Item 2: Wireless Access Point (WAP)

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
2.1	Brand	(Specify) Proposed product should be in the Gartner for Wired and Wireless LAN Access Infrastructure for last 3 years			
2.2	Model	(Specify)			
2.3	Country of Origin	(Specify)			
2.4	Country of Manufacture	(Specify)			
2.5	Year of manufacture	(Specify)			
2.6	Type	Indoor			
2.7	Supporting standards	Should support 802.11ac Wave 2			
2.8	Wireless Capabilities	3x3 MIMO with two spatial streams, single-user and multiuser MIMO			
		MRC			
		802.11ac beamforming (transmit beamforming)			
		20-, 40-, and 80-MHz channels			
		PHY data rates up to 867 Mbps (80 MHz in 5 GHz)			
		Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx)			
		802.11 DFS			
		CSD support			
2.9	Integrated Antenna	Should have 3 inbuilt integrated Antennas			
		2.4 GHz, gain 3 dBi, internal omni, horizontal beamwidth 360°			
		5 GHz, gain 5 dBi, internal omni, horizontal beamwidth 360°			
2.10	Deployment modes	Should support Centralized deployment controlled through a Wireless controller			
		Should support standalone deployment without a controller and wireless access point should be able to act as a controller			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
		Should support a hybrid mode where signaling traffic is directed to the controller and data traffic is routed locally			
2.11	Ports	1 x 10/100/1000BASE-T autosensing (RJ-45), Power over Ethernet (PoE) Management console port (RJ-45)			
2.12	Frequency band	2.4 GHz			
		5 GHz			
2.13	Transmission power	22 dBm or higher			
2.14	Power over Ethernet (PoE)	802.3af / 802.3at			
2.15	Data rate	Total aggregate dual-radio data rate of up to 1 Gbps			
2.16	Multiple broadcast SSID	16			
2.17	Accessories	Ethernet cable			
		Wall / Ceiling mount kit			
2.18	Security Standards	802.11i, Wi-Fi Protected Access 2 (WPA2), WPA			
		802.1X			
		Advanced Encryption Standard (AES)			
		EAP-Transport Layer Security (TLS)			
		EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2)			
		Protected EAP (PEAP) v0 or EAP-MSCHAPv2			
		EAP-Flexible Authentication via Secure Tunneling (FAST)			
		PEAP v1 or EAP-Generic Token Card (GTC)			
		EAP-Subscriber Identity Module (SIM)			
2.19	Management	Standalone secure web based, SSH or Centrally manage with a controller			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
2.20	Mounting option	Wall / Ceiling mounting required with the mounting bracket			
2.21	Operating system	(Specify)			
2.22	Hardware reset button	Required			
2.23	Dimension (W x D x H)	(Specify)			
2.24	Weight	(Specify)			
2.25	Power supply	PoE			
2.26	Standard compliance & certifications	UL 60950-1			
		CAN/CSA-C22.2 No. 60950-1			
		UL 2043			
		IEC 60950-1			
		EN 60950-1			
2.27	Install and Configuration	The bidder should install and configure the WAP as per the purchasers' request and to other systems simultaneously.			
2.28	User training	Required minimum of 6 users			
2.29	Manufacturer authorization	Manufacturer authorization letter shall be provided.			
2.30	Product experience	WAP brand shall be produced under the same brand for at least for last 3 years.			
2.31	Warranty	3 years comprehensive on-site manufacturer authorized warranty for unit, inclusive of replacement of all defective parts free of charge.			

