN and remote user VPN in transparent mode without any additional cost for VPN clients.		
61.	Load Balance	• For Automated Failover/Failback, Multi-WAN failover, High availability: Active-Active. QoS, OSPF, RIPv2, BGP, Policy routing based on Application and User support Round Robin Load Balancing		
62.	Bandwidth Management	• Application and user bandwidth management, Multi WAN bandwidth reporting, guaranteed bandwidth policy. Bandwidth for User, Group, Firewall Rule, URL and Applications.		
63.	Mobile application control and mobile malware protection	• Device should have feature to provide Security for Mobile devices protection for Apple IOS and Android environments which includes mobile application control and mobile malware		
64.	Monitoring and Reporting System	• Reports should be accessible through HTTP/HTTPS/Client based.		
65.		• Should provide reports in Graphical/CSV/Excel/PDF format or cloud based.		
66.	Warranty &License for UTM/NGFW	• The proposed solution must be licensed per unit for 5 years with Full UTM/Enterprise subscription for IPS, Gateway Antivirus, Anti-Spyware, and Content/Web Filtering System, Applications Control, Cloud based zero-day prevention/sandboxing, Mobile security, Botnet Prevention/blocking, Analysis & Management along with Logging &Reporting Solution with		

		24x7 Product (Hardware/Software) support. • 5 years comprehensive onsite back-to-back OEM warranty including service and parts. • Specify the warranty and support pack with necessary part/product code.		
67.	Specify the proposed Make			
68.	Specify the proposed Model No			

11.2.20 Wireless AC300 Router

Required Make: Any Make

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Protocols	IEEE 802.11n/g/b		
2.	Interface	1 10/100Mbps WAN Port 3 10/100Mbps LAN Ports		
3.	Antenna	2 fixed 5dbi or higher antennas		
4.	Button	1 Reset Button		
5.	Wireless Link Rate	IEEE 802.11n up to 300Mbps		
6.	Frequency Range	2.4GHz Range		
7.	Working Mode	Router Mode Universal Repeater/Range Extender Mode Access Point Mode WISP (Optional)		
8.	Wireless Encryption	WPA WPA2		
9.	Wireless Function	Enable/Disable Wireless Radio (Optional) Wireless Access Control		
10.	Internet Connection Type	Dynamic IP, PPPOE, Static IP, PPTP (Optional), L2TP (Optional)		
11.	DHCP Server	Built-in DHCP server DHCP Client List Address Reservation		

12.	Virtual Server	Port Forwarding DMZ Host/ IP address assign on port		
13.	Parental/Access Control	Client Filter or Access Control Mac Filter or IP & MAC Binding		
14.	Dynamic DNS	Dynamic DNS Supported		
15.	Other	Bandwidth Control (Optional) Mac Address Clone Remote Web Management		
16.	Hardware & Software Version	Quoted product must be latest Hardware & Software Version released by OEM and it should not be outdated or end of sale and end of support.		
17.	Warranty	• 5 years comprehensive warranty including service and parts.		
18.	Specify the proposed Make			
19.	Specify the proposed Model No			

11.2.21 Face Plate: 1 Port/2Port

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	**General Features**	Single/Double Gang as per the requirement & complete in all respect and as directed to the satisfaction of engineer.		
2.		Labelling provision must be there.		

11.2.22 Cat 6A Shielded RJ45 jack

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	**General Features**	Must be compliant with latest ISO/IEC 11801 A1.1 draft and ratified TIA/EIA 568.2-D for the support of 10GBASE-T.		
2.		Must use insulation displacement connectors (IDC)		
3.		Allow for re-terminations without signal degradation according to acc. to IEC60352-3		
4.		Be constructed of high impact, flame-retardant thermoplastic and robust diecast zinc alloy housing with icon options for better visual identification.		

5.		With shutter/Dust cap provision to protect from dust and moisture. If shutter/Dust cap provision is not available on RJ45 jack it is acceptable on faceplate also.		
6.		It should follow 568A/B wire patterns/configuration.		
7.		The I/O should be Tested/verified by Lab which is accredited by DANAK, and laboratory complies with the criteria in DS/EN ISO/IEC 17025:2005.		
8.		**Plastic Housing**: Robust diecast Zinc Alloy housing plated with Bright Nickel/Cu.		
9.	**Mechanical Characteristic:** Jack Connector	**Operating Life:** Minimum 750 insertion cycles		
10.		**Contact Material:** Copper alloy/Gold-Plated Bronze.		
11.		**Contact Plating:**>0.75 micro meters Gold /Ni		

