



**Government of Khyber Pakhtunkhwa
Ayub Teaching Hospital
Medical Teaching Institution, (ATH) Abbottabad**

Standard Bidding Document

FOR

**Supply, Installation & Networking Items
(Annual Tender FY 2026-27)**

Under National Competitive Bidding (NCB)

Tender (2026-27)

PREFACE

These Standard Bidding Documents have been prepared for use & prepared by the Ayub Medical & Teaching Institution Abbottabad, for procurement of IT Equipment, through National Competitive Bidding (NCB) Khyber Pakhtunkhwa via E-PADS.

The standard bidding documents for procurement of the said Bidding Documents are grouped in four parts.

Part-I	Mandatory Documents
Part-II	Instructions to Bidders (ITB)
Part-III	Technical Evaluation Performa
Part-IV	List of IT Equipment with Specifications and required Warranty

PART - I

Mandatory Documents

- a) Registration Certificate for NTN, STRN.
- b) Active on ATL for NTN & STRN.
- c) Last three-year bank statement/Bank Maintenance Certificate.
- d) Last Year Income Tax return.
- e) Affidavit on judicial stamp paper duly attested mentioning following statements:
 - (i) 2% CDR is attached with financial bid.
 - (ii) The firm is not black listed.
 - (iii) Non-shareholder Certificate (That no employee of Ayub Teaching Hospital, Abbottabad is shareholder in the firm's business).
- f) Warranty as per bidding documents.
- g) Certificate of 100% compliance with purchaser's specifications shall be provided on Firm/Company letter head.

Note: Any Documents Missing in the mandatory documents will leads to disqualification.

PART - II

Instructions to Bidders (ITB)

(A) General:

1. Scope of Bid

AMTI invites bids for **Networking Items** , Items specified in Schedule of Requirements along with Technical Specifications and related after sales services incidental thereto to meet the requirements AMTI Abbottabad with Bid Reference Number for the procurement activity as mentioned in Bid Data Sheet (BDS).

2. Source of Funds

AMTI Abbott bad

3. Eligible Bidders

3.1 This Invitation for Bidders (IFB) is open to all eligible registered manufacturers, registered importers and authorized dealers of IT Equipment. The Importer/Authorized dealer must possess valid authorization from the Principal origin. Furthermore, all the items quoted must be registered with the relevant forum.

3.2 Bidders under the declaration of ineligibility for corrupt and fraudulent practices issued by the Government (Federal, Provincial or Local) or a public sector organization are NOT ELIGIBLE.

4. Corruption and Fraud

4.1 The Government of Khyber Pakhtunkhwa defines Corrupt and Fraudulent Practices as, *“offering, giving ,receiving or soliciting of anything of value to influence the action of the public official or the supplier or the contractor in the procurement process or in contract execution to the detriment of the Procuring agencies; or misrepresentation of facts in order to influence a procurement process or the execution of contract, collusive practices among bidder (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive and any request for or solicitation of anything of value by any public official in the course of the exercise of this duty”*.

4.2 Indulgence in corruption and fraudulent practices is liable to result in rejection of Bids, cancellation of contract, debarring and blacklisting of the bidder, for a stated or indefinite period of time.

5. **Bidding for Selective Items**

A Bidder, if he so chooses, can bid for selective items from the list of goods provided for the schedule of Requirements. A Bidder is also at liberty to bid for all the goods mentioned in the Schedule of Requirements provided he fulfills the requirements.

However, a Bidder cannot bid for partial quantities of an item in the Schedule of Requirement. THE BID MUST BE FOR THE WHOLE QUANTITY OF AN ITEM REQUIRED IN THE SCHEDULE OF REQUIREMENT

(B) The Bidding Procedures:

1. The Governing Rules

The Bidding procedure shall be governed by the Khyber Pakhtunkhwa Public Procurement of Goods, Works and Services KPPRA Rules, 2014.

2. Applicable Bidding Procedure

The bidding procedure is governed by thy Rule 06 Para (2) KPPRA Rules, 2014.

3. The bidding procedure is explained below:

Single Stage, Two Envelop Procedure (Rule 2(b) KPPRA 2014) via E-PADS KP-PPRA.

- i) The bid shall be submitted through E-PADS both the Technical Proposal and the Financial Proposal.
- ii) The files shall be marked as “TECHNICAL PROPOSAL” and “FINANCIAL PROPOSAL” **FOR IT Equipment** in bold and legible letters to avoid confusion.
- iii) Initially the “TECHNICAL PROPOSAL” shall be downloaded; technical proposal is to determine the technical strength and consideration of the illegibility of the firm for the bidding process, which is to be carried out before the opening the financial bids.
- iv) The “FINANCIAL PROPOSAL” shall be only be downloaded and opened after the successful technical evaluation.
- v) The Technical Evaluation Committee (TEC) shall evaluate the technical proposal, without reference to the price and reject any proposal which do not conform the specified requirements.
- vi) During the technical evaluation no amendments in the technical proposal shall be permitted.
- vii) The financial proposals of bids shall be opened publicly at a time, date and venue to be announced and communicated to the Bidders in advance in accordance with KP-PPRA Rules through procuring entity website and E-PADS.

- viii) After the evaluation and approval of the technical proposal the Purchase committee shall at a time within the bid validity period, publicly open the financial proposals of the technically accepted bids only.
- ix) The bid found to be the lowest offered price shall be accepted.

Preparation of Bids

(A) The Bidding Documents:

1. Contents of the Bidding Documents

The Bidding Documents include

2. Language of Bids

2.1 All Correspondences, communications associated with preparation of Bids, clarifications, amendments, submissions shall be written in English/Urdu. Supporting documents and printed literature furnished by the Bidder may be in any language provided they are accompanied by an accurate translation of the relevant passages in English/urdu, in which case, for purpose of interpretation of the Bid, the said translation shall take precedence.

3. Bid Price

3.1 The Bidders should quote the prices of the goods according to the technical specifications the technical specifications of goods; different from the required specifications shall straightway be rejected.

3.2 The Bidder is required to offer a competitive price which must include all the taxes, levies, duties, prescribed prices.

If there is no mention of taxes, the offered/quoted price shall be considered as inclusive of all prevailing taxes/duties, etc.

3.3 The benefit of exemption from or reduction in the taxes and duties shall be passed as per Govt. rules.

3.3 Prices offered should be for the entire quantity of an item demanded in the Schedule of Requirement; partial quantity offered shall be straightway rejected. Conditional or alternate offer shall also be considered as non-responsive bid.

3.4 While making a price quote, trends/inflation in the rate of goods and services in the market should be kept in mind. No request for increase in price due to market fluctuation in the cost of goods or services shall be entertained.

4. Bid Currencies

Price shall be quoted in Pakistani Rupees.

5. Bid Validity

5.1 Bid Validity is for 90 days.

5.2 The TEC shall ordinarily be under an obligation to process and evaluate the bid within the stipulated bid validity period. However, under exceptional circumstances and for reason to be recorded in writing, if an extension is considered necessary, all those who have submitted their bids shall be asked to extend their respective bid validity period. Such extension shall be for not more than the period to the period of original bid validity.

5.3 Bidders who;

- a) Agree to the Competent Authority request for extension of bid validity period shall not be permitted to change the substance of their bids; and
- b) Do not agree an extension of the bid validity period shall be allowed to withdraw their bids without forfeiture of their bid securities.

6. Format and Signing of Bids

6.1 The bidder shall prepare and submit its bid and provide original documents as appropriate. Copies of any documents must be stamped and signed by the bidders.

6.2 The Bid shall be accompanied by the original receipt for the payments made for the purchase of the bidding document. In an event where the Bidder has downloaded the bidding document from the web, they will require to get the original payment receipt of the prescribed fee from the Procuring cell well before the date of submission of bid.

6.3 The original bid shall be typed or written in indelible ink and shall be signed by the bidder or a person or persons duly authorized to bind the bidder to Contract. The person or person signing the bid shall initial all pages of the bid form.

6.4 Any interlinear actions, erasures or overwriting shall valid only if they are initiated by the person or persons signing the bid.

6.5 Any tempering, illegitimate inclusion or exclusion in any part of the Standard Bidding Documents shall lead to disqualification of the bidder.

