Republic of the Philippines
Office of the Solicitor General
134 Amorsolo St. Legaspi Village, Makati City

Technical Working Group for
Information and Communications Technology

TERMS OF REFERENCE

Supply and Delivery of Additional Network Infrastructure for Relocated Offices

Background:

As part of the OSG's ongoing effort to optimize operational efficiency and workspace utilization, several offices have recently been relocated to a new building. These relocations have necessitated the provision of robust and updated network infrastructure to support essential digital operations, ensure continuity of services, and maintain interconnectivity across all sites while maintaining seamless integration with existing ICT systems.

Given the increasing reliance on digital platforms, collaborative tools, and cloud-based services, the relocated offices must be equipped with the appropriate network hardware and configurations that meet current performance and security standards. In addition to servicing relocated offices, the project will also address the urgent need to replace decade-old network switches that no longer meet current performance and security standards. Outdated hardware presents potential vulnerabilities and performance limitations that could hinder operational reliability. Likewise, existing wireless access points will be upgraded to support at least Wi-Fi 6E standards, enabling faster, more stable, and higher-capacity wireless connectivity.

The planned upgrades must fully integrate with the agency's existing network systems and technologies to ensure smooth compatibility, streamlined management, and secure communication across all layers of the infrastructure.

Objective:

The primary objective of this procurement is to acquire and deploy additional and replacement network infrastructure to support both newly relocated offices and the modernization of legacy network components. Specifically, the project aims to:

1. **Establish high-speed, secure, and scalable network connectivity** in relocated office spaces through the installation of modern wired and wireless infrastructure.
2. **Replace legacy network switches** that are over a decade old with modern, high-throughput, and energy-efficient alternatives that support current and future networking standards.

3. **Upgrade existing wireless access points** to models supporting **Wi-Fi 6E**, enabling faster and more reliable wireless connectivity, higher device density, and improved spectrum efficiency.
4. **Ensure full compatibility and integration** with the agency's current network architecture, security protocols, and management systems.
5. **Support long-term ICT resilience and scalability**, allowing for future expansion, remote work enablement, and enhanced cloud services.
6. **Minimize operational disruptions** through professional installation, configuration, testing, and commissioning of the new network infrastructure.

Terms:

1. *Scope.* - Supply and delivery of Additional Network Infrastructure for Relocated Offices

2. *ABC.* - The Approved Budget for the Contract (ABC) is **Six Million Pesos (₱6,000,000.00)**, inclusive of all government taxes, charges, and other standard fees.

ICT EQUIPMENT			
ITEM	**QTY**	**UNIT COST**	**TOTAL**
Additional Network Infrastructure for Relocated Offices. • **1 unit Core Switch** • **40 units Managed Network Switches *(Stackable Layer 3 switches)*** • **40 units Tri-band Wi-Fi 6E Access Points**	1 Lot	6,000,000	₱6,000,000.00
		TOTAL	**₱ 6,000,000.00**

3. *Payment.* The supplier shall be paid in full, subject to deduction of applicable taxes and retention upon the issuance by the OSG of the corresponding Certificate of Inspection and Acceptance. All bid prices shall be considered as fixed prices, and therefore not subject to price escalation during contact implementation.

4. *Delivery.* - Delivery shall be within sixty (60) calendar days upon receipt of the Notice to Proceed. A delay in delivery shall be subject to a penalty equivalent to 1/10 of 1% of the cost of the undelivered item/s for every day of delay.

5. *Qualifications of the Supplier*:

a. The Bidder shall have an SLCC that is at least one (1) contract similar to the Project the value of which, adjusted to current prices using the PSA's Consumer Price Index, must be equivalent to at least fifty percent (50%) of the ABC, completed within 5 years prior to the deadline for the submission and receipt of bids.