11.2.23 Cat 6A Patch Cord 2,5 and 10 meters

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	**General Features**	The work area equipment cords shall be comply with TIA/EIA 568.2-D Performance Specifications for 4 pair Category 6A Cabling.		
2.		Category 6A equipment cords: Shall be round, and consist of eight insulated 26 AWG, stranded bare copper conductors, arranged in four color-coded twisted-pairs each pair should be foiled with aluminum shield.		
3.		Equipped with 8-position shielded plugs on both ends, wired straight through with standards compliant wiring.		
4.		Should have 50 micro inches of gold plating over nickel contacts.		
5.		Modular cords should include a molded strain relief boot.		
6.		Should be certified by UL/DNV-GL/third party for type test approval		
7.	**Mechanical Characteristic:** Patch cord Cable	**Conductor size:** 26 AWG stranded bare copper.		
8.		**Jacket:** LSZH		

9.	**Mechanical Characteristic:** Plug	**Temperature range:** -10°C to +60°C		
10.		**Operating life:** Minimum 750 insertion cycles		
11.		**Contact Material:** Copper alloy/Gold-plated bronze.		
12.		**Contact plating: >0.75 micrometers**Au/Ni		

11.2.24 Cat 6A Shielded RJ45 Connectors

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	RJ45 shielded Field Termination Connector	Should be UL listed and IP 20 rated and Re-terminations may be performed with wire of either larger or equal size than originally terminated as per IEC60352-4.		

11.2.25 Cat 6A Cable

#	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**D**	**E**
1.	Shall be of FTP Solid cable LSZH 16-20 AWG solid copper conductor for superior conductivity		
2.	Shall support network line speeds up to 1 gigabit per second for 100-meter distance or better		
3.	Shall have as HDPE (High Density Polyethylene) Insulation Material		
4.	Shall have LSZH (Low Smoke Zero Halogen) Sheath		
5.	Shall be 4-pair Unshielded twisted pair with a cross filler/ isolator (+), meeting Category 6A tested till 500 MHz as per ANSI/TIA-568-C.2.		
6.	Should comply with all of the performance requirements for current and proposed applications such as Gigabit Ethernet, 100BASE-Tx, digital video and Voice		
7.	The Category 6A Solution shall fully comply with the link segment specifications for 10GBASE-T(10GBASE-T or IEEE 802.3an-2006 standard for transmitting data at speeds of 10 Gbps.		
8.	Shall have the length printed on the outer jacket of the cable after every meter.		
9.	Specify the proposed Make		
10.	Specify the proposed Model No		

11.2.26 PVC Batten Pipe

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	**General Features**	Conformity to Indian Standard: IS:9537(Part-3) Latest Classification of Conduit: Medium Mechanical Stress.		
2.	**Construction**	Material: PVC Resin Nominal Size of the Conduit, (mm): 20 or 25 or both Length (Metres) > 3 Socket ended conduit (at one end) : yes		
3.	**Certification**	ISI Marked		

11.2.27 12 Port/ 24 port SM LC LIU Fibre Panel Unloaded

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	General Features	1U low-profile, high density fiber optic shelf shall be proposed that can be used for a combination of splicing and termination of fiber optic.		
2.		Adequate number of Fusion splice holder trays should be included in the RFP.		
3.	Ports	The Panel shall accommodate up to 12/24 fibers to be spliced / terminated		
4.		The front plate of the panel shall be included in the proposal that can support LC-Style Duplex adapters		
5.		The alignment sleeve of the LC Duplex adapter shall be of Phosphor Bronze with integrated collapsible steel clip. This allows better retention and alignment of fiber connectors on patch cords and pigtails		
6.		The SM adapter shall support OS1 as well as OS2 fibers / patch cords.		

11.2.28 Fibre Patch Cord

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	**General Features**	Shall be Single mode OS2, LC to LC, Fiber patch cords of length 3 mtrs.		
2.		**Regulatory Compliance:** RoHS 2011/65/EU **Jacket:** Low Smoke Zero Halogen (LSZH) **Optical Components Standard:** ANSI/TIA-568-C.3		
3.		**Connector Interface:** LC **Operating Temperature:** -10 degree Celsius to +60 degree Celsius		
4.	**Connector Optical Performance**	Insertion Loss, Maximum: 0.30 dB Return Loss, minimum: 27.0 dB		

11.2.29 LC Pigtail SM

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	**General Features**	The Pigtail shall be assembled with 125 µm single mode fiber for SM fiber cabling system.		
2.		The pigtail shall be assembled using 900 micron buffered fiber		
3.		The pigtails shall be terminated with SM LC-Style connector for SM cabling system 6.00 lb @ 0 ° C and 3.00 lb @ 90 ° C		
4.		The LC connector on the pigtail shall meet Optical Components Standard ANSI/TIA-568-C.3.		