Submission Of Bids

7. Submission of Bids

The "TECHNICAL PROPOSAL" and "FINANCIAL PROPOSAL" of Laboratory chemical On Regent Basis shall be uploaded on E-PADS according to the dates mentioned in the advertisement.

8. Late Bids

Any bid if not uploaded to portal before the end time shall Not be entertained later.

9. Withdrawal of Bids

9.1 The Bidder may withdraw its bid after the bid's submission and prior to the deadline prescribed for opening of bids.

9.2 No bid may be withdrawn in the period between deadline for submission of bids and the expiration of the period of bid validity specified. Withdrawal of a bid during this period may result in forfeiture of the Bid Security submitted by the Bidder

Opening and Evaluation of Bids

1. Opening of Bids by Procuring Agency

1.1 All bids received through E-PADS shall be opened by the Tender opening committee (Purchase Committee) publicly in the presence of the Bidders or their representatives on the date, time and venue prescribed in Advertisement.

1.2 All Bidders in attendance shall sign an attendance sheet.

1.3 The Purchaser shall open one bid at a time and read out aloud its contents which may include name of the Bidder, the presence or absence of requisite bid security CDR, and such other details as the Purchaser, at its discretion, may consider appropriate if not in conflict with Khyber Pakhtunkhwa Public Procurement of Goods, Works and Services Rule 2014 specifically Rule 37.

1.4 The Procuring cell shall have the minutes of the Bid opening (technical and when applicable financial) recorded.

1.5 No Bid shall be rejected at technical proposal/bid opening, except for late bids, Tender fee receipt & non submission of Original CDR and judicial stamp papers.

1.6 The uploaded bid without Bid Security CDR shall not be accepted. However, the Chairman of the Purchase/Procurement Committee shall record a statement giving reasons for not accepting such bid(s).

2. Clarification of Bids

During evaluation of the bids the TEC may, at its discretion, ask the bidder for a clarification and the response shall be in writing and no change in the prices or substance of the bid shall be sought, offered or permitted.

3. Examination of Technical BIDS

After opening of the bids by Purchase Committee, the bids will be forwarded to TEC FOR Technical Evaluations.

4. Examination of Financial BIDS

4.1 The firms achieved the qualified marks in technical evaluation against the quoted items so as its financial bids will be opened by Purchase Committee.

4.2 In the financial bids the arithmetical errors shall be rectified on the following basis.

- a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected.
- b) If the Bidder does not accept the correction of the error, its bid shall be rejected, and its Bid Security may be forfeited.
- c) If there is a discrepancy between words and figures, the amount in words shall prevail.

d) For the purpose of comparison of bids quoted in different currencies, the price shall be converted into Pak Rupees. The rate of exchange shall be the Selling rate, prevailing on the date of opening of bids specified in the bidding documents, as notified by the State Bank of Pakistan/National Bank of Pakistan on that day.

e) A bid once opened in accordance with the prescribed procedure shall be subject to only those rules, regulations and policies that are in force at the time of issue of notice for invitation of bids.

f) The procurement cell prepared the comparative statements of the product and purchase committee approved the items

5. Announcement of Evaluation Report

The TEC may announce the results of the bid evaluation in form of a report through its website of the institution or display office notice board, giving justification for acceptance or rejection of bids at least ten days prior to the award of procurement Contract.

6. Re-Bidding

6.1 If the TEC has rejected all bids under Rule 47, it may call for a re-bidding Khyber Pakhtunkhwa Public Procurement of Goods, Works & Services Rules 2014 (Rule-48).

6.2 The TEC before invitation for re-bidding shall assess the reasons of rejection and may revise specifications, evaluation criteria or any other condition for Bidders as it may deem necessary.

Award of Contract

7. Acceptance of Bid and Award Criteria

The Bidder, whose bid is found to be most closely conforming to the Evaluation Criteria and having the lowest evaluated responsive bid, if not in conflict with any other law, rule, regulation or policy of the Government of Khyber Pakhtunkhwa, shall be awarded to the Contract within the original or extended period of bid validity.

8. Competent Authority Right to vary quantities at the time of Award

The competent Authority reserves the right at the time of the award of the Contract to increase or decrease, the quantity of goods originally specified in the Schedule of Requirements without any change in unit price or other terms or conditions

9. Notification of Award

9.1 Prior to the expiration of the period of the bid validity, the procurement cell shall notify to the successful Bidder in writing that its bid has been accepted Rule 46 in conformity with provision of Section 31 of the act in these rules.

9.2 The notification of the award shall constitute the formation of the Contract between the competent authority and the successful Bidder.

9.3 The enforcement of the Contract shall be governed by the Rule 50 of the Khyber Pakhtunkhwa Public Procurement of Goods, Works & Services Rules 2014.

10. Limitation on Negotiations

10.1 Negotiations that may be undertaken in finalization of the Contract shall not relate to the price or substance of bid specified by the Bidder but only to minor technical, contractual or logistical details.

10.2 Negotiations may relate to the following areas; (the list is being provided as guidance as only and under no circumstances be treated as exhaustive and final):

- Minor alternation to technical details, such as scope of work, the specification or drawings;
- Minor amendment to the Special Condition of Contract;
- Finalization of payment schedule and ancillary details;
- Mobilization arrangements;
- Agreement on final delivery or completion schedules to accommodate any changes required by the Procuring Agency;
- The proposed methodology or staffing;
- Inputs required from the Procuring Agency;
- Clarifying details that were not apparent or could not be finalized at the time of the bidding;
- The Bidder's tax liability in Pakistan, if a Bidder is a foreign company.

11. Negotiations shall not be used to:

- Substantially change the technical quality or details of the requirement, including the task and responsibilities of the Bidder or the performance of the goods;
- Substantially alter the terms & conditions of the Contract;
- Reduce unit rates or reimbursable costs;
- Substantially alter anything which formed a crucial or deciding factor in the evaluation of the bids or proposals;
- Alter the submitted financial bid.

12. Signing of Contract

- I. After the completion of Contract Negotiations, the Purchaser shall send the Bidder the Contract Agreement Form provided in Part-Two: Section IV of these Standard Bidding Documents, incorporating all agreements between the Parties.
- II. Within one week of the receipt of the Contract Agreement Form, the successful Bidder and the Purchaser shall sign the Contract in accordance with the legal requirements in vogue.

- III. Unless the procurement contract has already entered into force a contractor or supplier feeling aggrieved by the Order of a Purchaser accepting a bid may file an application for review.
- IV. If a successful Bidder, after completion of all codal formalities show an inability to sign the Contract then its Bid Security shall stand forfeiture and the firm may be blacklisted and de-barred from future participation, whether temporarily or permanently. In such situation the Purchaser may award the Contract to the next lowest evaluated Bidder or call for a new bid.
- V. The Contract shall become effective upon affixation of signature of the Purchaser and the selected Bidder on the contract document, shall be governed for the period of one year or till the finalization of new contract.
 - a) All Goods and related Services to be supplied under the contract that are required to be imported in Pakistan shall have their origin in eligible source countries as prescribed by the commercial polices of Federal Government Of Pakistan and all expenditures made under the contract shall be limited to such goods and services.
 - b) For purpose of this Clause “origin” means the place where the goods are produced, or the place where the related services are supplied. Goods are produced when, through manufacturing or processing.

