PanSALB
PAN SOUTH AFRICAN LANGUAGE BOARD

ANNEXURE A

SD-WAN EQUIPMENTS:

LOCATION	EQUIPMENT	QUANTITY
Switches	Ethernet Switch with 48*10/100/1000BASE-T PoE+ Ports (AC 370W,DC 740W) and 4*1G/10G BASE-X SFP Plus Ports,(AC/DC)	13
AP	Access Point, 4 Streams Dual Radio 802.11ax/ac/n, FIT	36
AC	Access controller	1
Management Platform	Management platform with 50 licenses for switches and APs	1

DETAILED SPECIFICATIONS

ACCESS SWITCH- 48 PORTS	
ITEM	**MINIMUM REQUIREMENTS**
Downlink Ports Capacity	100/1000 Base-T Ethernet ports
Uplink Ports	Fixed configuration switches with 10 GigE uplinks and provides upgrade paths for 10 Gigabit Ethernet (GigE) stacking, 10 GigE uplinks and metro Ethernet services. 4 x 10G SFP+
Power Over Ethernet (PoE)	IEEE 802.3at PoE+ support for IP phones, wireless LAN (WLAN) access points and video cameras.
Switch capacity on all port	At least 128 Gb/s
Stackable	Up to 8 units using fixed SFP ports
Authentication Method	RADIUS, Secure Shell v.2 (SSH2), TACACS+
MAC Address Table Size	At least 16K entries
Jumbo Frames	9216 bytes

Encryption Algorithm	AES, SSL
IPv4 routing entries	4K
IP Routing	IPv4, IPv6
Connectivity Technology	Wired
Switching	Layer 2 and Layer 3

Performance and redundancy	High availability with virtual chassis concept, redundant stacking and uplinks links, primary/ secondary unit failover, hot-swappable SFP and configuration rollback. Triple-speed (10/100/1000) user interfaces and fiber interfaces (SFPs), supporting 1000Base-X optical transceivers
Features	ARP support, Access Control List (ACL) support, auto-negotiation, auto-sensing per device, flow control, layer 2 switching, port mirroring, BOOTP support, DHCP support, IGMP snooping, Quality of Service (QoS), RARP support, Syslog support, VLAN support, Weighted Round Robin (WRR) queuing
Compliant Standards	IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ad (LACP), IEEE 802.3ae, IEEE 802.3af, IEEE 802.3at, IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z,IEEE 802.1ab (LLDP), IEEE 802.1p, IEEE 802.1s, IEEE 802.1t, IEEE 802.1w, IEEE 802.3, IEEE 802.3ab, IEEE 802.3ac
Manageable	Yes, can be monitored by multiple type of tool, include • Local management platform • Cloud based management platform • Self-Hosted management platform
Routing Protocol	OSPF, OSPFv3, RIP-1, RIP-2, IS-IS, IS-ISv3, BGP
Multicast	IGMPv1/v2/v3 snooping for optimized multicast traffic, Multicast Listener Discovery (MLD) v1/v2 snooping, UP to 1000 multicast groups, IP Multicast VLAN (IPMVLAN) supported
Licenses & Software OSrelease	Field-proven software managed through a web interface (WebView), command

	line interface (CLI), and Simple Network Management Protocol (SNMP)
Switching Protocol	Ethernet
Remote Management Protocol	HTTP, RMON, SNMP, SNMP 2, SNMP 3, SSH-2, Telnet
Manufacturer/Dealer Support	Proof of manufacturers authorization is required
Security	Flexible device and user authentication with Access Guardian (IEEE 802.1x/MAC). Advanced QoS and ACLs for traffic control, including an embedded denial of service (DoS) engine to filter out unwanted traffic attacks Protection of management sessions using radius, Terminal Access Controller Access-Control System Plus (TACACS+) and local database authentication as well as secure management sessions over Secure Sockets Layer (SSL).
Warranty	**Five (5) Year**