11.2.30 6 Core OS2 FOC Cable

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1	**Features**	The fiber type should be 9/125µm, OS2 Matched Cladding Single Mode optical fiber.		

2		Fiber should be coated with a crylate coating.		
3	**Physical Characteristics:**	Nominal mode field diameter 9 µm		
4		Mode field diameter tolerance ±0.5µm		
5		Cladding diameter 125µm		
6		Cladding diameter tolerance ±1.0µm		
	Optical Characteristics:	**Attenuation (of cable with fibers):**		
7		At1310nm ≤0.35dB/km		
8		At1550nm≤0.22dB/km		
9		Polarization Mode Dispersion (PMD) ≤0.06 (ps/sqkm)		
10		Proof Stress level > 0.7(~1%) GPa		
11		Core-Cladding Concentricity error ≤0.5µm		
12		Cladding non-circularity ≤0.7%		
13		Diameter of outer coating layer 242±5µm		
14		Cut-off wavelength ≤1260nm		
15	**Construction Details:**	Germanium doped core with no phosphorus i.e., reduced tendency for hydrogen degradation	.	
16		COATING UV-curable dual layer acrylate coating which ensure excellent micro bending and abrasion resistance.		
17		Fibre /Tube Identification Color coded		
18		Fibre protection (Tubes) Polybutylene Terephthalate (PBT)		
19		Corrugated Steel tape Armor (ECCS Tape)		
20		Inner Jacket High density polyethylene		
21		Outer Jacket UV Stabilized High density polyethylene (HDPE).		
22		Outer Jacket Color Black		
23		Central Strength Member Fibre reinforced Plastic (FRP)		
24	**Dimensions:**	Cable Diameter 15.1±4.0 mm		
25	**Mechanical and Environmental**	Max Bend Radius (full load) 10XOverall diameter		
26		Max. Bending Radius (during installation) 20XOverall diameter		
27	**Performance:**	Max. Tensile Strength-Short Term Minimum 2000N		
28		Max. Crush Resistance-Short Term Minimum 4000N/10cm		

29		Operating Temperature range 10°Cto+70°C		

11.2.31 9U/15U Wall Mount Network Rack

Racks to be supplied with 5 Years repair or replacement comprehensive warranty with parts from make **Vertive/Rittal/APC/Emerson/HPE/Lenovo/Dell/APW/Netrack.**

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1	**Rack Size**	9U/15U Wall mount with min. Depth of 500mm		
2		Lock & key with front glass door		
3		Powder coated Steel cabinet		
4	**Accessories** to be Supplied with each rack unit	Min 1 Cooling Fan		
5		Min 1 Cable Manager		
6		Min 1 Equipment placement tray		
7		• Min 5 Socket/Plug Power Strip (With repair/ replacement)		
8		Rack must be supplied with minimum 1 (One) no. of standard hardware pack/bag (which includes mounting nut-bolts, cable ties etc.) per each Rack Unit for mounting at least 6 Nos Network/IT equipment.		
9	**Warranty**	5 Years repair or replacement comprehensive warranty with parts.		
10	**Proposed Make:**			
11	**Proposed Model/Part Code:**			

11.2.32 27U RACK

Racks to be supplied with 5 Years repair or replacement comprehensive warranty with parts from make **Vertive/Rittal/APC/Emerson/HPE/Lenovo/Dell/APW/Netrack.**

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Type of Server Racks	Portable Racks		
2.	Size of Server Rack Enclosure	27U		
3.	Depth of the Rack (mm)	Upto 1000		
4.	Mount Type	Free-Standing mount with min. Depth of 500mm		

5.	Front and Back doors should be perforated with at least 60% or higher perforations	Yes		
6.	Front & Back door should be lockable utilizing a single key with the doors	Yes		
7.	Side Panels With Key Locks and Slam Latch	Yes		
8.	Secure Locks	Available		
9.	Rear split door design	Yes		
10.	Keyboard Tray Sliding and Rotary	Yes		
11.	Cable channel in rear side for cable management	Yes		
12.	Support cable entry from top or bottom	Yes		
13.	Vertical & Horizontal managers	Yes		
14.	Numbers of Rack trays	1		
15.	Number of Fan For Heat dissipation (nos.)	4		
16.	Heavy Duty Caster Wheels	Yes		
17.	PDU Power Strips	Available		
18.	Warranty	5 Years repair or replacement comprehensive warranty with parts.		