PART - III

TECHNICAL EVALUATION PERFORMA

TECHNICAL EVALUATION PERFORMA FOR IT EQUIPMENT

Part-III

Mandatory	Registration Certificate for NTN, STRN.	
	Active status on ATL for NTN & STRN	
	Last 03 years Bank Statement/Bank Maintenance Certificate duly issued by the concerned bank	
	Last Year Income Tax Return	
	Affidavit on stamp paper duly attested mentioning: (a) 2% CDR attached with financial bid. (b) Firm is not black listed. (c) Non-Shareholder Certificate.	
	01 Years warranty with parts	
	Certificate of 100% compliance with purchaser specifications on company letterhead	

S/No	Parameters	Detail/Supporting Documents	Maximum Marks	Remarks
1.	Physical resources	Established office within 600 Km from purchaser	3	Details with supporting documents must be attached. (15 marks)
		List of relevant qualified/experienced employees	3	
		Official Website of the Firm	3	
		List of spare parts available for quoted items	3	
		Availability of Technical Support (24/7)	3	
2.	Past Performance of last five year	02 marks per institute, up to maximum 10 marks (only attach valid Purchase Orders reflecting financial effects of > 1 Million, in one year)	10	Institutions include Government, Semi Govt, Autonomous Bodies and renowned private entites
3.	Dealership Certification	1. Authorized Dealer: 10 2. General supplier: 05	10	

4.	Last 03-year Turnover from Tax Return	Turnover 100Mil & above : 10 Turnover below 100Mil :05	10	
8	Warranty	01 years beyond asked warranty with parts: 2 02 years beyond asked warranty with parts: 5	05	
	TOTAL MARKS		50	

In Technical Evaluation 70% (35/50) marks will be passing marks

Lowest priced among technically qualified bids will be accepted

PART - IV

LIST OF EQUIPMENT WITH SPECIFICATIONS **AND REQUIRED WARRANTY**

LIST OF NETWORKING ITEMS FOR THE TENDER 2026-27

S.No	Item Description	Detailed Technical Specifications (Generalized / Latest / OEM-Agnostic)	Unit
1. ACCESS LAYER SWITCHES — LAYER 3, 2.5g, 5g, 10G COPPER (CAT6A) WITH 25G SFP UPLINKS			
1	L3 Access Switch — 24-Port, 10G Copper	24x 100/1000/2.5G/5G/10GBASE-T RJ45 auto-negotiating multi-gigabit copper ports (Cat6A support); 4x (min.) 25G SFP28 uplink ports (backward compatible with 10G/1G SFP+/SFP); non-blocking switching fabric with switching capacity ≥ 960 Gbps and forwarding rate ≥ 700+ Mpps; Full Layer 3 feature set — static & dynamic routing (RIPv2, OSPFv2/v3, BGP), VLAN (802.1Q, up to 4094), Inter-VLAN routing, VRRP/HSRP-equivalent gateway redundancy, DHCP Server/Relay/Snooping, ACL (L2–L4), QoS (802.1p, DSCP, rate limiting), IGMP/MLD Snooping & PIM (multicast routing); Stacking / Virtual Chassis support (physical or via uplinks) for ≥ 4-8 units with single-IP management; Redundant/hot-swappable power supply option; PoE+/PoE++ (802.3af/at/bt) variant available for AP/IP-phone/camera power (per-port up to 60W, PoE budget ≥ 370W); Support for SNMPv3, SSH v2, HTTPS, RADIUS/TACACS+, 802.1X Port-Based Network Access Control; sFlow/NetFlow/telemetry support; Cloud & on-prem centralized management/controller compatibility, REST API/Zero-Touch Provisioning; ITU/IEEE IEEE802.3bz (2.5G/5GBASE-T) compliant; MTBF ≥ 100,000 hours; Rack-mountable 1U, 19-inch form factor; must be currently shipping / not End-of-Sale or End-of-Life at time of supply; minimum 5-year manufacturer warranty & software update support.	Nos
2	L3 Access Switch — 24-Port, 2.5G/5G Copper	24x 100/1000/2.5G/5GBASE-T RJ45 auto-negotiating multi-gigabit copper ports (Cat6A support, IEEE 802.3bz compliant); 4x (min.) 25G SFP28 uplink ports (backward compatible with 10G/1G SFP+/SFP); non-blocking switching fabric with switching capacity ≥ 480 Gbps and forwarding rate ≥ 350+ Mpps; Full Layer 3 feature set — static & dynamic routing (RIPv2, OSPFv2/v3, BGP), VLAN (802.1Q, up to 4094), Inter-VLAN routing, VRRP/HSRP-equivalent gateway redundancy, DHCP Server/Relay/Snooping, ACL (L2–L4), QoS (802.1p, DSCP, rate limiting), IGMP/MLD Snooping & PIM (multicast routing); Stacking / Virtual Chassis support (physical or via uplinks) for ≥ 4-8 units with single-IP management; Redundant/hot-swappable power supply option; PoE+/PoE++ (802.3af/at/bt) variant available for AP/IP-phone/camera power (per-port up to 60W, PoE budget ≥ 370W); Support for SNMPv3, SSH v2, HTTPS, RADIUS/TACACS+, 802.1X Port-Based Network Access Control; sFlow/NetFlow/telemetry support; Cloud & on-prem centralized management/controller compatibility, REST API/Zero-Touch Provisioning; ITU/IEEE IEEE802.3bz (2.5G/5GBASE-T) compliant; MTBF ≥ 100,000 hours; Rack-mountable 1U, 19-inch form factor; must be currently shipping / not End-of-Sale or End-of-Life at time of supply; minimum 5-year manufacturer warranty & software update support.	Nos
3	L3 Access Switch — 48-Port, 2.5G/5G Copper	48x 100/1000/2.5G/5GBASE-T RJ45 auto-negotiating multi-gigabit copper ports (Cat6A support, IEEE 802.3bz compliant); 4-6x (min.) 25G SFP28 uplink ports (backward compatible with 10G/1G SFP+/SFP); non-blocking switching fabric with switching capacity ≥ 800 Gbps and forwarding rate ≥ 600+ Mpps; Full Layer 3 feature set — static & dynamic routing (RIPv2, OSPFv2/v3, BGP), VLAN (802.1Q, up to 4094), Inter-VLAN routing, gateway redundancy protocol (VRRP), DHCP Server/Relay/Snooping, ACL (L2–L4), QoS (802.1p, DSCP), IGMP/MLD Snooping & PIM; Stacking/Virtual Chassis support for ≥ 4-8 units, single-IP management; Redundant/hot-swappable power supply option; PoE+/PoE++ (802.3af/at/bt) variant available, PoE budget ≥ 740W; SNMPv3, SSHv2, HTTPS, RADIUS/TACACS+, 802.1X; sFlow/NetFlow/telemetry; Cloud & on-prem controller management, REST API, Zero-Touch Provisioning; IEEE 802.3bz compliant; MTBF ≥ 100,000 hours; Rack-mountable 1U, 19-inch form factor; must be currently shipping / not End-of-Sale or End-of-Life at time of supply; minimum 5-year manufacturer warranty & software update support.	Nos
4	L3 Access Switch — 48-Port, 10G Copper	48x 100/1000/2.5G/5G/10GBASE-T RJ45 auto-negotiating multi-gigabit copper ports (Cat6A support); 4-6x (min.) 25G SFP28 uplink ports (backward compatible with 10G/1G SFP+/SFP); non-blocking switching fabric with switching capacity ≥ 1.5 Tbps and forwarding rate ≥ 1,100+ Mpps; Full Layer 3 feature set — static & dynamic routing (RIPv2, OSPFv2/v3, BGP), VLAN (802.1Q, up to 4094), Inter-VLAN routing, gateway redundancy protocol (VRRP), DHCP Server/Relay/Snooping, ACL (L2–L4), QoS (802.1p, DSCP), IGMP/MLD Snooping & PIM; Stacking/Virtual Chassis support for ≥ 4-8 units, single-IP management; Redundant/hot-swappable power supply option; PoE+/PoE++ (802.3af/at/bt) variant available, PoE budget ≥ 740W; SNMPv3, SSHv2, HTTPS, RADIUS/TACACS+, 802.1X; sFlow/NetFlow/telemetry; Cloud & on-prem controller management, REST API, Zero-Touch Provisioning; IEEE 802.3bz compliant; MTBF ≥ 100,000 hours; Rack-mountable 1U, 19-inch form factor; must be currently shipping / not End-of-Sale or End-of-Life at time of supply; minimum 5-year manufacturer warranty & software update support.	Nos
2. CORE / DISTRIBUTION LAYER SWITCHES — LAYER 3, 25G/100G UPLINKS			
5	L3 Core Switch — 24-Port, 10G/25G/100G	24x SFP28 ports supporting 1G/10G/25G (auto-sensing) for downlink aggregation from access switches; minimum 4x QSFP28 100G (or 40G/100G auto) uplink/spine ports for core interconnect; switching capacity ≥ 3.6 Tbps, forwarding rate ≥ 2,000+ Mpps, wire-speed/non-blocking, low & consistent latency (≤ 1μs typical, cut-through switching); Advanced Layer 3 routing — static, RIPv2, OSPFv2/v3, IS-IS, BGP4, PBR, VRF-lite/ multi-VRF; Redundancy — VRRP, MLAG/Virtual-Chassis/Stacking for chassis & link-level redundancy, dual redundant hot-swappable power supplies (1+1) and hot-swappable/redundant fans; Advanced QoS (8+ hardware queues, DSCP/CoS remarking), ACL (L2-L4, hardware based), IGMP/PIM Multicast routing, VXLAN/EVPN support for overlay & data-center fabric readiness; Security — 802.1X, MACsec (optional), SSHv2, RADIUS/TACACS+, Control-Plane Policing; Management — SNMPv3, gNMI/NETCONF, REST API, sFlow/NetFlow/IPFIX, Zero-Touch Provisioning, centralized cloud/on-prem controller support; Buffer memory ≥ 32MB, MAC table ≥ 128K, Routing table ≥ 128K IPv4 / 64K IPv6 routes; IPv6 dual-stack support; 19-inch rack-mount 1U/2U chassis; must be currently shipping technology / not End-of-Sale or End-of-Life; minimum 5-year manufacturer warranty & software update/lifecycle support.	Nos
6	L3 Core Switch — 48-Port, 10G/25G/100G	48x SFP28 ports supporting 1G/10G/25G (auto-sensing) for downlink aggregation; minimum 6x QSFP28 100G (40G/100G auto) uplink/spine ports; switching capacity ≥ 6.4 Tbps, forwarding rate ≥ 4,000+ Mpps, wire-speed/non-blocking, cut-through low-latency switching; Advanced Layer 3 routing — static, RIPv2, OSPFv2/v3, IS-IS, BGP4, PBR, VRF-lite/multi-VRF; Redundancy — VRRP, MLAG/Virtual-Chassis/Stacking, dual redundant hot-swappable power supplies and fan trays; Advanced QoS (hardware queues, DSCP/CoS remarking), hardware ACL (L2-L4), IGMP/PIM Multicast, VXLAN/EVPN overlay support; Security — 802.1X, MACsec (optional), SSHv2, RADIUS/TACACS+, CoPP; Management — SNMPv3, gNMI/NETCONF, REST API, sFlow/NetFlow/IPFIX, Zero-Touch Provisioning, centralized management/controller/SDN readiness; Buffer memory ≥ 64MB, MAC table ≥ 256K, Routing table ≥ 256K IPv4 routes; IPv6 dual-stack; 19-inch rack-mount 1U/2U chassis; must be currently shipping / not End-of-Sale or End-of-Life; minimum 5-year manufacturer warranty & software lifecycle support.	Nos
3. WIRELESS LAN — WI-FI 7 ROUTERS & ACCESS POINTS (LATEST GENERATION)			