Item 3: Firewall

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Page	If No Bidders Reference Response/ Reference Page
3.1	Brand	(Specify) Proposed product should be in the Gartner for UTM firewalls for last 3 years			
3.2	Model	(Specify)			
3.3	Country of Origin	(Specify)			
3.4	Country of Manufacture	(Specify)			
3.5	Year of manufacture	(Specify)			
3.6	Form factor	Rack Mountable			
3.7	Interfaces	08 (expandable to 16) x 10M/100M/1GBASE-T Ethernet interfaces (RJ-45),			
		2 x 10 Gigabit (SFP+) interfaces with 1G SFP Populated			
		1 x Gigabit Ethernet copper port for Management			
		1 x RJ-45 console			
		1 x USB 3.0			
		Free Expansion slot 1			
3.8	Architecture	(Specify)			
3.9	Maximum concurrent sessions, with Application Visibility and Control	20 million			
3.10	Maximum new connections per second, with AVC	200,000			
3.11	IPS Throughput	9 Gbps or higher			
3.12	Minimum VPN Throughput	4.5Gbps			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Page	If No Bidders Reference Response/ Reference Page
3.13	Next Generation Firewall throughput (FW+IPS+APP ID)	5.5 Gbps (Should be real world throughput not lab throughput)			
3.14	Multiple Security Zones	(Specify)			
3.15	Access Control Criteria	User Identity			
		Source and Destination zone			
		Mac and IP Addresses			
3.16	VLAN interfaces	(Specify)			
3.17	VLAN support	802.1Q VLAN Support			
3.18	IP address assignment	Static			
		PPoE client			
		DHCP Server, Client, Relay, Dynamic DNS Client			
3.19	User Authentication	Internal Database			
		AD Integration			
3.20	Routing protocols	Dynamic Routing • BGP • OSPF • RIP v1, v2			
		Static routes			
		Policy based routing			
		Multicast Support			
		Other (specify)			
3.21	PAT/NAT	Static NAT (Port forwarding)			
		Dynamic PAT/NAT			
		One to One PAT/NAT			
		Policy Based PAT/NAT			
		IPsec NAT Traversal			
3.22	Networking	Port Independence			
		VLAN (Tagging, Routed mode)			
		Multi VLAN and server load Balancing			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Page	If No Bidders Reference Response/ Reference Page
		VoIP and Video Conferencing Support			
		DNS Based inbound load balancing			
		QoS Support Bandwidth priority • Differentiated services • Queuing • Other (specify)			
3.23	IDS/IPS	IDS support			
		IPS support			
3.24	Virtual Private Network (VPN)	IPSec			
		PPTP			
		L2TP			
		Encryption Methods (Specify)			
		Data Encryption Standard (DES) (56-bit)			
		Triple Data Encryption Standard (3DES) (168-bit)			
		Advanced Encryption Standard (AES) (128-bit+) encryption			
		Other (specify)			
3.25	SSL VPN	TCP & UDP Tunneling			
		Authentication • AD • Radius • LDAP • TACACS+			
		User Policy Enforcement			
		Group Policy Enforcement			
		Administrative Control			
		Other (specify)			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Page	If No Bidders Reference Response/ Reference Page
3.26	Threat/Security Protection	DoS/ DDoS attacks Prevention			
		Fragmented & Malformed packets protection			
		Advanced threats Prevention			
		Detecting and Preventing Brute Force Login Attacks			
		Network Attack Detection			
		Zone based IP spoofing & flooding protection			
		Pharming Protection			
		Others (specify)			
3.27	IPv6 support	Comprehensive security over IPv6 (Routing and policing)			
3.28	Indicators (Alarm / Notification)	Management System Alert			
		Port Status			
3.29	Security subscriptions / Threat protection	Advanced Malware Protection Anti Virus			
		Web and App filtering			
		Threat Prevention (IPS)			
		Email filtering and anti spam			
		Web Application Firewall Protection			
3.30	High-Availability	Active-Passive			
3.31	Administration & system management	Web-based configuration wizard			
		Role-based access control			
		Support of API			
		Firmware Upgrades via Web UI			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Page	If No Bidders Reference Response/ Reference Page
		Web 2.0 compliant UI (HTTPS)			
		Command Line Interface (Serial, SSH, Telnet)			
		Other (specify)			
3.32	Centralized event and Policy management	Specify			
3.33	Bandwidth management	User / Group / Application based bandwidth policies			
		Application & User Identity based Traffic Discovery			
		Other (specify)			
3.34	Logging/Reporting	Graphical Interfaces			
		Real-time Monitoring			
		Historical Monitoring			
		Syslog support			
		Log Viewer			
		HTML and PDF reports			
		Other (specify)			
3.35	Certifications	NSS LAB Report			
		Other (Specify)			
3.36	Software and security subscription licenses for 3 years	Advanced Malware Protection Anti virus,e-mail			
		URL filtering			
		Threat Prevention			
		Other (specify)			
3.37	Power supply with Internal or External Redundant PSU	100~240V, 50/60Hz Power Supply			
3.38	Power consumption	(Specify)		©	
3.39	Dimension (WxDxH)	(Specify)			
3.40	Install and Configuration	The Technical team should install and			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Page	If No Bidders Reference Response/ Reference Page
		configure the Firewall Unit as per the purchasers' request and to other systems simultaneously.			
3.41	User training	Required for minimum of 10 users			
3.42	Manufacturer authorization	Manufacturer authorization letter shall be provided.			
3.43	Warranty	3 years comprehensive manufacturer authorized warranty, one to one replace in case of workshop attention.			