11.2.33 42 U Rack

Racks to be supplied with 5 Years repair or replacement comprehensive warranty with parts from make **Vertive/Rittal/APC/Emerson/HPE/Lenovo/Dell/APW/Netrack.**

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification / Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Dimension	Rack Width: 750-800mm Rack Depth/Length: 1000 mm to 1070 mm		
2.		Rack Height : 42U		
3.		Color: Black		
4.		Rack Equipment Mounting should be as per EIA-310 standard: 19" along with 'U' marking.		
5.		Rack should have minimum weight carrying Capacity of 500Kgs.		
6.	Doors	Front and Back doors should be perforated with at least 60% or higher perforations		
7.		Front & Back door should be lockable utilizing a single key with the doors.		

8.		Rack should have single front door and it should be able to move to the opposite side or interchanged with rear doors. Doors should be able to be removed easily with simple lift-off design.		
9.		Rack should have Split rear doors to improve access and serviceability to rear of rack mounted equipment.		
10.	Side Panels	Side Panels should be of Half-height on each side for easy access.		
11.		Side panels should be lockable utilizing a single key with the doors.		
12.	Cable access	It should have cable access slots in the roof for overhead cable egress.		
13.		It should have unobstructed cable access from bottom of the Rack through a raised floor.		
14.	Wire managers	Two vertical wire/cable managers/panels should be provided in front and back of the rack for cable management.		
15.	Power Distribution Units	Rack must be supplied with 2 x PDUs per Rack - Vertically Mounted, 32AMPs with 25 Power Outputs. (20 Power outs of IEC 320 C13 Sockets & 5 Power outs of 5/15 Amp Sockets), Electronically controlled circuits for Surge & Spike protection 32AMPS MCB, 5 KV AC isolated input to Ground & Output to Ground.		
16.		PDUs provided should have LAN/RJ-45 Port and it should be able to manage by assigning IP address to fetch the Information like current/voltage/power being drawn from each port or total power from PDU.		
17.		All types of Power Cables (like C13 to C14, etc..) required to power up the various Network/Server devices should be supplied/provided with it from day one.		
18.	**Hardware/Accessories provided**	Rack must be supplied with minimum 2 (two) nos. of standard hardware pack/bag (which includes mounting nut-bolts, cable ties etc.) for mounting IT equipment and tools for enclosure adjustment.		
19.		Pre-installed full-enclosure height Integrated and adjustable rear accessory channel to accommodate PDUs and vertical cable organizers.		
20.		Rear accessory channel should be able to move to other locations of the enclosure along the side brace to		

		resituate cable management as per requirement.		
21.		Minimum 2 x 1U Mountable Cable Manager and maximum as per site requirement needs to be supplied from Day one.		
22.	Warranty	5 Years repair or replacement comprehensive warranty with parts.		
23.	Specify the proposed Make			
24.	Specify the proposed Model No			

11.2.34 10 KVA UPS

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
	Generic			
1.	Rating in KVA (KVA)	10.0 KVA		
2.	Technology	IGBT-PWM with/ without inbuilt isolation transformer		
3.	Input Power	single phase 160V - 260V sinewave, 50Hz		
4.	Output power	Single phase 230V +/-1% sinewave 50 Hz		
5.	Backup time on Full Load of 10 KVA	60 minutes		
6.	Minimum VAH (VAH)	8000		
7.	Warranty for UPS (Years)	5 years comprehensive onsite back-to-back OEM warranty including service and parts		
8.	Movable trolley for Batteries	Without trolley but with rack		
9.	Warranty for battery	2 years		
10.	Comprehensive maintenance with replacement for battery post warranty	3 years		
11.	Degree of Protection	IP20		
12.	Cabling 5 meters for input and out put	Without		
13.	Paralleling kit for synchronising	With		
14.	Installation and Commissioning	Yes		

	Functional			
15.	Maximum overshoot and Under shoot of output rated voltage	4		
16.	Voltage Regulation from no load to full load (%)	< / = 3%		
17.	20% Overload limit for minimum 10 minutes	Yes		
18.	Overall Efficiency (%)	>/=90%		
19.	Total Harmonic Distortion (THD) (%)	Maximum 3%		
20.	50% Overload limit for minimum 1 minutes	Yes		
21.	**Protection**	Protection for under voltage at battery terminal at 10.5V per 12 V battery		
22.		Protection of Over voltage, Short Circuit & overload at UPS output terminal		
23.	Specify Proposed Make			
24.	Specify Proposed Model			