7	Wireless Router / Gateway — Wi-Fi 7	IEEE 802.11be (Wi-Fi 7) certified, Tri-band (2.4/5/6 GHz) simultaneous operation; Multi-Link Operation (MLO) for combined-band throughput & lower latency; support for 320 MHz channel width (6 GHz), 4K-QAM modulation; aggregate PHY data rate ≥ 10 Gbps (band combined); MU-MIMO & OFDMA (uplink/downlink) on all bands; minimum 1x 10GbE WAN + 1x 10GbE/2.5GbE LAN port (multi-gig), remaining ports Gigabit; integrated router functions — NAT, DHCP server, VPN server/client (WireGuard/IPSec/OpenVPN), Dynamic DNS, Firewall/SPI, Guest network with VLAN isolation, Parental controls, QoS/traffic prioritization; WPA3-Personal/Enterprise security; WEP/WPA legacy support for backward compatibility only; Mesh-capable (proprietary or EasyMesh/802.11s standard); cloud & mobile app management; must be currently shipping / not EOL; minimum 2–3 year manufacturer warranty.	Nos
8	Indoor Access Point — Wi-Fi 7 (Ceiling/Wall Mount)	IEEE 802.11be (Wi-Fi 7) certified, Tri-band (2.4/5/6 GHz) concurrent operation; Multi-Link Operation (MLO), 320 MHz channel support (6 GHz band), 4K-QAM; minimum 4x4:4 (5 GHz) + 4x4:4 (6 GHz) + 2x2:2 (2.4 GHz) spatial streams (8-stream class) or equivalent; aggregate throughput ≥ 5–6 Gbps; supports minimum 500+ concurrent associated clients per radio (enterprise-grade); OFDMA, MU-MIMO (UL & DL), BSS Coloring, Target Wake Time (TWT); Uplink — minimum 1x 2.5GbE or 5GbE/10GbE multi-gigabit Ethernet port (IEEE 802.3bz), auto-negotiating; Powered via PoE+/PoE++ (IEEE 802.3at/bt), single cable install; WPA3-Personal/Enterprise, 802.1X, RADIUS integration, Rogue AP detection, built-in firewall & Wireless Intrusion Prevention (WIPS/WIDS); supports centralized cloud controller or on-prem controller management, Zero-Touch Provisioning, SNMP, REST API; Seamless Layer 2/3 roaming (802.11r/k/v); Airtime fairness & band-steering; Compact in/outdoor rated enclosure options; must be currently shipping / not EOL; minimum 5-year manufacturer warranty.	Nos
9	Outdoor Access Point — Wi-Fi 7 (Weatherproof)	IEEE 802.11be (Wi-Fi 7) certified, Tri-band (2.4/5/6 GHz — 6 GHz subject to local spectrum regulatory approval), MLO support, 320 MHz channel width; weatherproof enclosure rated minimum IP66/IP67, operating temperature range -30°C to +60°C; integrated or external high-gain directional/omni antenna options; aggregate throughput ≥ 4–5 Gbps; minimum 1x 2.5GbE/10GbE multi-gigabit uplink port with PoE+/PoE++ (802.3at/bt) input, surge & lightning protection on Ethernet port; WPA3-Personal/Enterprise, 802.1X; supports point-to-point/point-to-multipoint bridging mode as well as standard AP mode; centralized cloud/on-prem controller management; wind loading rated mounting kit (pole/wall); must be currently shipping / not EOL; minimum 5-year manufacturer warranty.	Nos
10	Wireless Router / Gateway — Wi-Fi 6E (Alternate/Optional Technology)	IEEE 802.11ax (Wi-Fi 6E) certified, Tri-band (2.4/5/6 GHz) simultaneous operation, extending 802.11ax into the 6 GHz band for additional interference-free spectrum; 160 MHz channel width support, 1024-QAM modulation; aggregate PHY data rate ≥ 5.4 Gbps (band combined); MU-MIMO & OFDMA (uplink/downlink) on all bands; minimum 1x 2.5GbE WAN + 1x 1GbE/2.5GbE LAN port (multi-gig, IEEE 802.3bz), remaining ports Gigabit; integrated router functions — NAT, DHCP server, VPN server/client (WireGuard/IPSec/OpenVPN), Dynamic DNS, Firewall/SPI, Guest network with VLAN isolation, Parental controls, QoS/traffic prioritization; WPA3-Personal/Enterprise security; WEP/WPA legacy support for backward compatibility only; Mesh-capable (proprietary or EasyMesh/802.11s standard); cloud & mobile app management; must be currently shipping / not EOL; minimum 2–3 year manufacturer warranty.	Nos
11	Indoor Access Point — Wi-Fi 6E (Alternate/Optional Technology, Ceiling/Wall Mount)	IEEE 802.11ax (Wi-Fi 6E) certified, Tri-band (2.4/5/6 GHz) concurrent operation; 160 MHz channel support (5/6 GHz), 1024-QAM; minimum 4x4:4 (5 GHz) + 4x4:4 (6 GHz) + 2x2:2 (2.4 GHz) spatial streams (8-stream class) or equivalent; aggregate throughput ≥ 3–4 Gbps; supports minimum 400+ concurrent associated clients per radio (enterprise-grade); OFDMA, MU-MIMO (UL & DL), BSS Coloring, Target Wake Time (TWT); Uplink — minimum 1x 2.5GbE multi-gigabit Ethernet port (IEEE 802.3bz), matched to access-switch 2.5G/5GBASE-T ports for plug-and-play compatibility; auto-negotiating; Powered via PoE+/PoE++ (IEEE 802.3at/bt), single cable install; WPA3-Personal/Enterprise, 802.1X, RADIUS integration, Rogue AP detection, built-in firewall & Wireless Intrusion Prevention (WIPS/WIDS); supports centralized cloud controller or on-prem controller management, Zero-Touch Provisioning, SNMP, REST API; Seamless Layer 2/3 roaming (802.11r/k/v); Airtime fairness & band-steering; Compact in/outdoor rated enclosure options; must be currently shipping / not EOL; minimum 5-year manufacturer warranty.	Nos
12	Outdoor Access Point — Wi-Fi 6E (Alternate/Optional Technology, Weatherproof)	IEEE 802.11ax (Wi-Fi 6E) certified, Tri-band (2.4/5/6 GHz — 6 GHz subject to local spectrum regulatory approval), 160 MHz channel width, 1024-QAM; weatherproof enclosure rated minimum IP66/IP67, operating temperature range -30°C to +60°C; integrated or external high-gain directional/omni antenna options; aggregate throughput ≥ 3–3.5 Gbps; minimum 1x 2.5GbE multi-gigabit uplink port (IEEE 802.3bz) with PoE+/PoE++ (802.3at/bt) input, surge & lightning protection on Ethernet port; WPA3-Personal/Enterprise, 802.1X; supports point-to-point/point-to-multipoint bridging mode as well as standard AP mode; centralized cloud/on-prem controller management; wind loading rated mounting kit (pole/wall); must be currently shipping / not EOL; minimum 5-year manufacturer warranty.	Nos