For this purpose, a similar contract shall refer to the procurement contract for network and wireless LAN.

b. The bidder must present a Client Satisfaction Certification for at least three (3) contracts with government agencies and/or private corporations with whom the bidder has previous or ongoing contract/s similar to this project.

c. The bidder shall submit a valid and current Certificate of Distributorship/Dealership/Resellership of the product being offered, issued by the principal or manufacturer of the product (if the bidder is not the manufacturer). If not issued by the manufacturer, they must also submit a certification/document linking the bidder to the manufacturer.

d. The Bidder must be an Authorized Service Partner (ASP) of the brand being offered. A current, valid manufacturer certificate is required as part of the technical component of the bid proposal.

e. The bidder must attach a brochure of the brand being offered.

f. The bidder must have a main office or satellite office within Regions III, IV-A, IV-B, and NCR.

g. The bidder shall submit documents relevant to the project, such as but not limited to the following:

- Valid DTI or SEC Registration;
- Valid and Current Mayor's Permit/Municipal License/Business Permit;
- Tax Clearance Certificate as finally reviewed and approved by BIR;
- Statement of contracts completed which are similar in nature to the contract to be bid.
- Net Financial Contracting Capacity (NFCC) Computation

6. Applicable provisions of the Government Procurement Reform Act (RA No. 12009) and its Revised Implementing Rules and Regulations (RIRR) shall form part of the Terms of Reference (TOR).

Technical Specifications:

ITEM	SPECIFICATIONS	STATEMENT OF COMPLIANCE
Specific Requirements		
Warranty and After-sales Requirements	- Immediate replacement of the equipment and/or its parts	
	- The winning Bidder shall replace a factory-defective unit with a new unit within 30 days of delivery of the item.	
	- For the two immediately preceding items, the Bidder must submit Proof of Warranty as part of the technical component.	
Compatibility	- Must be compatible with the existing OSG Network and Wireless Infrastructure.	

ITEM	SPECIFICATIONS	STATEMENT OF COMPLIANCE
Network Switches		
1 Unit Core Switch		
Key Features		
	Stackable Layer 3 switches with BGP, EVPN, VXLAN, VRF, and OSPF with robust security and QoS	
	High-performance 880 Gbps system switching capacity, 660 MPPS of system throughput, and up to 200 Gbps stacking bandwidth	
	Compact 1U switches with full density Smart Rate (1/2.5/5GbE) multi-gigabit, 60W PoE and SFP+ models	
	Power-to-port switch bundle with back-to-front airflow ideal for data center 1 GbE ToR and OOBM deployments	
	Built-in high speed 10GbE/25GbE/50GbE uplinks	

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	Intelligent monitoring, visibility, and remediation with Network Analytics Engine	
	Manage via single pane of glass with Central Management across wired, wireless, and WAN	
	Support for automated configuration and verification	
	Support for Dynamic Segmentation enables secure and simple access for users and IoT	
Quality of Service		
	Strict priority (SP) queuing and Deficit Weighted Round Robin (DWRR)	
	Traffic prioritization (IEEE 802.1p) for real-time classification into 8 priority levels that are mapped to 8 queues	
	Transmission rates of egressing frames can be limited on a per-queue basis using Egress Queue Shaping (EQS)	
Resiliency and High Availability		
	High performance front plane stacking for up to 10 switches	
	Flexibility to mix both modular and fixed models within a single stack	
	Hot Swappable Power Supplies	
	Provides N+1 and N+N redundancy for high reliability in the event of power line or supply failures	
	Virtual Router Redundancy Protocol (VRRP) allows groups of two routers to dynamically back each other up to create highly available routed environments.	
	Unidirectional Link Detection (UDLD) monitors link connectivity and shuts down ports at both ends if unidirectional traffic is detected, preventing loops in STP-based networks.	
	IEEE 802.3ad LACP—Supports up to 54 link aggregation groups (LAGs), each with eight links per group with a user-selectable hashing algorithm.	

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	Support for Microsoft Network Load Balancer (NLB) for server applications	
	Ethernet Ring Protection Switching (ERPS) supports rapid protection and recovery in a ring topology	
	IEEE 802.1s Multiple Spanning Tree provides high link availability in VLAN environments where multiple spanning trees are required, and legacy support for IEEE 802.1d and IEEE 802.1w	
Performance		
	Up to 880 Gbps in non-blocking bandwidth and up to 660 Mpps for forwarding	
	10 GbE/25GbE uplinks1 and large TCAM sizes ideal for mobility and IoT deployments in large offices with several thousand clients	
Connectivity		
	48 x ports SmartRate 100M2/1G/2.5G/5G/10G BaseT Class 8 PoE ports supporting up to 90W per port (MACsec) & 4x 10G/25G/40G/100G QSFP/QSFP28 ports (MACsec)	
	Supports PoE Standards IEEE 802.3af, 802.3at and 802.3bt (up to 90W)	
	1x USB-C Console Port 1x OOBM port 1x USB Type A Host port 1x Bluetooth dongle to be used with Mobile App	
	Jumbo frames allow for high-performance backups and disaster-recovery systems; provides a maximum frame size of 9198 bytes	
	Packet storm protection against broadcast and multicast storms with user-defined thresholds	
	Smart link enables simple, fast converging link redundancy and load balancing with dual uplinks, avoiding Spanning Tree complexities	
Management		