WIRELESS ACCESS POINT -ADVANCED	
ITEM	**MINIMUM REQUIREMENTS**
Environment	Indoor
MIMO	2x2
High Performance	867Mbps (5G) 400Mbps (2.4G)
Power	802.3af/802.3at compatible power supply
Wi-Fi standards	802.11 b/g/n/ac /ac wave2
Radios	2.4 GHz; 5GHz
Wireless Security	WEP, WPA-PSK, WPA-Enterprise (WPA/WPA2, WPA3, TKIP/AES)
Mounting	Wall, Ceiling, Junction Box (Kits Included)
Antenna	Built-in smart Antenna
Quality of Service	Supports advanced QoS
Capacity	Up to 16 SSID per radio (total 32 SSID)
Authentication	Support radius authentications of wireless users
Warranty	Five (5) Year

WIRELESS ACCESS CONTROLLER	
ITEM	**MINIMUM REQUIREMENTS**
Throughput	**8Gbps minimum**
Port	8 GE+SFP combo 2 SFP+ 1 console
Maximum number of managed APs	512(Recommend local forwarding) 256(Recommend centralized forwarding)
Maximum number of STA	8192
802.11MAC	802.11 Protocols √ Multi-SSID (Per RF) 16 SSID hiding √11G protection √ 11n only √ Use number limit Supported: SSID based, per RF based Keep-alive √ Idle √ Multi-country code assignment √ Wireless user isolation Supported: VLAN based wireless users 2-layer isolation SSID based wireless user 2-layer isolation 20MHz/40MHz auto-switch in 40MHz mode √ Local forwarding Local forwarding based on SSID+VLAN
CAPWAP	Auto AP serial number entry √ AC discovery (DHCP option43, DNS) √IPv6 tunnel √ Clock synchronization √ Jumbo frame forwarding √ Assign basic AP network parameter through AC Supported: Static IP, VLAN, connected AC address √ L2/L3 connection between AP and AC √ NAT traversal between AP and AC √

Roaming	Intra-AC, Inter-AP L2 and L3 roaming √ Inter-AC, Inter-AP L2 and L3 roaming √
GW features	NAT √ PPPoE √ DDNS √ IPSEC VPN √ SSL VPN √ GRE √
Accesscontrol	Open system, Shared-Key √ WEP-64/128, dynamic WEP √ WPA,WPA2,WPA3 √ TKIP √ CCMP √(11n recommended) SSH v1.5/v2.0 √ Wireless EAD (End-point Access Domination) √ Portal authentication Supported: Remote Authentication, external server Portal page redirection Supported: SSID based, AP Portal page push Portal by-pass Proxy √ 802.1x authentication EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-MD5, EAP-SIM, LEAP, EAP-FAST, EAP offload (TLS, PEAP only) Local authentication 802.1X, Portal, MAC authentication LDAP authentication 802.1X and Portal EAP-GTC and EAP-TLS supported by 802.1X login AP location-based user access control √ Guest Access control √ VIP channel √ ARP attack detection Supported: Wireless SAVI SSID anti-spoofing SSID + username binding AAA server selection based on SSID and domain √ AAA server backup √ Local AAA server for wireless user √ TACACS+ √
Layer 2 protocol	ARP (gratuitous ARP) √ 802.1p √ 802.1q √ 802.1x √
IP protocol	IPv4 protocol √ Native IPv6 √ IPv6 SAVI √ IPv6 Portal √ DHCP Server (IPv4, IPv6) √
Multicast	MLD Snooping √ IGMP Snooping √ Multicast group 256 Multicast to Unicast (IPv4, IPv6) Supported: Set unicast limit based on operating environment
Redundancy	1+1 failover between ACs √ Intelligent AP sharing among ACs √ Remote AP √
Managementand deployment	Network management WEB, SNMP v1/v2/v3, RMON and more Network deployment WEB, CLI, Telnet, FTP and more
WLAN application	RF Ping √ Remote probe analysis √ Realtime Spectrum Guard (RTSG) √ Wireless Intelligent Application Aware (WIAA) Supported/ Stateful Inspection Firewall Packet forwarding fairness adjustment √ 802.11n packet forwarding suppression √ Access based traffic shaping √ Co-AP channel sharing √ Co-AP channel reuse √ RF interface transmission rate

	adjustment algorithm √ Drop wireless packet with weak signal √ Disable user access with weak signal √ Disable multicast packet caching √
Warranty	Five (5) Year

Management Platform
Intelligent Management Platform (including) licenses
Wireless Service Manager Component with 50 Licenses

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