4. RJ45 CONNECTORS — 10G RATED (CAT6A)

13	RJ45 Connector — Cat6A UTP (10G)	8P8C RJ45 modular plug, rated for Cat6A / Class EA performance up to 500 MHz per TIA-568-C.2/ISO-IEC 11801 Class EA, supports 10GBASE-T up to 100m per ANSI/TIA-568; 3-prong staggered gold-plated contacts (50 micro-inch gold flash minimum) for low-resistance, high-durability termination (≥ 750 mating cycles); unshielded (UTP) type for standard Cat6A UTP cable, 23-24 AWG solid conductor compatible; strain-relief boot compatible; RoHS compliant.	Pcs
14	RJ45 Connector — Cat6A STP/Shielded (10G)	8P8C RJ45 shielded modular plug, rated Cat6A/Class EA up to 500 MHz, supports 10GBASE-T up to 100m; metal shield (fully shielded 360° ferrule) for EMI/crosstalk immunity in high-interference environments; gold-plated contacts (50 micro-inch minimum); compatible with Cat6A S/FTP or F/UTP shielded cable, 23-24 AWG; grounding-compatible shield termination; RoHS compliant.	Pcs
15	RJ45 Connector	Rj45 Connector with 1G support.	

5. CAT6A CABLE — 10G DATA TRANSMISSION

16	Cat6A UTP Cable (Data Cable, 10G, 305m/Box)	Category 6A Unshielded Twisted Pair (UTP) cable per ANSI/TIA-568-C.2 & ISO/IEC 11801 Class EA; supports 10GBASE-T up to 100m and bandwidth up to 500 MHz; 4-pair, 23 AWG solid bare copper conductors; enhanced cross-web/spline separator design to reduce alien crosstalk (AXT); PVC or LSZH (Low Smoke Zero Halogen) jacket option for riser/plenum rated installations (CMR/CM or CMP per NEC/UL 444); nominal cable OD ≈ 7.9–8.5 mm; verified/certified test performance (NEXT, PSNEXT, Return Loss, Insertion Loss, ACR-F) to full Cat6A limits; 305m (1000ft) pull-box packaging; UL/ETL listed & RoHS compliant.	Box
16	Cat6A STP/FTP Cable (Shielded, 10G, 305m/Box)	Category 6A Shielded (F/UTP foil-shielded or S/FTP individually-shielded pairs) twisted pair cable per ANSI/TIA-568-C.2 & ISO/IEC 11801 Class EA; supports 10GBASE-T up to 100m, bandwidth up to 500 MHz; 4-pair, 23 AWG solid bare copper conductors; aluminum-foil/braid shield with drain wire for superior alien crosstalk & EMI immunity, suited for high-EMI/industrial or data-center environments; LSZH or PVC jacket, CMR/CM rated; nominal OD ≈ 8.5–9.2 mm; full Cat6A electrical certification; 305m pull-box packaging; UL/ETL listed & RoHS compliant.	Box
17	Cat6 STP/UTP Cable (305m/Box)	Cat6 STP/UTP Cable (305m/Box)	Box