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	Scalable ASIC-based wire speed network monitoring and accounting with no impact on network performance; network operators can gather a variety of network statistics and information for capacity planning and real-time network monitoring purposes.	
	Management interface control enables or disables each of the following depending on security preferences, console port, or reset button	
	Industry-standard CLI with a hierarchical structure for reduced training time and expense. Delivers increased productivity in multivendor environments	
	Management security restricts access to critical configuration commands, provides multiple privilege levels with password protection, and local and remote syslog capabilities allow logging of all access	
	SNMP v2c/v3 provides SNMP read and trap support for industry standard Management Information Base (MIB), and private extensions	
	Remote monitoring (RMON) with standard SNMP to monitor essential network functions. Supports events, alarms, history, and statistics groups as well as a private alarm extension group; RMON and sFlow provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events	
	TFTP and SFTP support offer different mechanisms for configuration updates; trivial FTP (TFTP) allows bidirectional transfers over a TCP/ IP network; Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security	
	Network Time Protocol (NTP) synchronizes timekeeping among	

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	distributed time servers and clients; keeps timekeeping consistent among all clock-dependent devices within the network so the devices can provide diverse applications based on the consistent time	
	IEEE 802.1AB Link Layer Discovery Protocol (LLDP) advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications	
	Dual flash images provide independent primary and secondary operating system files for backup while upgrading	
	Assignment of descriptive names to ports for easy identification	
	Multiple configuration files can be stored to a flash image	
	Ingress and egress port monitoring enable more efficient network problem solving	
	Unidirectional link detection (UDLD) monitors the link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices	
	IP SLA for Voice monitors quality of voice traffic using the UDP Jitter and UDP Jitter for VoIP tests	
	Precision Time Protocol allows precise clock synchronization across distributed network switches as defined in IEEE 1588. Needed for time critical applications like AVB, smart grid power automation, etc. Supports transparent clock E-E	
Layer 2 switching		
	VLAN support and tagging for IEEE 802.1Q (4094 VLAN IDs)	
	Jumbo packet support improves the performance of large data transfers; supports frame size of up to 9198 bytes	

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	IEEE 802.1v protocol VLANs isolate select non-IPv4 protocols automatically into their own VLANs	
	Rapid Per-VLAN Spanning Tree (RPVST+) allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+	
	MVRP allows automatic learning and dynamic assignment of VLANs	
	VXLAN encapsulation (tunnelling) protocol for overlay network that enables a more scalable virtual network deployment	
	Bridge Protocol Data Unit (BPDU) tunnelling Transmits STP BPDUs transparently, allowing correct tree calculations across service providers, WANs, or MANs	
	Port mirroring duplicates port traffic (ingress and egress) to a monitoring port; supports 4 mirroring groups	
	STP supports 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)	
	Internet Group Management Protocol (IGMP) Controls and manages the flooding of multicast packets in a Layer 2 network	
	IPv4 Multicast in VXLAN/EVPN Overlay support allows PIMSM/IGMP snooping in the VXLAN Overlay	
	IPv6 VXLAN/EVPN Overlay support, allows IPv6 traffic over the VXLAN overlay	
	VXLAN ARP/ND suppression allows minimization of ARP and ND traffic flooding within individual VXLAN segments, thus optimizing the VXLAN network	
Layer 3 services		