11.2.35 For Radiology workstation (CT/MRI/X-Ray/Ultrasound) for PACS with Diagnostic Monitor

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Basic Features	Power supply, 16xDVDRW, USB optical mouse, CPU cooling kit, Intel Xeon E7 – 4809v3 processor or Higher		
2.	Memory Specifications	16GB DDR4 – 1333 or Higher RAM, 128GB NVMe PCIe M.2 SSD or higher		
3.	Keyboard	Full Size 104 key USB Keyboard (should be regular in size and not be slim type)		
4.	Operating System	Factory Pre-loaded/Pre-installed and activated licensed - Window 10 Professional 64 bit upgradable to windows 11 professional 64 bit version or - Windows 11 professional 64 bit version		

		with latest updates with Restore/ Recovery CD		
	General Specifications			
5.	Medical Grade Diagnostic display for PACS/CT/MRI4MP Fusion with graphic card. Touchpad and Medical QA & QC software–latest model should be quoted with the latest graphic cardtosupport4MPina dual view/single and2MPclinical display.			
6.	The display system should include the display, Graphic card and Medical QA software along with accessories of the same make.			
7.	Should be based on the latest screen technology IPS-TFT color LCD. LED backlight and size of 30.4"or more with are solution of 4MP Native 4MP (2560x 1600) Configurable to 2 x 2MP+ (1280 X 1600) Configurable to 2x2MP (1200X1600)			
8.	Luminance Maximum 1050 cd/m2 more and DICOM calibrated at 600 cd/m2 with a contrast ratio of 1500:1			
9.	Power consumption 100W @ calibrated luminance of 600 cd/m² 64W @ calibrated luminance of 400 cd/m²			
10.	Screen protection with a protective, non-reflective glass cover			
11.	Should have necessary front senor for automated calibration and image optimization features to improve uniformity.			
12.	The display should have the feature to be connected to a project or through the graphic card in the same configuration.			
13.	Warranty – 5 years comprehensive onsite back-to-back OEM warranty for Desktop, Monitor, Keyboard and mouse including service and parts.			
14.	Each diagnostic display should be combined with a 2MP clinical grade display 20inch or more of the same brand for RIS and reporting and should have a DICOM calibrated luminance of 180cd/m2 with front sensor and cleanable protective cover with 5 years warranty.			
15.	Network Connectivity		Ethernet	
16.	Specify the proposed make			
17.	Specify the proposed model			

11.2.36 Robotic CD/DVD Writer for PACS

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Disc Capacity:	100 discs		
2.	Number of Drives:	2		
3.	Disc Recorders:	Latest-generation CD-R/DVD-R recordable drives; optional 12xBD-R drives		
4.	Recordable Formats:	CD:CD-R,CD-RW,CD-Audio(CD-DA), Video-CD, MP3to CD-Audio, most other industry		

		-standard CD formats DVD:DVD±R, DVD±RW,DVD±DL		
5.	Print Method:	Thermal inkjet		
6.	Print Resolution:	Upto 4800 dpi		
7.	Print Head:	Semi-permanent; user replaceable		
8.	Ink Cartridges:	Separate high-capacity ink cartridges for Cyan, Magenta, Yellow and Black (CMYK)		
9.	Colors:	16.7million		
10.	ColorMatching:	Color profile included		
11.	Robotics:	High-speed belt drive		
12.	Data Interface:	USB 2.0 for CD/DVD drives		
13.	Power:	Universalauto-switching100-240VAC, 50/60Hz,5.0A		
14.	Certifications:	UL, UL-C, CE, FCC Class A, RoHS, WEEE		
15.	Onsite OEM Warranty (years)	5 years comprehensive onsite back-to-back OEM warranty including service and parts		
16.	Specify the proposed make			
17.	Specify the proposed model			

11.2.37 55" LED:

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	**B**	**C**	**D**	**E**
1.	Connectivity	USB Ports : 2 or higher		
2.		HDMI Ports :2 or higher		
3.		Wireless Connectivity		
4.		Internet Connectivity		
5.	Display	Screen size: Minimum 55"		
6.		LED		
7.		Full HD		
8.		Resolution :1920 x 1080 or higher		
9.	Smart Features	QMS Display app must be available in play store		
10.		Should support Multimedia playback - images, video, live TV feed & scrolling multi-lingual text.		
11.	Operating System	: Android		
12.	Audio	Speaker: 5W + 5W @ 8Ω		
13.	Warranty	5 years comprehensive warranty including service and parts.		
14.	Specify the proposed Make			
15.	Specify the proposed Model No			

11.2.38 40" LED:

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification / Remarks if Any
A	B	C	D	E
1.	Connectivity	USB Ports : 2 or higher		
2.		HDMI Ports :2 or higher		
3.		Wireless Connectivity		
4.		Internet Connectivity		
5.	Display	Screen size: Minimum 40"		
6.		LED		
7.		Full HD		
8.		Resolution: 1920 x 1020 or higher		
9.	Smart Features	QMS Display app must be available in play store		
10.		Should support Multimedia playback - images, video, live TV feed & scrolling multi-lingual text.		
11.	Operating System	Android		
12.	Audio	Speaker: 5W + 5W @ 8Ω		
13.	Warranty	5 years comprehensive warranty including service and parts.		
14.	Specify the proposed Make			
15.	Specify the proposed Model No			

11.2.39 Touch Screen Token Dispensing Kiosk:

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	Touch Details	Number of Touch Points: 60 points with palm rejection		
2.		Touch Point Speed :<120 milliseconds		
3.		Input Type : Finger, Thin Glove		
4.		Touch Communication : USB		
5.		Operating System Support :Windows 8 or higher/Android/IOS		
6.		Touch screen kiosk with 8" or higher LCD/LED Screen		
7.	Physical Specifications	Operating Environment :0 to +40 degrees C, Relative Humidity, non-condensing 90%		
8.		Storage Environment : -10 to +60 degrees C		
9.		Video Input :DVI, VGA, HDMI or directly install the QMS application		
10.		Audio : Speaker: 5W + 5W @ 8Ω		
11.		Cover Glass: Chemically Strengthened		

12.		VESA Pattern: 400mm x 400mm		
13.		Power Supply: Internal 110/220 VAC Power Supply		
14.		Power Consumption: 100W Typical, 130W Max		
15.		RoHS Compliant : Yes		
16.		Alpha-numeric token number should also be supported with pattern such as AB0001-AB9999. Each type of service should have its unique series of Queue-Token number with an Alphabet embedded in-front such as Department A – A0001~A9999, Diagnosis Services B – B0001~B9999.		
17.		QR code and bar code scan facility should be made available in the token dispensing kiosks that will also facilitate confirmation of the patient arrival in OPD for patients with prior appointment via mobile app/browser.		
18.	General Requirements	Compact and portable and durable for heavy usage		
19.		Must be able to handle 5000 or more transactions per day		
20.		Must be able to print bar-code/QR code		
21.		Able to dispense tickets with neat edges		
22.		Able to prompt users via sms/email when ticket supply is running low		
23.		Capable of high speed printing (at least 30 tickets per minute) and in thermal paper format		
24.		Ticket length can be programmable		
25.		The machine spare parts should be easily available for at least 5 years One Ticket roll with 800 or more tickets should be used for token number issuing		
26.		Ticket printout must be in blue color		
27.		If required, card reader option should able to use with touch & button token dispenser		
28.		If required, patient should able to enter their name, contact details in touch dispenser		
29.		Hospital logo must printout on token.		
30.		Ticket finishing alert		
31.		Token machine able to restore previous token number after restart or power failure		

32.		Token machine able to print QR code. QR code will help patients to know current queue status.		
33.	Queue Token Ticket Minimum Information	Hospital's and Department' name		
34.		Date and time of issue		
35.		Queue-Token number in numeric and bar-coded form (if required)		
36.		Counter numbers of the counters providing the services		
37.		Number of people waiting to be served / the next patients to be called to be served		
38.		Expected waiting time which should be computed by the Queuing System; and Cautionary and/or customized messages, e.g. "Season's Greetings", "Queue-Token numbers may not be called in sequence". These words should be edited through the Web-System real time as and when the user would want to change.		
39.	Warranty	5 years comprehensive warranty including service and parts.		
40.	Specify the proposed Make			
41.	Specify the proposed Model No			

11.2.40 Centralized HCI Server

[**Note**: The proposed solution will be hosted at SMC's datacenter. SI is responsible to size and propose the IT infrastructure required for smooth functioning of the entire solution as per OEM guidelines and standard industry practice. SI must supply, install, commission and manage/maintain the IT Infrastructure components such as, Servers, Databases, Storage Solution, Software and other supporting IT components as required at the Data Centre that has been proposed as part of the bid. The sizing for HMIS, PACS, QMS, EMS, NMS and any other solution component is to be considered on HCI. The mentioned quantity of nodes is the minimum requirement. The SI is free to quote the HCI node quantity and usable storage capacity as per the solution requirement to meet the RFP requirements.]