18	10G SFP+ Transceiver — Single Mode (SMF)	10GBASE-LR SFP+ optical transceiver, MSA (Multi-Source Agreement) compliant, hot-pluggable; wavelength 1310nm; duplex LC connector; single-mode fiber (OS2) compatible; reach up to 10km (extended reach 40km/80km ZR/ER variants available on request); digital diagnostic monitoring (DDM/DOM) support; compliant with IEEE 802.3ae; operating temperature 0°C to 70°C (commercial) / -40°C to 85°C (industrial, optional); compatible/interoperable across standard-based switch platforms; RoHS compliant.	Nos
19	10G SFP+ Transceiver — Multi Mode (MMF)	10GBASE-SR SFP+ optical transceiver, MSA compliant, hot-pluggable; wavelength 850nm; duplex LC connector; multi-mode fiber (OM3/OM4) compatible; reach up to 300m (OM3) / 400m (OM4); digital diagnostic monitoring (DDM/DOM) support; compliant with IEEE 802.3ae; operating temperature 0°C to 70°C; compatible/interoperable across standard-based switch platforms; RoHS compliant.	Nos
20	25G SFP28 Transceiver — Single Mode (SMF)	25GBASE-LR SFP28 optical transceiver, MSA compliant, hot-pluggable, backward compatible with 10G SFP+ ports; wavelength 1310nm; duplex LC connector; single-mode fiber (OS2) compatible; reach up to 10km; digital diagnostic monitoring (DDM/DOM); compliant with IEEE 802.3by/cc; operating temperature 0°C to 70°C (industrial variant available); RoHS compliant.	Nos
21	25G SFP28 Transceiver — Multi Mode (MMF)	25GBASE-SR SFP28 optical transceiver, MSA compliant, hot-pluggable, backward compatible with 10G SFP+ ports; wavelength 850nm; duplex LC connector; multi-mode fiber (OM4/OM5) compatible; reach up to 100m (OM4); digital diagnostic monitoring (DDM/DOM); compliant with IEEE 802.3by/cc; operating temperature 0°C to 70°C; RoHS compliant.	Nos
7. FIBER OPTIC CABLE — 12-CORE (SINGLE-MODE & MULTI-MODE)			
22	12-Core Fiber Optic Cable — Single Mode (SMF)	12-core Single-Mode fiber optic cable, glass fiber per ITU-T G.652D (OS2, 9/125µm); Armored, double-jacketed, corrugated steel-tape armor with rip-cord for rodent/crush protection; suitable for direct-burial, duct, or outdoor aerial installation as required; loose-tube gel-filled or gel-free (dry-block) construction; central strength member (FRP/steel) with aramid yarn reinforcement; low attenuation ≤ 0.36 dB/km @1310nm, ≤ 0.22 dB/km @1550nm; PE (polyethylene) outer sheath, UV-resistant; color-coded buffer tubes/fibers per TIA-598 standard for easy identification; supports 10G/25G/40G/100G transmission over long-haul distances.	Meter
23	12-Core Fiber Optic Cable — Multi Mode (MMF)	12-core Multi-Mode fiber optic cable, OM4 (50/125µm) laser-optimized graded-index fiber per ITU-T G.651.1/IEC 60793-2-10; Armored, double-jacketed, corrugated steel-tape armor with rip-cord for rodent/crush protection; suitable for indoor/outdoor duct installation; loose-tube or tight-buffered construction as per site requirement; central strength member with aramid yarn reinforcement; bandwidth ≥ 4700 MHz-km @850nm (OM4), supports 10G up to 550m, 25G/40G/100G up to 100–150m; PE outer sheath, UV-resistant; color-coded fibers per TIA-598 standard.	Meter
8. DUCT PIPE — PVC CONDUIT (VARIOUS SIZES, 10FT LENGTH)			
24	Duct Pipe (Rigid PVC Conduit) — 20mm (3/4") x 10ft	Heavy-gauge rigid uPVC electrical/telecom conduit pipe, UV & impact resistant, self-extinguishing (fire-retardant) grade material; smooth interior bore for low-friction cable pulling; standard 10-feet (3.05m) length with plain/socketed ends for coupler jointing; suitable for surface, concealed, or underground (with proper bedding) installation of structured cabling (copper & fiber); compliant with relevant PVC conduit standards (e.g., IEC 61386 / PSQCA equivalent); temperature rating -5°C to 60°C.	Nos (10ft)
25	Duct Pipe (Rigid PVC Conduit) — 25mm (1") x 10ft	Heavy-gauge rigid uPVC electrical/telecom conduit pipe, UV & impact resistant, self-extinguishing (fire-retardant) grade material; smooth interior bore for low-friction cable pulling; standard 10-feet (3.05m) length with plain/socketed ends for coupler jointing; suitable for surface, concealed, or underground (with proper bedding) installation of structured cabling (copper & fiber); compliant with relevant PVC conduit standards (e.g., IEC 61386 / PSQCA equivalent); temperature rating -5°C to 60°C.	Nos (10ft)
26	Duct Pipe (Rigid PVC Conduit) — 32mm (1-1/4") x 10ft	Heavy-gauge rigid uPVC electrical/telecom conduit pipe, UV & impact resistant, self-extinguishing (fire-retardant) grade material; smooth interior bore for low-friction cable pulling; standard 10-feet (3.05m) length with plain/socketed ends for coupler jointing; suitable for surface, concealed, or underground (with proper bedding) installation of structured cabling (copper & fiber); compliant with relevant PVC conduit standards (e.g., IEC 61386 / PSQCA equivalent); temperature rating -5°C to 60°C.	Nos (10ft)
27	Duct Pipe (Rigid PVC Conduit) — 50mm (2") x 10ft	Heavy-gauge rigid uPVC electrical/telecom conduit pipe, UV & impact resistant, self-extinguishing (fire-retardant) grade material; smooth interior bore for low-friction cable pulling; standard 10-feet (3.05m) length with plain/socketed ends for coupler jointing; suitable for surface, concealed, or underground (with proper bedding) installation of structured cabling (copper & fiber); compliant with relevant PVC conduit standards (e.g., IEC 61386 / PSQCA equivalent); temperature rating -5°C to 60°C.	Nos (10ft)
28	Duct Pipe (Rigid PVC Conduit) — 75mm (3") x 10ft	Heavy-gauge rigid uPVC electrical/telecom conduit pipe, UV & impact resistant, self-extinguishing (fire-retardant) grade material; smooth interior bore for low-friction cable pulling; standard 10-feet (3.05m) length with plain/socketed ends for coupler jointing; suitable for surface, concealed, or underground (with proper bedding) installation of structured cabling (copper & fiber); compliant with relevant PVC conduit standards (e.g., IEC 61386 / PSQCA equivalent); temperature rating -5°C to 60°C.	Nos (10ft)
9. DUCT PATTI — PVC TRUNKING / CASING-CAPPING (VARIOUS SIZES, 10FT LENGTH)			
29	Duct Patti (PVC Trunking/Casing-Capping) — 25x12mm x 10ft	Two-piece PVC cable trunking (base + snap-fit cover/capping), self-extinguishing fire-retardant uPVC material, UV stabilized for indoor/outdoor use; standard 10-feet (3.05m) length; internal cable-routing channel for structured/data cabling and power cabling separation; accessories (couplers, bends, tees, end-caps) available in matching size; surface-mount installation with screw/adhesive fixing; smooth rounded edges for cable safety.	Nos (10ft)
30	Duct Patti (PVC Trunking/Casing-Capping) — 40x20mm x 10ft	Two-piece PVC cable trunking (base + snap-fit cover/capping), self-extinguishing fire-retardant uPVC material, UV stabilized for indoor/outdoor use; standard 10-feet (3.05m) length; internal cable-routing channel for structured/data cabling and power cabling separation; accessories (couplers, bends, tees, end-caps) available in matching size; surface-mount installation with screw/adhesive fixing; smooth rounded edges for cable safety.	Nos (10ft)
31	Duct Patti (PVC Trunking/Casing-Capping) — 60x40mm x 10ft	Two-piece PVC cable trunking (base + snap-fit cover/capping), self-extinguishing fire-retardant uPVC material, UV stabilized for indoor/outdoor use; standard 10-feet (3.05m) length; internal cable-routing channel for structured/data cabling and power cabling separation; accessories (couplers, bends, tees, end-caps) available in matching size; surface-mount installation with screw/adhesive fixing; smooth rounded edges for cable safety.	Nos (10ft)
32	Duct Patti (PVC Trunking/Casing-Capping) — 100x50mm x 10ft	Two-piece PVC cable trunking (base + snap-fit cover/capping), self-extinguishing fire-retardant uPVC material, UV stabilized for indoor/outdoor use; standard 10-feet (3.05m) length; internal cable-routing channel for structured/data cabling and power cabling separation; accessories (couplers, bends, tees, end-caps) available in matching size; surface-mount installation with screw/adhesive fixing; smooth rounded edges for cable safety.	Nos (10ft)
10. FLEXIBLE PIPE — CORRUGATED CONDUIT (VARIOUS SIZES, 10FT LENGTH)			

33	Flexible Pipe (Corrugated PVC/PP Conduit) — 16mm x 10ft	Flexible corrugated conduit pipe (PVC or Polypropylene), split or non-split type, self-extinguishing fire-retardant material; standard 10-feet (3.05m) length; high flexibility for routing through tight bends, false ceilings, and wall chases; abrasion & crush resistant; used for protecting structured cabling drops (copper/fiber) between duct/trunking and outlet points; compatible with standard flexible-conduit connectors/glands.	Nos (10ft)
34	Flexible Pipe (Corrugated PVC/PP Conduit) — 20mm x 10ft	Flexible corrugated conduit pipe (PVC or Polypropylene), split or non-split type, self-extinguishing fire-retardant material; standard 10-feet (3.05m) length; high flexibility for routing through tight bends, false ceilings, and wall chases; abrasion & crush resistant; used for protecting structured cabling drops (copper/fiber) between duct/trunking and outlet points; compatible with standard flexible-conduit connectors/glands.	Nos (10ft)
35	Flexible Pipe (Corrugated PVC/PP Conduit) — 25mm x 10ft	Flexible corrugated conduit pipe (PVC or Polypropylene), split or non-split type, self-extinguishing fire-retardant material; standard 10-feet (3.05m) length; high flexibility for routing through tight bends, false ceilings, and wall chases; abrasion & crush resistant; used for protecting structured cabling drops (copper/fiber) between duct/trunking and outlet points; compatible with standard flexible-conduit connectors/glands.	Nos (10ft)
36	Flexible Pipe (Corrugated PVC/PP Conduit) — 32mm x 10ft	Flexible corrugated conduit pipe (PVC or Polypropylene), split or non-split type, self-extinguishing fire-retardant material; standard 10-feet (3.05m) length; high flexibility for routing through tight bends, false ceilings, and wall chases; abrasion & crush resistant; used for protecting structured cabling drops (copper/fiber) between duct/trunking and outlet points; compatible with standard flexible-conduit connectors/glands.	Nos (10ft)

11. OTHER RELATED ACCESSORIES

37	Cable Ties (Nylon, 4-inch/100mm)	Self-locking nylon 66 (PA66) cable tie, UL 94V-2 rated, weather & UV resistant options available; tensile strength ≥ 8 lbs (18kg); size 100mm x 2.5mm; black or white; pack of 100.	Pack
38	Cable Ties (Nylon, 8-inch/200mm)	Self-locking nylon 66 (PA66) cable tie, UL 94V-2 rated, weather & UV resistant options available; tensile strength ≥ 18–20 lbs (40kg); size 200mm x 4.8mm; black or white; pack of 100.	Pack
39	Screws & Wall Plugs (Assorted, for conduit/rack mounting)	Self-tapping / concrete screws with matching plastic wall plugs (rawl plugs), assorted sizes (25mm–50mm), zinc-plated / corrosion-resistant steel; suitable for fixing duct pipe, trunking, back-boxes and rack/wall-mount brackets to concrete, brick, or drywall surfaces; pack of 100.	Pack
40	Miscellaneous Fasteners / Anchors	Assorted nuts, bolts, washers, drop-in/expansion anchors and threaded rods (M6–M10) for rack installation, cable-tray support, and general mounting hardware; corrosion-resistant zinc/galvanized finish.	Lot