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	Address Resolution Protocol (ARP) determines the MAC address of another IP host in the same subnet; supports static ARPs	
	Domain Name System (DNS) provides a distributed database that translates domain names and IP addresses, which simplifies network design; supports client and server	
	Supports internal loopback testing for maintenance purposes and increased availability; loopback detection protects against incorrect cable or network configurations and can be enabled on a per-port or per VLAN basis for added flexibility	
	Route maps provide more control during route redistribution; allow filtering and altering of route metrics	
Security		
	Access control list (ACL) support for both IPv4 and IPv6; allows for filtering traffic to prevent unauthorized users from accessing the network, or for controlling network traffic to save resources; rules can either deny or permit traffic to be forwarded; rules can be based on a Layer 2 header or a Layer 3 protocol header	
	ACLs also provide filtering based on the IP field, source/ destination IP address/subnet, and source/ destination TCP/UDP port number on a per-VLAN or per-port basis	
	Management access security for both on- and offbox authentication for administrative access. RADIUS or TACACS+ can be used to provide encrypted user authentication. Additionally, TACACS+ can also provide admin authorization services	
	Control Plane Policing sets rate limit on control protocols to protect CPU overload from DOS attacks	
	Supports multiple user authentication methods. Uses an IEEE 802.1X	

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	supplicant on the client in conjunction with a RADIUS server to authenticate in accordance with industry standards	
	Supports MAC-based client authentication	
	Secure management access delivers secure encryption of all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3	
	Switch CPU protection provides automatic protection against malicious network traffic trying to shut down the switch	
	ICMP throttling defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic	
	Port security allows access only to specified MAC addresses, which can be learned or specified by the administrator	
	MAC address lockout prevents particular configured MAC addresses from connecting to the network	
	Secure Sockets Layer (SSL) encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch	
	MAC Pinning allows non-chatty legacy devices to stay authenticated by pinning client MAC addresses to the port until the client's logo off or get disconnected	
Multicast		
	IGMP Snooping allows multiple VLANs to receive the same IPv4 multicast traffic, lessening network bandwidth demand by reducing multiple streams to each VLAN	
	Multicast Listener Discovery (MLD) enables discovery of IPv6 multicast listeners; support MLD v1 and v2	
	Protocol Independent Multicast (PIM) defines modes of IPv4 and IPv6 multicasting to allow one-to-many	

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	and many-to-many transmission of information; supports PIM Sparse Mode (SM) and Dense Mode (DM) for both IPv4 and IPv6	
	Internet Group Management Protocol (IGMP) utilizes Any-Source Multicast (ASM) to manage IPv4 multicast networks; supports IGMPv1, v2, and v3	
40 units Access Switch		
Key Features		
	Smart-managed layer 2+ Ethernet switch that supports Class 4 and Class 6 PoE	
	Up to 600W of PoE to power APs, IP Phones, surveillance cameras, door locks and other IoT devices	
	Two dedicated 10G SFP+ fiber and two 10GBase-T uplink ports for faster network speeds that eliminate traffic bottlenecks	
	Supports 10G copper and 10G SFP uplinks on 12-port access switch with m-gig ports	
	Supports 8x1GbE and 4x2.5GbE autosensing ports and RJ-45/SFP+ Uplink ports to support next-generation devices for 12-port access switch	
	The 12-port aggregation switch comes with 12 ports of 10GBase-T to easily add and expand your network reach to other stacks, modernizing your network topology	
	Supports true stacking makes it easy to handle many switches as one unit, providing redundancy and simplifying configuration, management, and troubleshooting	
	Luggage tag for easy cloud onboarding	
	Convenient mobile app and web-based GUI for setup, management, and troubleshooting	
Quality of Service		

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	Traffic prioritization - provides time-sensitive packets (like VoIP and video) with priority over other traffic based on DSCP or 802.1p classification.	
	Traffic shaping - allows smoothing out temporary traffic bursts over time and sets the limit on how much traffic can leave a port, given that the switch can limit the transmission rate of egress frames on a per-port basis.	
	Access Control Lists (ACLs) - enables network traffic filtering by creating an ACL, adds rules and matches criteria to an ACL, and applies the ACL to permit or deny on one or more interfaces or a VLAN. Supports for 100 inbound IPv4 and MAC ACLs with up to 960 ACEs on access switches and up to 1024 ACEs on aggregation switch.	
	Class of Service (CoS) - sets the 802.1p/DSCP priority to queue mapping (8 queues). Supports strict priority queuing (SP) or weighted round robin (WRR) queuing.	
	Global Trust Mode - enables the user to define the type of trust to apply to traffic received on port or LAG interface, with 802.1p, DSCP or 802.1p-DSCP being the configurable options.	
Connectivity		
	Auto MDI/MDI-X - Adjusts automatically for straight-through or crossover cables on all 10/100/1000 ports	
	Auto-negotiating capability - supports half/full-duplex auto-negotiating capability on every port doubles the throughput of every port.	
	Supports 10 GbE fiber and copper connectivity	
	Smart-Rate Connectivity - The 12-port multi-gig access switch (IEEE 802.3bz) supports (IEEE 802.3bz) Ethernet switch supports high speed	

