

عطاء رقم 1/ل م/2019

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### **1. Active Components: -**

#### **(1-1) Network POE Switches (QTY 3): -**

- Each Switch shall provide 24 x100/1000 Mbps POE+ RJ45 Ports.
- Each Switch shall provide 4 Active SFP/SFP+ 1G/10G Ports.
- Support the ability to manage at least 4 interconnected switches as a single logical device in a form of virtual chassis system.
- Should be Layer 3 switch (Static Route & RIP) and support OSPF in the future.
- Should be fully managed switch through web, CLI and SSH.
- Non-blocking architecture.
- Switch Capacity: 128 Gbps
- Forwarding Rate: 95 Mpps
- POE Power Budget: 370 Watt
- MAC Addresses: not less than 16000
- Switch Model should be classified as Enterprise Model at the Mother company.
- Warranty & Support not less than 5 years.
- All required licenses for listed feature during warranty time must be included.

#### **(1-2) Indoor Access Points (QTY 27): -**

- AP must be Ideal for small and medium-sized networks.
- AP must transmit on both 2.4GHZ and 5GHZ.
- AP must support 802.11ac Wave 2 with 3x3 Multiple-Input Multiple-Output (MIMO) technology
- AP must support wireless LAN controllers.
- AP must comply IEEE 802.11ac standard with the following: -
  - 3x3 MIMO with two spatial streams, single-user or multiuser MIMO
  - Maximal Ratio Combining
  - 802.11ac beamforming
  - 20-, 40-, and 80-MHz channels
  - Data rates up to 867 Mbps (80 MHz in 5 GHz)
  - Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx)

- 802.11 Dynamic Frequency Selection (DFS)
- Cyclic Shift Diversity support
- AP must comply IEEE 802.11N standard with the following: -
  - 3x3 MIMO with two spatial streams
  - Maximal Ratio Combining
  - 802.11ac beamforming
  - 20- and 40-MHz channels
  - Data rates up to 300 Mbps (40 MHz in 2.4 GHz)
  - Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx)
  - 802.11 Dynamic Frequency Selection (DFS)
  - Cyclic Shift Diversity support
- AP must be equipped with an integrated Antenna with the following specifications to support transmitted frequency as: -
  - 2.4 GHz, gain 3 dBi, internal omni, horizontal beamwidth 360°
  - 5 GHz, gain 5 dBi, internal omni, horizontal beamwidth 360°
- AP must be equipped with the following interfaces: -
  - 1x10/100/1000BASE-T autosensing (RJ-45), Power over Ethernet (PoE)
  - Console port for management
  - USB 2.0
- AP must be equipped with a Status LED indicator
- AP system memory must comply: -
  - 1 GB DRAM
  - 128 MB Flash (Preferable 256 MB Flash)
- AP powering Options: -
  - POE 802.3af/802.3at
- Support of load balancing between Access Points.
- Support for coverage Self-healing of failed AP's.
- Should support Wireless mesh deployments.
- Warranty & Support not less than 5 years.

### **(1-3) Controller (QTY 2): -**

- Minimum access points support: minimum 1
- Maximum access points: not less than 150
- Maximum clients support: 3000
- Maximum number of RFID tags: 1500
- Maximum throughput: 4Gbps
- Maximum access-point groups: not less than 150
- Maximum Flex Connect Groups: not less than 100



- Maximum access points per group: not less than 100
- Maximum WLANs: 512
- Maximum VLANs: 4094
- Interfaces or network I/O: 1 x 5 Gb (1/2.5/5-G speeds supported, restrictions on other ports while over 1G) 4 x 1 Gb (2 PoE ports)
- Maximum power consumption: 98W
- Must support the following:
  - Access control lists (ACLs)
  - Application Visibility and Control (AVC)
  - Bidirectional rate limiting
  - Bonjour gateway
  - Datagram Transfer Layer Security (DTLS)
  - Guest anchor
  - High Availability with AP SSO
  - High Availability with client SSO
  - Integrated wireless policy engine
  - Link Aggregation Group (LAG)
- ✓ **Notice: - Mutah University already has a two redundant wireless LAN Aruba controller (7210) used to manage all aruba Access points so any offer solution must be compatible with we have (just Access Points without controller) or provide a new completed solution (Controller and indoor access points).**