#	Parameters	Requirement/Minimum Specification	Matched [Yes/No]	Deviation from Specification/ Remarks if Any
A	B	C	D	E
1.	Type of Hyper-Converged Infrastructure (HCI) offered	Generic node HCI (consisting of both Compute and Storage)		
2.	Total usable physical Cores	256 or higher. Pl. specify.		

	available (after installation of HCI software resources required for solution) in the offered solution available after 1 node failure			
3.	Total usable Storage available after 1 node failure in TB without using De-duplication, Compression (after installation of HCI software resources required for solution) in the offered solution. Bidder is required to use RAID 5 / RAID 6 / RAID 10 as per best practices and to maximize the performance of entire software solution proposed.	200 TB or higher. Pl. specify offered HDD combination with capacity.		
4.	Ratio of SSD & NL–SAS storage in the HCI	40 : 60		
5.	Total usable RAM in GB available (after installation of HCI software resources required for solution) in the offered solution available after 1 node failure	2304 or higher		
6.	Types of data copies across Cluster available in the offered solution	2 or higher		
7.	Number of Nodes offered in HCI Cluster	5 + 1 or higher (must have protection of 1 node failure (n+1))		
8.	Number of Sockets offered per Node	2 or higher		
9.	Number of Populated Processor per Node	2 or higher		
10.	Number of minimum Cores per processor	24 or higher		

11.	Type of Processor offered in the system	Latest Intel Xeon processor 2.60 GHz or higher. Pl. specify offered processor.		
12.	RAM Capacity (Raw) offered per node in GB	512 GB or higher. Pl. specify offered RAM.		
13.	RAM scalability per node in TB	1.5 TB or higher. Pl. specify.		
14.	No of cache drives per node	2 or higher		
15.	Cache offered per Node in GB	1600 or higher. Pl. specify,		
16.	Number of Network ports per node	4 or higher		
17.	Throughput Per Network port	10 Gbps		
18.	Number of HCI Interconnect Switches to be offered for Interconnection all the Network Ports in the Cluster	2 or higher		
19.	HCI Interconnect Switches throughput available per port	10 Gbps or higher		
20.	Stacking/uplink port & throughput of HCI Interconnect Switches	2 * 40 Gbps or higher		
21.	Number of Available and Active Ports for 10 Gbps Throughput per Switch	24 or higher		
22.	Scalability: Any additional node/storage/RAM added to the cluster to augment compute/ storage/ memory capacities, the same performance per node on upgraded node/Storage/RAM	Yes		
23.	IOPS delivered at 70:30 Read: Write Ratio on 8K block size with latency of 5ms maximum for each node	20000 or higher		
24.	Supported industry protocols by HCI	1.NFS, 2. iSCSI		
25.	HCI capability to support File/Block	1.NFS, 2. iSCSI		

	Services and file/block replication across clusters for			
26.	Inline data Compression & Deduplication function licenses for	Unlimited		
27.	Number of nodes HCI supports in same cluster/deployment	24 or higher		
28.	Hypervisor to be integrated with SDS	Outside Kernel		
29.	Bare-metal/non-Bare metal type of virtualization hypervisor	BareMetal		
30.	HCI Features	HCI must support all industry's standard Hypervisor		
31.		HCI should have independently scaled storage and compute as and when needed without any downtime.		
32.		HCI should have a mechanism for Metadata protection for all offered nodes within the cluster so as to provide high availability and no single point of failure.		
33.		HCI is configuration of SSD/SAS/NL SAS/NVMe then the caching must be on appropriate capacity of SSD/NVME drives to meet the IOPS/performance requirements.		
34.		HCI should have VLAN for networking and integrated VM IP's Management capabilities,		
35.		HCI should have a security compliance methodology to ensure a highly secure environment.		
36.		HCI should provide management through a remote/ On-Premise GUI console. Also, it should provide storage, compute & hypervisor metrics on a per VM/Node level as well as health and monitoring of the entire platform.		
37.		HCI should have the platform support LDAP Active Directory integration. The Clients installed on any major Operating System.		
38.		Platform should support monitoring via SNMPv3, email alerting via SMTP.		
39.		Capable of creating instant snapshots of virtual machines and maintaining multiple copies of snapshots & clones,		
40.		Capability to support native VM/ HCI level replication for installed Hypervisor		