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	wireless access points; the switch includes 8x 1G ports supporting IEEE 802.3at Class 4 (30W), along with 4x 2.5G smart-rate ports supporting high power IEEE 802.3bt Class 6 (60W)	
	Aggregation capability - 12-port 10-Gigabit aggregator model with 12 10GBase-T and four (4) SFP+ ports providing 10GbE connectivity, ideal for servers and network storage devices while offering uplink connectivity to access switches	
	Ethernet Alliance PoE Class 6 and Class 4 certification	
	PoE power allocation - support multiple methods (LLDP-MED automatic, class of PoE, or usage-based) to allocate PoE power for more efficient energy savings.	
	PoE Scheduling	
Performance and Efficiency		
	Energy Efficient Ethernet (EEE) - compliant with 802.3az standard requirements to save energy during periods of low data activity.	
	Auto-port shutdown - the switch saves power by automatically shutting down power to inactive ports. Power is restored on a port upon link detection.	
	Energy-efficient cooling - includes variable speed fans operating only at the speed necessary to maintain operating temperature to reduce excess noise and power consumption.	
	Fan-less operation - fan-less design for 24-port non-PoE model, making the switches ideal for silent operations or usage.	
Connectivity of 24G 2XGT 2SFP+		
	24 RJ-45 autosensing 10/100/1000BASE-T ports with 4 ports of IEEE 802.af/at/bt CL6 PoE and 20 ports of IEEE 802.af/at CL4 PoE (IEEE 802.3u Type 100BASE-TX,	

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	IEEE 802.3ab Type 1000BASET, IEEE 802.an 10GBASE-T)	
	Duplex: 100BASE-TX: half or full; 1000BASE-T: full only 10GBASE-T: full only	
	2 SFP+ 10GbE ports 2 RJ-45 autosensing 100/1000/10GBASE-T ports	
Management		
	Cloud-based management for entire network	
	Simple local web GUI management	
	True stacking	
	Hybrid stacking	
	Cloud-managed stacking	
	Secure web-management sessions with HTTPS	
	Firmware update	
	Default DHCP client mode	
	Account management	
	Locator LED	
	SNMPv1, v2c, and v3	
	Simple Network Time Protocol (SNTP)	
	Management VLAN ID	
Switching		
	Flow control - provides a flow-throttling mechanism propagated through the network to prevent packet loss at a congested node.	
	Link Flap prevention - minimizes the network disruption by automatically detecting and disabling ports that experience link flap events.	
	Spanning Tree Protocol (STP) - supports 802.1D STP, 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and 802.1s Multiple Spanning Tree Protocol (MSTP supported on local web only)	
	BPDU filtering - drops BPDU packets when STP is enabled globally but disabled on a specific port.	

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	Loop protection - allows loop detection in the network for switches that do not run spanning tree, or on which STP feature is disabled.	
	GMP v1, v2, v3 /MLDv1, v2 snooping - IGMP/MLD snooping allows the switch to forward IPv4 or IPv6 multicast traffic intelligently.	
	Link aggregation - groups together multiple ports up to 16 trunks with a maximum of eight (8) ports per trunk automatically using Link Aggregation Control Protocol (LACP), or manually, to form a high-bandwidth connection to the network backbone that helps prevent traffic bottlenecks.	
	Link Layer Discovery Protocol (LLDP) - advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications	
	LLDP-MED (Media Endpoint Discovery) - defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN for automatic configuration of network devices such as IP phones	
	Port mirroring - enables traffic on a port or VLAN to be simultaneously sent to a network analyzer for troubleshooting in case of issues.	
	Auto recovery - allows ports to be placed in a suspended state when defined error conditions are met.	
Security		
	TPM-based security - includes a Trusted Platform Module (TPM) for secure hardware based generation and storage of cryptographic keys used for secure connection to the cloud portal.	
	RADIUS - the switch supports RADIUS authentication with primary	