Item 4: Core Ethernet Switch

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
4.1	Brand	(Specify) Proposed product should be in the Gartner for Wired and Wireless LAN Access Infrastructure for last 3 years			
4.2	Model	(Specify)			
4.3	Country of Origin	(Specify)			
4.4	Country of Manufacture	(Specify)			
4.5	Year of manufacture	(Specify)			
4.6	Type	Rack Mountable			
4.7	Status LEDs	System, Link/Act			
4.8	CPU memory DRAM	4GB DRAM & 2GB Flash or Higher			
4.9	Supporting switching layer	Should have L3 Support			
4.10	VLAN support	Port-based and 802.1Q VLAN Support (4,000 VLAN IDs)			
		Management VLAN			
		Guest VLAN support			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
		Dynamic VLAN assignment via Radius server with 802.1x client authentication			
4.11	Switching capacity	640 Gbps or higher			
4.12	Forwarding rate	68.4 Mpps or higher			
4.13	I/O Ports	Stackable 24 SFP Ethernet ports with 12 no's 1 G SFP Populated			
4.14	L3 features support	IPv4 and IPv6 Support			
		Static routing • RIP (v1, v2) • OSPF • BGP • IPv4 and IPv6 Routing (OSPFv3 and EIGRPv6)			
		Equal-cost routing (L3 Load Balancing)			
		IGMPv1, v2, and v3			
		Policy-based routing			
		Protocol-Independent Multicast (PIM) for IP multicast routing			
4.15	Other features	NTP Support			
		Net Flow Support			
4.16	Mac address	32,000 or higher			
4.17	Security	Access Control Lists (L2 / L3)			
		Port Security			
		DHCP Snooping			
		Dynamic ARP inspection (DAI)			
		IP source guard			
		Unicast Reverse Path Forwarding (uRPF)			
		Intrusion Detection System (IDS)			
		TACACS+ and RADIUS authentication			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
4.18	Link Aggregation	IEEE 802.3ad LACP			
4.19	Switch Management	SSH, SNMP v1/v2/v3 & Web Interface, Remote Monitoring (RMON), Command Line Interface (CLI) & RSPAN support			
4.20	Storm control	Broadcast, Unicast, flooding, and multicast			
4.21	Spanning tree	IEEE 802.1d Spanning Tree, IEEE 802.1s Multiple Spanning Tree, IEEE 802.1w Rapid Spanning Tree			
4.22	Reliability (MTBF)	30 Years or better			
4.23	Other management	SSH, DHCP client support, SYSLOG, configuration unload/backup via HTTP or TFTP			
4.24	Highly Availability	Stackable (Minimum of 480 Gbps Stacking Bandwidth), Active/Standby VRRP Support			
4.25	Standards	IEEE 802.x Standards (1as, 1s, 1w, 11, 1x, 3ad, 3af, 3at, 1D, 1Q)			
4.26	Certifications	UL 60950-1 Second Edition			
		EN 60950-1 Second Edition			
		VCCI Class A			
		CNS13438 Class A			
4.27	Accessories	Console cable			
		Rack mountable Installation kit			
4.28	Enclosure dimension (H x W x D)	(Specify)			
4.29	Operating temperature	23 to 113°F (-5 to 45°C)			
4.30	Weight	(Specify)			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
4.31	Power supply	Dual redundant power supplies 220-240 VAC			
4.32	Install and Configuration	The Technical team should install and configure the Core Ethernet Switch as per the purchasers' request and to other systems simultaneously.			
4.33	Manufacturer authorization	Manufacturer authorization letter shall be provided.			
4.34	Product experience	Core Ethernet Switch brand shall be produced under the same brand for at least for last 3 years.			
4.35	Warranty	3 years comprehensive on-site manufacturer authorized warranty for unit, inclusive of replacement of all defective parts free of charge.			