41.		HCI should have redundant components with no single point of failure in the system for power supply module, fan etc.		
42.		It should have Intelligent Optimum Data Distribution across all nodes.		
43.		HCI should support container-based application,		
44.		HCI should have single management tool supporting multiple clusters		
45.		HCI should have Management tool which is built into the solution & scales with the cluster		
46.		HCI should have built-in-security for data		
47.		HCI should have VM/Node-centric policy-based management.		
48.		HCI should have Management platform providing the box automation and orchestration for appliance-based operational tasks.		
49.		HCI should support for VM or APP consistent snapshot/backup.		
50.		HCI should have data at Rest Encryption.		
51.		HCI should have management tool which is Built-in to the solution, scales with the cluster, and does not require separate hardware infrastructure.		
52.		HCI should have integrated/Software-based remote Data recovery/Replication solution.		
53.		HCI should have Data Integrity Checks.		
54.		HCI should have Management tool providing visibility of HCI network.		
55.		HCI should have integrated management for hyperconverged infrastructure and virtual environment switch Storage & Compute/Storage/Network/Computer.		
56.		Proposed HCI platform should offer hardware independent scale up and scale out functionality.		
57.		HCI software license should be perpetual.		
58.	The offered product to have support from OEM for	Updation for Patches and Bug fixes for software Within support period.		
59.		Upgradation of version software within support period.		
60.		Service and support from OEM within support period.		
61.	Integration with Third-Party FC Storage	Yes		
62.	Necessary cable with sufficient length to be provided for	Yes		

	connecting the Nodes to the Switch (meters)			
63.	Number of Years upto which support to be provisioned from OEM for Updation (Patches and Bugfixes) within support period	5 or higher		
64.	Number of Years upto which support to be provisioned from OEM for Upgradation of version within support period	5 or higher		
65.	Number of years of service and support to be provisioned from OEM	5 or higher		
66.	Number of years & Type of warranty	5 years comprehensive onsite back-to-back OEM warranty including service and parts		
67.	Specify the proposed make			
68.	Specify the proposed model			

11.2.41 NMS Application

#	Specifications	Compliance [Yes/No]	Remarks if Any
A	**B**	**C**	**D**
1.	The Network Management Solution should be hardware or software based providing secured web-based consoles to monitor AP and Switches. It should have appropriate scalability to manage the number of AP and switches.		
2.	NMS solution should provide a dashboard that includes but not restricted to AP and Switch Health, Client Health, Topology It should provide with valuable information that gives insights into the network to more quickly detect and react to potential Wi-Fi user experience degradation.		
3.	The Network Management Software should allow flexible definitions of administrator roles and responsibilities with RBAC (Role based Access Control) for different teams.		
4.	The Network Management Software should provide an interface to configure and deploy Command Line Interface (CLI) across one or more IP devices.		
5.	The Network Management Software should enable performance management by Providing customizable dashboard(s).		
6.	The NMS should provide reports encompassing key performance indicators (KPIs)and exported in multiple formats.		
7.	Solution must provide RF Heat maps, Network Monitoring and Troubleshooting, Centralized software updates, Network		

	mapping with floor plans.		
8.	Display the location of each rogue device with respect to the AP reporting it.		
9.	System should provide current list of clients connected to each AP, graphical details of wireless traffic & data rates on a per client basis, recent history of association with APs for clients		
10.	System should provide Visual Connection Diagnostics for wireless client that speeds and simplifies troubleshooting and Client problem resolution.		
11.	NMS should support Traffic analysis/Traffic Details that displays AP/Switch, WLAN and AP traffic And Client trends overtime. It should quickly find the most heavily loaded AP/Switches/Ports or top network users and devices. It should be able to inform about the Client OS types and application consumption for wireless Clients. NMS should support filter of statistics by band (2.4GHz,5GHz, or both) and traffic direction (uplink, downlink, or both), and monitor Client load over time.		
12.	System should support extended duration of logging through Syslog.		
13.	The operations solution should provide a network "dashboard" on screens, providing up- to-date network-wide information on key usage and performance metrics. The operations solution should monitor all network devices including edge switches to which wireless devices are connected.		
14.	NMS solution should support Wired network (Network Switch) management.		
15.	NMS solution should support viewing switch information details.		
16.	NMS solution should support Switch inventory (model, FW version, etc.) management.		
17.	NMS solution should provide report for Health and performance monitoring (status, traffic stats, errors etc.) with alarms.		
18.	NMS solution should support scheduled Firmware Upgrade.		
19.	NMS solution should support creating Switch configuration and switch stack, file backup and restore.		
20.	NMS should allow port settings.		
21.	NMS should allow viewing switch port details, switch alarms, switch events, LLDP neighbours in the switch and firmware history/details of the switch.		
22.	NMS solution should support Clients troubleshooting-search by Client MAC to find the AP/switch port for that Client		
23.	**Licensing**: Product Solution offered must have capacity for support of minimum 500 Network devices like Switches, Routers, WI-FI Aps, WI-Fi controller, Firewall etc. Product/Solution/All Modules offered as per above requirement must be with perpetual licence and 5 years of support from OEM. OEM/SI is required to provide atleast 1 major software upgrade during the 5 years of Contract period, if any.		