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	and backup server configuration.	
	Automatic VLAN assignment – RADIUS assigned VLANs	
	RADIUS accounting - a robust set of attributes and statistics are available for collecting information from the switch.	
	Port security - limits the number of MAC addresses that can be learned on a port. If the configured limit is reached, any other addresses beyond that limit are not learned, and the frames are discarded. It helps secure the network by preventing unknown devices from forwarding packets into the network.	
	DHCP snooping and IP Source Guard - DHCP snooping provides network security by filtering DHCP messages between untrusted hosts and DHCP servers.	
	ARP attack prevention - ARP attack protection intercepts, logs, and discards ARP packets with invalid IP-to-MAC address bindings, protecting the network from common man-in-the-middle attacks.	
	Automatic denial-of-service protection - manages high-volume traffic and prevents denial-of-service (DoS) attacks against the network.	
	Global Storm Control - Protects against conditions where incoming packets flood the LAN, causing network performance degradation for unicast traffic with an unknown destination and for broadcast and multicast traffic.	
40 units Access Points		
Key Features		
	Unlocks the 6 GHz band to more than double the available capacity in wireless networks	

ITEM	SPECIFICATIONS	STATEMENT OF COMPLIANCE
	Comprehensive dual radio/tri-band coverage across 2.4 GHz, 5 GHz, and 6 GHz to deliver up to 3.6 Gbps combined peak data rate1	
	Compact and low power consumption – virtually unrestricted operation from an 802.3af (class 3) PoE source2	
	Up to seven 160 MHz channels in 6 GHz to support low-latency, bandwidth-hungry applications like high-definition video and augmented reality/virtual reality applications	
	designed to take advantage of the newly available 6 GHz spectrum using unique dual-radio/tri-band architecture.	
	Provides a cost-effective and compact platform that delivers full tri-band coverage	
	2.5 Gbps Smart Rate Ethernet port to minimize wired bottlenecks	
	Built-in GPS receivers and fine time measurement (802.11mc) to enable APs to automatically locate themselves and serve as reference points for accurate indoor location measurements	
	Low power indoor (LPI) device class.	
	with OFDMA to handle multiple 802.11ax capable clients on each channel simultaneously, regardless of device or traffic type.	
	Unified AP support—Flexibility to deploy in either controller-based, cloud-managed, or controller-less networks.	
	Includes an integrated Bluetooth 5 and 802.15.4 radio for Zigbee support	
Specifications		
	AP type: Indoor, dual-radio/tri-band 2.4 GHz, 5 GHz, and 6 GHz (dual concurrent) 802.11ax 2x2 MIMO	
	2.4 GHz radio: Two spatial stream Single User (SU) MIMO for up to 574 Mbps wireless data rate with 2SS	

ITEM	SPECIFICATIONS	STATEMENT OF COMPLIANCE
	HE40 802.11ax client devices (287 Mbps for HE20)	
	5 GHz radio: Two spatial stream Single User (SU) MIMO for up to 1.2 Gbps wireless data rate with 2SS HE80 802.11ax client devices	
	6 GHz radio: Two spatial stream Single User (SU) MIMO for up to 2.4 Gbps wireless data rate with 2SS HE160 802.11ax client devices	
	Up to 512 associated devices per radio and up to 16 BSSIDs per radio (limited to 8 for the 6 GHz radio)	
	Dynamic frequency selection (DFS) optimizes the use of available RF spectrum	
	Supported frequency bands (country-specific restrictions apply): -2.400 to 2.4835 GHz ISM -5.150 to 5.250 GHz U-NII-1 -5.250 to 5.350 GHz U-NII-2A -5.470 to 5.725 GHz U-NII-2C -5.725 to 5.850 GHz U-NII-3/ISM -5.850 to 5.895 GHz U-NII-4 -5.925 to 6.425 GHz U-NII-5 -6.425 to 6.525 GHz U-NII-6 -6.525 to 6.875 GHz U-NII-7 -6.875 to 7.125 GHz U-NII-8	
	Supported radio technologies: -802.11b: Direct-sequence spread-spectrum (DSSS) -802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM) -802.11ax: Orthogonal frequency-division multiple access (OFDMA) with up to 8 resource units	
	Supported modulation types: -802.11b: BPSK, QPSK, CCK -802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM and 256-QAM (proprietary extension) -802.11ac: BPSK, QPSK, 16-QAM, 64-QAM,	