12. NETWORK RACK CABINETS

41	Network Rack Cabinet — 12U, Double Section (600x600/800mm)	19-inch standard server/network rack cabinet, 12U usable height, Double-Section construction (separate front server compartment + rear/side vertical cable-management section); dimensions approx. 600(W) x 600 or 800(D) x 636(H) mm; cold-rolled steel (SPCC) construction, powder-coated finish; front tempered-glass/perforated lockable door, removable lockable side & rear panels; adjustable 19-inch mounting rails (front & rear); top & bottom cable entry with brush strips; static/dynamic load capacity ≥ 300–400 kg; built-in cooling provision (fan-tray ready, top/side vents); grounding point; castor wheels + leveling feet; cable-management rings/D-rings in vertical section; compliant with EIA-310 standard.	Nos
42	Network Rack Cabinet — 9U, Double Section (600x600mm)	19-inch standard server/network rack cabinet, 9U usable height, Double-Section construction (front equipment compartment + vertical cable-management section); dimensions approx. 600(W) x 600(D) x 508(H) mm; cold-rolled steel (SPCC) construction, powder-coated finish; front tempered-glass/perforated lockable door, removable lockable side panels; adjustable 19-inch mounting rails; top & bottom cable entry with brush strips; static/dynamic load capacity ≥ 150–200 kg; cooling vents/fan-ready; grounding point; wall-mount or floor-standing base option; cable-management rings in vertical section; compliant with EIA-310 standard.	Nos

13. OPTICAL DISTRIBUTION FRAME (ODF)

43	ODF Box — 24 Port (Rack Mount)	19-inch rack-mountable Optical Distribution Frame (ODF), 1U, 24-port capacity; sliding drawer design for easy front access to splice tray & adapters; supports LC/SC (duplex or simplex) adapter panels (specify at order); integrated splice tray(s) for fusion splice protection (min. 24 splices); cable entry with strain-relief & grounding provision; lockable front cover; pre-loaded or unloaded (adapters/pigtails) option as specified; steel construction, powder-coated finish.	Nos
44	ODF Box — 48 Port (Rack Mount)	19-inch rack-mountable Optical Distribution Frame (ODF), 2U (or 1U high-density), 48-port capacity; sliding drawer design for front access to splice trays & adapters; supports LC/SC (duplex or simplex) adapter panels (specify at order); integrated splice tray(s) for fusion splice protection (min. 48 splices); cable entry with strain-relief & grounding provision; lockable front cover; pre-loaded or unloaded (adapters/pigtails) option as specified; steel construction, powder-coated finish.	Nos

14. FIBER OPTIC PIGTAILS / PATCH CORDS (SC-SC, LC-LC, SC-LC)

45	Fiber Pigtail/Patch Cord — SC to SC	Single-Mode (OS2, 9/125μm) or Multi-Mode (OM3/OM4, per site requirement) fiber optic pigtail/patch cord, SC-UPC or SC-APC connector on both ends (as specified); simplex or duplex, tight-buffered 900μm (pigtail) or 3.0mm jacketed (patch cord); factory-polished, insertion loss ≤ 0.3dB, return loss ≥ 50dB (UPC) / ≥ 60dB (APC); LSZH or PVC jacket; standard length 1–3m (pigtail, unterminated other end for fusion splicing) or 1–5m (patch cord, both ends terminated).	Nos
46	Fiber Pigtail/Patch Cord — LC to LC	Single-Mode (OS2, 9/125μm) or Multi-Mode (OM3/OM4, per site requirement) fiber optic pigtail/patch cord, LC-UPC or LC-APC connector on both ends (as specified); simplex or duplex, tight-buffered 900μm (pigtail) or 2.0/3.0mm jacketed (patch cord); factory-polished, insertion loss ≤ 0.3dB, return loss ≥ 50dB (UPC) / ≥ 60dB (APC); LSZH or PVC jacket; standard length 1–3m (pigtail) or 1–5m (patch cord).	Nos
47	Fiber Pigtail/Patch Cord — SC to LC	Single-Mode (OS2, 9/125μm) or Multi-Mode (OM3/OM4, per site requirement) hybrid fiber optic patch cord, SC-UPC/APC connector on one end and LC-UPC/APC connector on other end; simplex or duplex, 2.0/3.0mm jacketed; factory-polished, insertion loss ≤ 0.3dB, return loss ≥ 50dB (UPC) / ≥ 60dB (APC); LSZH or PVC jacket; standard length 1–5m; used for interconnecting ODF (SC) to switch/transceiver (LC) ports.	Nos