Item 5: Access Ethernet Switch

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
5.1	Brand	(Specify) Proposed product should be in the Gartner for Wired and Wireless LAN Access Infrastructure for last 3 years			
5.2	Model	(Specify)			
5.3	Country of Origin	(Specify)			
5.4	Country of Manufacture	(Specify)			
5.5	Year of manufacture	(Specify)			
5.6	Type	Rack Mountable			
5.7	Status LEDs	System, Link/Act			
5.8	Supporting switching layer	L2 and L3 Support required			
5.9	Switching capacity	200 Gbps or better			
5.10	Forwarding rate	70 Mpps or higher			
5.11	VLAN support	Port-based and 802.1Q VLAN Support (4096 VLANs simultaneously)			
		Management VLAN			
		MAC-based VLAN			
		Private VLAN Edge (PVE)			
		Guest VLAN support			
		Dynamic VLAN assignment via Radius server with 802.1x client authentication			
5.12	I/O Ports	24 10/100/1000 Ethernet ports			
		PoE+ & 370 W Ports			
		4 SFP ports with Populated 1G SFP 2no's			
		IPv4 and IPv6 Support			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
5.13	L3 features support	Should have wire speed routing of IPv4 packets			
		Should support for Load balancing and redundancy across the stack			
		Should be able to configure Layer 3 routed access open shortest path first.			
		Should relay of DHCP traffic across IP domains			
5.14	Other features	Plug-and-play installation			
		Full/half-duplex support			
		Flow control			
		Should have support stackable			
		Network wide Automatic Voice Deployment			
5.15	Mac address	16K or higher			
5.16	Security	Access control list			
		Port Security			
		RADIUS/TACACS+ support			
		IEEE 802.1X, SSH, SSL support			
		DHCP, BPDU Guard support			
		Dynamic ARP Inspection (DAI)			
		Storm control			
5.17	Switch management	SSH, SNMP v1/v2/v3 & Web Interface, Remote Monitoring (RMON), DHCP client, SYSLOG			
5.18	Port Aggregation	specify			
5.19	Reliability (MTBF)	20 years or better			
5.20	Standards	IEEE 802.x (1D, 3, 3u, 3ab, 3ad, 3x,3z 1w,1P,1Q,1S,1W,1X,1AB,)			
	Certifications	UL 60950			

Item No.	Minimum Specification		Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
5.21		CSA 22.2			
		KN 24			
		EN 60950-1			
5.22	Accessories	Console cable			
5.23	Enclosure dimension (W x H x D)	(Specify)			
5.24	Operating temperature	23° to 113°F			
5.25	Weight	(Specify)			
5.26	Power supply	Must be internal. No external power transformers			
5.27	Power consumption	0.49 KVA			
5.28	Install and Configuration	The Technical team should install and configure the Access Ethernet Switch as per the purchasers' request and to other systems simultaneously.			
5.29	User training	Required for minimum 10 users			
5.30	Manufacturer authorization	Manufacturer authorization letter shall be provided.			
5.31	Warranty	3 years comprehensive on-site manufacturer authorized warranty for unit, inclusive of replacement of all defective parts free of charge.			

Item No: 06 - Wireless Adapter

	Description	Specification	Complied (Yes/No)	If Yes Bidders Response/ Reference Page	If No Bidders Response/ Reference Page
	Wireless Adapter				
1	Country of Origin				
2	Country /place of Manufacture				
3	Brand Name				
4	Model Number				
5	Standards Performance	PCI Express 1.0a IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (up to 300 Mbps) IEEE 802.11ac (up to 867 Mbps)			
6	Hardware Interface	PCI Express x1 (Version 1.0a) LED indicator 2 x RP-SMA antenna connectors Magnetic Antenna Base with 1 m (3.3 ft) extension cable 2 High Gain Detachable Dual Band Antennas Standard and low profile tower brackets			
7	Encryption	Wireless encryption: WEP, WPA/WPA2-			

		PSK, WPA/WPA2-RADIUS			
8	Compatibility	Windows® 10, 8.1, 8, 7, Vista, XP			
9	Features	2 high gain dual band detachable antennas and integrated high powered amplifiers for long range connectivity Magnetic Antenna Base for easy mounting and antenna positioning for optimal signal reception High-speed 802.11ac connectivity			
10	Frequency	4GHz: (FCC) 2.412 – 2.462GHz, (ETSI) 2.412 – 2.472GHz 5GHz: (FCC) 5.150 – 5.250GHz/5.745 - 5.825GHz, (ETSI) 5.150 – 5.250GHz/5.260 – 5.320GHz/5.500 – 5.700GHz			
11	Antenna Gain	2.4 GHz/5 GHz: 2 x 5 dBi (max.) dual band external/detachable			
12	Certifications	CE FCC			
13	Manufacturer authorization	Manufacturer authorization letter shall be provided.			
14	Warranty	3 years comprehensive on-site manufacturer			

		authorized warranty for unit, inclusive of replacement of all defective parts free of charge.			