BACHA KHAN MEDICAL COMPLEX / GAJJU KHAN MEDICAL COLLEGE

MEDICAL TEACHING INSTITUTION (MTI) Swabi

All changes marked Yellow after Prebid meeting held on June 11, 2025

Contact No: 0938-280214

3rd time (BID SOLICITATION DOCUMENTS)

FOR

SUPPLY & INSTALLATION OF COMPLETE LAN & WI-FI INFRASTRUCTURE (ENTERPRISE NETWORK INFRASTRUCTURE PROJECT)

Note: The prospective bidder is expected to examine the Bidding Documents carefully, including all Instructions, Terms & Conditions, and Specifications etc. Failure to furnish all information required by the Bidding documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect would result in the rejection of the Bid.

Manager Materials Management
BKMC/GKMC-MTI, Swabi

Manager MIS
BKMC/GKMC-MTI, Swabi

Director Finance
BKMC/GKMC-MTI, Swabi

Hospital Director
BKMC-MTI, Swabi

Brief Introduction of GKMC & BKMC -MTI

1 Overview of RFP

Gajju Khan Medical College & Bacha Khan Medical Complex – MTI hereby invites proposals from qualified bidders for the "Supply and Installation of Complete LAN and Wi-Fi Infrastructure (Enterprise Network Infrastructure Project)", in accordance with the terms, conditions, and specifications outlined in this Request for Proposal (RFP).

1.1 Proposed Methodology

Bidders are required to submit a detailed technical proposal encompassing LAN infrastructure, managed Wi-Fi solutions, corporate level data center deployments, fiber optic, passive work, and other relevant components, as specified in the Bill of Quantities (BOQ) and in alignment with the requirements outlined in the Request for Proposal (RFP). The proposal must demonstrate compliance with all technical specifications, include documentation of relevant past projects, and outline a clear methodology for executing the work. The financial proposal must be submitted concurrently with the technical proposal.

1.2 Terms of References (TORs)

1. The Procurement shall be conducted in accordance with the KPPRA Rules 2014 on **Single Stage Two Envelope Procedure**. All Bids must reach in Office at 11 :00AM on Date: **23/06/2025**
2. GKMC & BKMC invites two separate sealed envelopes, one for Technical Proposal and One for Financial which will be clearly marked outside the envelops.
3. The Technical bid should clearly mention Make, Model, origin and Brand, (Specification of bid) without quoting the price and must mention the warranty period. (as per BOQ)
4. Compliance against each Technical Specifications must be attached.
5. Company seal / stamp must be fixed on Technical Specification and Financial Proposal.

6. Bid Money will be 2% of complete Project Value.
7. If any firm fails to qualify the Technical Evaluation Criteria based upon ToRs, then financial bid of the same will not be opened.
8. **Call Deposit** of Two percent (2%) of the total bid amount must be attached with financial proposal in separate sealed envelope in favor of Hospital Director, Bacha Khan Medical Complex-MTI, Swabi: **on or before 11:00 AM, Dated_23/06/2025_____.**
9. Tender bid opening will be held on, **23/06/2025** at 11:30 AM at BKMC Swabi.
10. Any bid submitted after due date and time will not be entertained.
11. The BKMC / GKMC – MTI will not be responsible for any costs or expenses incurred by bidders in connection with the preparation or delivery of bids.
12. The prices quoted shall remain valid for **180 days**, after the date of opening of the tender. (Bid Validity).
13. Overall Project will be completed within 180 days including supply after issuance of award letter / purchase order / work order.
14. All prices quoted must be inclusive of all applicable Government Taxes.
15. Rate should be quoted in words and figures.
16. In case of failure to supply the item under specified time. The work order should be awarded to second bidder.
17. Supply and Installation should be completed within specified timeline. Failure that penalty @ 2% will be charged up to 15 days and beyond 15 days the penalty will be charged @5 %.
18. Bidders must submit the bid that matches or is better/higher/more than the required specifications
19. Proposals shall be submitted in English language.
20. The proposals shall be comprehensive, clear, and elaborative. Different sections/Annexures of the proposals shall be separated using color separators, flags, or tags. The proposals shall be prepared without any interlineations or overwriting.

21. The Hospital reserves the right to accept or reject all/any of the proposals submitted at any time in accordance with applicable KPPRA rules.
22. All pages must be Signed & Stamp by the Authorized Authority.

23. **Proposal weightage is Given below:**

PROPOSAL	WEIGHT
Technical	70%
Financial	30%
TOTAL	**100%**

24. **Contract Period/Warranties/SLA:**

a. All equipment under Lot 1 and Lot 2 shall be covered by a comprehensive warranty period of three (03) years. This warranty shall include all relevant licenses for the equipment and/or software, unless otherwise specified separately in the detailed specifications.

b. SLA (Service Level Agreement) for the Quoted Equipment's must be of 3 years after successful installation and deployment of the active and passive equipment's, SLA document included in BOQ.