## **2. Passive Components: -**

### **(2-1) Cabinet (QTY 3): -**

- Welded frame, reliable structure.
- Reversible 5mm toughened glass front door with lock.
- Material: Steel.
- Fans: 2 Fans.
- PDU: 1 x 6-Way, 13A
- Removable side panels with side pins, side locks are optional for protection.
- Standing or wall mount installation.
- Cable entries on both of top cover and bottom panel
- 9U with dimensions of (600x600) mm



**(2-2) Cat6 U/UTP cable (Box 305 Mtr): - (QTY: 1500m)**

- Cable Shall be Category 6 U/UTP cable.
- Comply with ISO 11801 or EIA/TIA 568-B.2.
- Frequency [MHz]: 250 MHz or above.
- Flame Retardant Sheath (FR)
- Cable Shall be LSZH.
- The cable must support 1G.
- 3rd party certificate.
- Brand: Europe or USA.

**(2-3) Category 6 U/UTP Patch Panel: - (QTY: 3)**

- 24 Port Modular Patch Panel
- 1 rack unit height, 19" width.
- Equipped with 24 x Cat6 connectors.
- Brand: Europe or USA.

**(2-4) Patch cords guide panel: - (QTY: - 3)**

- 1 rack unit height.
- Metal.
- Box Type.
- Same brand of the cabinet

**(2-5) Cat 6 U/UTP Patch Cords 1m: - (QTY: - 27)**

- Cable Shall be Category 6 U/UTP cable.
- 1 meter length.
- Low-Smoke Zero Halogen.
- Flame Retardant Sheath (FR).
- Brand: Europe or USA.

**(2-6) Cat 6 U/UTP Patch Cords 3m:- (QTY:- 27)**

- Cable Shall be Category 6 U/UTP cable.
- 3 meter length.
- Low-Smoke Zero Halogen.
- Flame Retardant Sheath (FR).
- Brand: Europe or USA.



**(2-7) Single Data Outlet: - (QTY: - 27)**

- Shall include one Cat6 RJ-45 unshielded Jack.
- One faceplate with one holes for Module Jack.
- RJ45 Module Female.
- Category 6 connecter shall comply with ISO 11801 or EIA/TIA 568-B.2.
- Back box 7cmx7cm inside wall.
- Brand: Europe or USA.

**(2-8) Fiber Optic Cable OM3 12 Core: - (QTY: - 400 meter)**

- Cable shall be OM3 multimode type.
- Cable shall include 8 fiber cores.
- Cable shall be metal free.
- Cable shall have rodent protection feature.
- Flame Retardant Sheath (FR).
- Cable shall include glass armor.
- Low Smoke Zero Halogen (LSZH) Sheath.
- Brand: Europe or USA.

**(2-9) Fiber Optic Patch Panel OM3 6SCD: - (QTY: - 3)**

- Shall be spliced box type.
- 19"/1U, extractable,
- Shall include 6 SC Duplex Adapters.
- Shall Include 12 Pigtail OM3 2 meter length
- Shall include spliced tray & cover to hout splicing inside the Patch Panel.
- Shall have two cable entry.
- Brand: Europe or USA.

**(2-10) Fiber Optic Patch Cord OM3 2 Meter: - (QTY: - 6)**

- Fiber Optic Patch Cord OM3 2 Meter.
- LSZH sheath.
- 2 Meter Length.
- OM3 Type.
- Brand: Europe or USA.

### **(2-11) Additional Equipment's**

<b>SFP 1G (Single Mode)</b>	<b>6</b>
<b>Box (7*7)</b>	<b>27</b>
<b>Trunk 3*4</b>	<b>250m</b>
<b>Trunk 5*5</b>	<b>50m</b>

### **Installation and Configuration: -**

- All connectors termination.
- Cables organization and Labeling on both sides.
- Testing using Fluke for all connections as following:
  - All connections must be test from end-to-end
  - Testing reports must be provided.
  - Calibrating of Fluke must be from the mother company.
  - Testing results must comply with at least the minimum standards for tested components.
  - Compliance sheet should be provided with the technical proposal.

### **General Specifications: -**

- The provider of items must be:
  - Authorized distributor for all Components.
  - Familiar with same projects, and have reference list for similar big projects.
- Subcontractor is not accepted without University Approval.
- All solution should be as built drawing and documentation.
- 25 Years Warranty on Copper Solution from the Manufacture of the Structured Cabling System.