15. PATCH PANEL (FULLY LOADED)

48	Patch Panel — 24-Port Cat6A, Fully Loaded	19-inch rack-mountable, 1U, 24-port Cat6A patch panel, fully loaded with Cat6A keystone jacks/ports (110-style or tool-less punch-down termination); supports 10GBASE-T; UTP or Shielded (STP) variant per cabling type used; rear cable-management bar; individual port numbering/labeling; certified performance to TIA-568-C.2 Category 6A / Class EA; angled or flat design option; black powder-coated steel housing.	Nos
49	Patch Panel — 48-Port Cat6A, Fully Loaded	19-inch rack-mountable, 2U (or high-density 1U), 48-port Cat6A patch panel, fully loaded with Cat6A keystone jacks/ports (110-style or tool-less punch-down termination); supports 10GBASE-T; UTP or Shielded (STP) variant per cabling type used; rear cable-management bar; individual port numbering/labeling; certified performance to TIA-568-C.2 Category 6A / Class EA; black powder-coated steel housing.	Nos
16. PATCH CORDS — CAT6A (NEW, FACTORY-TERMINATED)			
50	Patch Cord — Cat6A, 1M (Factory Terminated, New)	Factory-manufactured (not field-terminated) Cat6A UTP or S/FTP patch cord per TIA-568-C.2 / ISO-IEC 11801 Class EA; supports 10GBASE-T; stranded 26-28 AWG copper conductors for flexibility; molded snagless/booted RJ45 connectors both ends, gold-plated contacts; length 1M; factory-tested & certified (NEXT, Return Loss, Insertion Loss); LSZH or PVC jacket; color as specified.	Nos
51	Patch Cord — Cat6A, 2M (Factory Terminated, New)	Factory-manufactured (not field-terminated) Cat6A UTP or S/FTP patch cord per TIA-568-C.2 / ISO-IEC 11801 Class EA; supports 10GBASE-T; stranded 26-28 AWG copper conductors for flexibility; molded snagless/booted RJ45 connectors both ends, gold-plated contacts; length 2M; factory-tested & certified (NEXT, Return Loss, Insertion Loss); LSZH or PVC jacket; color as specified.	Nos
52	Patch Cord — Cat6A, 3M (Factory Terminated, New)	Factory-manufactured (not field-terminated) Cat6A UTP or S/FTP patch cord per TIA-568-C.2 / ISO-IEC 11801 Class EA; supports 10GBASE-T; stranded 26-28 AWG copper conductors for flexibility; molded snagless/booted RJ45 connectors both ends, gold-plated contacts; length 3M; factory-tested & certified (NEXT, Return Loss, Insertion Loss); LSZH or PVC jacket; color as specified.	Nos
53	Patch Cord — Cat6A, 5M (Factory Terminated, New)	Factory-manufactured (not field-terminated) Cat6A UTP or S/FTP patch cord per TIA-568-C.2 / ISO-IEC 11801 Class EA; supports 10GBASE-T; stranded 26-28 AWG copper conductors for flexibility; molded snagless/booted RJ45 connectors both ends, gold-plated contacts; length 5M; factory-tested & certified (NEXT, Return Loss, Insertion Loss); LSZH or PVC jacket; color as specified.	Nos
54	Patch Cord — Cat6A, 10M (Factory Terminated, New)	Factory-manufactured (not field-terminated) Cat6A UTP or S/FTP patch cord per TIA-568-C.2 / ISO-IEC 11801 Class EA; supports 10GBASE-T; stranded 26-28 AWG copper conductors for flexibility; molded snagless/booted RJ45 connectors both ends, gold-plated contacts; length 10M; factory-tested & certified (NEXT, Return Loss, Insertion Loss); LSZH or PVC jacket; color as specified.	Nos
17. POWER DISTRIBUTION UNIT (PDU)			
55	PDU — Rack Mount, Basic/Metered, 1U	19-inch rack-mountable 1U Power Distribution Unit; minimum 8-12x Universal/IEC C13 (with additional C19 optional) output sockets; input via IEC C14/C20 plug or hard-wired, rated 16A/230V (site voltage/current to be confirmed); overload/surge protection with circuit breaker; Basic (no display) or Metered (local LED/LCD current & voltage display) variant as specified; Switched/remote-monitored (network-manageable, SNMP) variant available for data-center-grade requirement; all-metal housing, grounded; horizontal or vertical (OU) mount options.	Nos
18. CABLE MANAGER			
56	Cable Manager — Horizontal, 1U/2U	19-inch rack-mountable horizontal cable manager, 1U or 2U (as required) with front (and rear, for 2U/double-sided) cover; integrated D-ring/finger-type cable-routing channels; steel construction with powder-coated finish; used to organize and protect patch-cord runs between switches and patch panels; compatible with standard 19-inch rack rails.	Nos
19. I/O (KEYSTONE JACK), FACEPLATE & BACK BOX — CAT6A			
57	I/O (Keystone Jack) — Cat6A	Cat6A UTP/STP keystone jack (I/O), tool-less or 110-punch-down termination, 8P8C RJ45 female interface; certified to TIA-568-C.2 Category 6A / Class EA, supports 10GBASE-T; 180°/90° termination cap; color-coded T568A/B wiring diagram; gold-plated contacts; snap-fit into standard faceplate cut-out.	Nos
58	Faceplate — Single/Dual Port	Single-gang wall faceplate, single-port or dual-port (as specified) keystone-compatible cut-out; UK/US standard size options; ABS/PC fire-retardant plastic, UL94V-0 rated; snap-fit shutter/dust-cover on unused ports; white/ivory (standard) or custom color; compatible with standard back-box mounting.	Nos
59	Back Box — Surface/Concealed Mount	Single-gang electrical back box for data outlet mounting; Metal (galvanized steel) for surface mount or PVC for concealed/in-wall mount, per site requirement; standard depth 25-35mm/47-50mm; pre-punched knock-outs for conduit entry; compatible with standard faceplate mounting screw spacing (60mm).	Nos
20. CABLE SADDLES / CONDUIT CLAMPS			
62	Cable Saddles / Conduit Clamps (Assorted Sizes)	PVC or galvanized-steel single/double-piece conduit saddle/clamp for securing duct pipe/flexible conduit to wall, ceiling, or cable tray; assorted sizes to match 16mm-50mm conduit diameters; supplied with matching fixing screws; UV-resistant (PVC variant) for outdoor use.	Pack
21. HOOK-AND-LOOP STRIPS (VELCRO CABLE TIES)			
63	Hook-and-Loop Strips (Velcro Cable Ties)	Reusable adjustable hook-and-loop (Velcro-type) cable tie/strap, soft nylon fabric construction (non-damaging to cable jackets); width 15-20mm, standard length 150-200mm (also available in continuous roll); ideal for bundling and routine re-arrangement of patch cords & fiber patch cords inside racks; black/multi-color option; pack of 100 or roll of 25m.	Pack
22. RJ45 RUBBER BOOTS (STRAIN RELIEF)			
64	RJ45 Rubber Boots (Strain Relief Cover)	Flexible PVC/rubber snag-less strain-relief boot for RJ45 plug, compatible with Cat6A connectors and cable OD range; protects locking tab from breakage and provides cable bend-relief; available in multiple colors for cable/circuit identification & color-coding; pack of 100.	Pack
23. LABOR COST FOR INSTALLATION			
65	Labor Cost of CatIV Cable	Cost of labor in feet for labor installation of networking cable in Duct and pipes	Nos
66	Labor Cost of power Cable	Cost of labor in feet for labor installation of power cable Duct and pipes	Nos
67	Labor Cost of Fibr Cable	Cost of labor in feet for labor installation of Fiber cable Duct and pipes	Nos
68	Labor Cost of Digging Cable	Cost of labor in feet for labor installation of Digging cable Duct and pipes	Nos
69	Cost of Installing and laying Switches , ODF. Racks outdoor and indoor	Cost of Installing and laying Switches , ODF, Racks outdoor and indoor	Nos
70	Configuration of Devices	Configuring all the devices in the network	Nos

S.No	Item Description	Detailed Technical Specifications (Generalized / Latest / OEM-Agnostic)	Unit
1. PoE ACCESS SWITCHES — LAYER 3, 2.5G/5G COPPER, 25G SFP28 UPLINKS			
1	PoE Switch — 24-Port, L3, 2.5G/5G, Full PoE++	24x 100/1000/2.5G/5GBASE-T RJ45 auto-negotiating multi-gigabit copper ports (Cat6A support, IEEE 802.3bz compliant), ALL ports PoE/PoE+/PoE++ capable (IEEE 802.3af/at/bt), per-port power up to 60W (802.3bt Type 3) / 90W (802.3bt Type 4) as required; total PoE power budget ≥ 400W (scalable to ≥ 740W high-power variant for high-density AP/camera deployments); automatic PoE power detection, priority & scheduling per port; 4x (min.) 25G SFP28 uplink ports (backward compatible with 10G/1G SFP+/SFP); non-blocking switching fabric, switching capacity ≥ 480 Gbps, forwarding rate ≥ 350+ Mpps; Full Layer 3 feature set — static & dynamic routing (RIPv2, OSPFv2/v3, BGP), VLAN (802.1Q, up to 4094), Inter-VLAN routing, VRRP gateway redundancy, DHCP Server/Relay/Snooping, ACL (L2–L4), QoS (802.1p, DSCP, rate limiting), IGMP/MLD Snooping & PIM (multicast routing); Stacking / Virtual Chassis support (≥ 4-8 units) with single-IP management; Redundant/hot-swappable power supply option; Perpetual & Fast PoE (power retained/restored during switch reboot) support; SNMPv3, SSHv2, HTTPS, RADIUS/TACACS+, 802.1X Port-Based Network Access Control; sFlow/NetFlow/telemetry support; cloud & on-prem centralized management/controller compatibility, REST API, Zero-Touch Provisioning; MTBF ≥ 100,000 hours; 1U 19-inch rack-mountable; must be currently shipping and readily available in the Pakistan market / not End-of-Sale or End-of-Life at time of supply; minimum 5-year manufacturer warranty & software update support.	Nos
2	PoE Switch — 48-Port, L3, 2.5G/5G, Full PoE++	48x 100/1000/2.5G/5GBASE-T RJ45 auto-negotiating multi-gigabit copper ports (Cat6A support, IEEE 802.3bz compliant), ALL ports PoE/PoE+/PoE++ capable (IEEE 802.3af/at/bt), per-port power up to 60W (802.3bt Type 3) / 90W (802.3bt Type 4) as required; total PoE power budget ≥ 740W (scalable to ≥ 1440W high-power variant for high-density AP/camera deployments); automatic PoE power detection, priority & scheduling per port; 4-6x (min.) 25G SFP28 uplink ports (backward compatible with 10G/1G SFP+/SFP); non-blocking switching fabric, switching capacity ≥ 800 Gbps, forwarding rate ≥ 600+ Mpps; Full Layer 3 feature set — static & dynamic routing (RIPv2, OSPFv2/v3, BGP), VLAN (802.1Q, up to 4094), Inter-VLAN routing, VRRP gateway redundancy, DHCP Server/Relay/Snooping, ACL (L2–L4), QoS (802.1p, DSCP), IGMP/MLD Snooping & PIM; Stacking/Virtual Chassis support (≥ 4-8 units), single-IP management; Redundant/hot-swappable power supply option; Perpetual & Fast PoE (power retained/restored during switch reboot) support; SNMPv3, SSHv2, HTTPS, RADIUS/TACACS+, 802.1X; sFlow/NetFlow/telemetry; cloud & on-prem controller management, REST API, Zero-Touch Provisioning; MTBF ≥ 100,000 hours; 1U 19-inch rack-mountable; must be currently shipping and readily available in the Pakistan market / not End-of-Sale or End-of-Life at time of supply; minimum 5-year manufacturer warranty & software update support.	Nos

 12/08/2026