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	256-QAM and 1024-QAM (proprietary extension) -802.11ax: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and 1024-QAM	
	Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements): -Per radio/band (2.4 GHz / 5 GHz / 6 GHz): +21 dBm (18dBm per chain) Note: Conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain	
	Integrated down tilt omnidirectional antennas for 2x2 MIMO with peak antenna gain of 2.8dBi in 2.4 GHz, 4.5dBi in 5 GHz and 4.5dBi in 6 GHz. Built-in antennas are optimized for horizontal ceiling-mounted orientation of the AP. The down tilt angle for maximum gain is roughly 30 to 40 degrees.	
	Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements): -Per radio/band (2.4 GHz / 5 GHz / 6 GHz): +21 dBm (18dBm per chain) Note: Conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain	
	E0: Ethernet wired network ports (RJ-45) -Auto-sensing link speed (100/1000/2500BASE-T) and MDI/MDX -2.5 Gbps speed complies with NBase-T and 802.3bz specifications -PoE-PD: 48Vdc (nominal) 802.3af/at PoE (class 3 or higher)	

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	-802.3az Energy Efficient Ethernet (EEE)	
	Maximum (worst-case) power consumption (without/with a USB device attached): -DC powered: 12.5W/18.2W. -POE powered: 14.7W/20.9W. *This assumes that up to 5W is supplied to the attached USB device.	
	• Operating conditions -Temperature: 0°C to +50°C/+32°F to +122°F -Relative humidity: 5% to 95% -ETS 300 019 class 3.2 environments -AP is plenum-rated for use in air-handling spaces	
	Advanced Cellular Coexistence (ACC) minimizes the impact of interference from cellular networks	
	Maximum ratio combining (MRC) for improved receiver performance	
	Low-density parity check (LDPC) for high-efficiency error correction and increased throughput	
	Low-density parity check (LDPC) for high-efficiency error correction and increased throughput	
	Transmit beamforming (TxBF) for increased signal reliability and range	
	Bluetooth Low Energy (BLE5.0) and Zigbee (802.15.4) radio -BLE: up to 5dBm transmit power (class 1) and -100dBm receive sensitivity (125kbps) -Zigbee: up to 5dBm transmit power and -97dBm receive sensitivity (250kbps) - Integrated omnidirectional antenna with roughly 30 to 40 degrees down tilt and peak gain of 2.6 dBi	

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	GNSS L1 (1575.42MHz) receiver supporting GPS, Galileo, GLONASS, and BeiDou signals –Receive sensitivity: -162dBm (tracking) – Integrated omnidirectional antenna with roughly 30 to 40 degrees down tilt and peak gain of 2.3dBi	
	Reset button: factory reset, LED mode control (normal/off)	
	E1: 10/100/1000BASE-T Ethernet network interface (RJ-45) - Auto-sensing link speed and MDI/MDX - 802.3az Energy Efficient Ethernet (EEE)	
	Serial console interface (proprietary, micro-B USB physical jack)	
	Advanced IOT Coexistence (AIC) allows concurrent operation of multiple radios in the 2.4 GHz band	
	USB 2.0 host interface (Type A connector)	
	Bluetooth 5.0 Low Energy (BLE5.0) and Zigbee (802.15.4) radio (2.4GHz)	
	Visual indicators (two multi-color LEDs): for System and Radio status	
	Reset button: factory reset, LED mode control (normal/off)	
	Serial console interface (proprietary, micro-B USB physical jack)	
	Kensington security slot	
Accessories	Must include mount bracket (same brand)	
Warranty	Must have Limited Lifetime Warranty.	
Certification	The bidder must submit a valid and current Certificate of Distributorship/Dealership/Reseller of the product being offered, issued by the principal or manufacturer of the product (if the bidder is not the manufacturer). If not issued by the manufacturer, they must also submit a certification/document linking the bidder to the manufacturer.	

ITEM	SPECIFICATIONS	STATEMENT OF COMPLIANCE
	Must belong to the latest Top 4 of the Leaders Group of Gartner's Magic Quadrant for Enterprise Wired and WLAN Infrastructure Report (must provide certificate).	
	The brand being offered must have a local vendor presence and local service center	

Technical Working Group for ICT Equipment

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