22. Technical Evaluation Criteria

- A technically eligible bidder who does not achieve the minimum required score of 49 marks, as per the evaluation criteria outlined in this document, shall be disqualified during the Technical Evaluation phase. In such cases, the bidder's sealed Financial Proposal will be returned unopened. Bidders who obtain a score equal to or greater than 49 marks will be considered technically qualified, and their Financial Proposals will be opened for further evaluation.
- The Bidders who have duly complied with the Eligibility/Qualification and Evaluation Criteria will be eligible for further processing.
- The Bids which do not confirm to the Technical Specifications or Bid conditions or the Bids from the Bidders without adequate capabilities for supply and maintenance / warranty /support services will be rejected.
- The technical proposals shall be evaluated by the technical evaluation committee in the light of following evaluation criteria.

Note: "Vendors may apply for Lot 1, Lot 2, or both, depending on their expertise and preference."

Technical Evaluation Criteria for LOT.1

Description	Maximum Points
Legal (Mandatory)	**Mandatory**
Certificate of Company/Firm Registration/Incorporation under the laws of Pakistan	
Valid Income Tax Registration	
Valid General Sales Tax Registration (Status = Active with FBR) with ATL Proof.	
KPRA Registration	
Submission of undertaking on legal valid and attested stamp paper that the Firm is not blacklisted, bankrupt nor insolvent by any of Provincial or Federal Government Department, financial institution, Agency, Organization or autonomous body or Private Sector Organization Anywhere in Pakistan (On100 Rs Stamp Paper)	
Compliance to the technical specifications of Services to be procured are Mentioned in Annex-A of this document.	
In full compliance of the Execution Schedule and Delivery Period mentioned in Tender document (Undertaking)	
OEM authorization & partnership certificate for the quoted products **(Serial # 1 – 10,)**	
Bidder's Office presence must have in major cities of Pakistan.	
Human Resource: Two Team leader – 4 (2 marks for each) Three IT Engineers – 6 (2 marks for each) Four IT Technicians – 3 (1 mark for each)	4 6 3
Partnership: Partnership Status for Major Network Equipment **(Serial # 1 – 10)** Tier 1 Partnership: 10 marks Tier 2 Partnership: 06 marks	10
Experience: The bidder should have at least three deployments of the similar Projects. Value 10 million or above (3 POs each). each PO carry 04 marks Note: Copy of Purchase orders and contract should be attached and performance certificates should be attached	12

Company operating in Pakistan: • 16 - 20 years : 10 marks • 06 - 15 years : 05 marks • 01 - 5 years : 02 marks	10
Location of offices in KPK Office Presence – 05 marks	05
Annual Turnover: Minimum 200 million – 10 Marks (To be verified from Audit Report) Minimum 100 million – 05 Marks (To be verified from Audit Report)	10
Performance Certificates: Performance's certificate of the major equipment **(Serial#1 – 10,)** (2 marks of each certificate)	10
Total	**70**

Technical Evaluation Criteria for LOT.2

Description	Maximum Points
Legal (Mandatory)	**Mandatory**
Certificate of Company/Firm Registration/Incorporation under the laws of Pakistan	
Valid Income Tax Registration	
Valid General Sales Tax Registration (Status = Active with FBR) with ATL Proof.	
KPRA Registration	
Submission of undertaking on legal valid and attested stamp paper that the Firm is not blacklisted by any of Provincial or Federal Government Department, Agency, Organization or autonomous body or Private Sector Organization Anywhere in Pakistan (On100 Rs Stamp Paper)	
Compliance to the technical specifications of Services to be procured are Mentioned in Annex-A of this document.	
In full compliance of the Execution Schedule and Delivery Period mentioned in Tender document (Undertaking)	
Bidder's Office presence must have in major cities of Pakistan.	
Human Resource: Two Team leader – 6 (3 marks for each) Three IT Engineers – 6 (2 marks for each)	6

Four IT Technicians – 3 (1 mark for each)	6 3
Experience: The bidder should have at least three deployments of the similar Projects. Value 1 million or above (3 POs required). each PO carry 05 marks Note: Copy of Purchase orders and performance certificates should be attached	15
Company operating in Pakistan: 10 - 15 years : 10 marks 06 - 10 years : 05 marks 01- 5 years : 02 marks	10
Location of offices in KPK Office Presence – 05 marks	05
Annual Turnover: Minimum 50 million – 15 Marks (To be verified from Audit Report) Minimum 30 million – 10 Marks (To be verified from Audit Report)	15
Performance Certificates: Performance's certificate of same nature of projects (2 marks of each certificate)	10
Total	**70**

Enterprise Network Infrastructure Project, MTI Swabi
BOQ of Lot 1 & Lot 2 Items

Scope of Project

The scope of work for the enterprise network infrastructure project involves the comprehensive design, installation, and configuration of a robust network system across multiple locations, including the Main Complex MTI Swabi (Gajju Khan Medical College and Bacha Khan Medical Complex). This project will deploy a wide range of active and passive network components, such as next-generation firewalls, core SFP switches, aggregation switches, POE switches, wireless LAN controllers, wireless access points, IP phones, PBX exchange, servers, network storage, and other critical infrastructure elements. The goal is to establish a scalable, secure, and high-availability network that seamlessly integrates with existing systems and supports failover mechanisms.

Additionally, the project includes the installation and configuration of essential software solutions, such as endpoint protection, network management systems (NMS), and security information and event management (SIEM) solutions. The setup of data center infrastructure, including modular racks, power distribution units, uninterruptible power supplies (UPS), and environmental controls like cooling and fire detection systems, is also part of the scope.

The bidder will ensure all components are properly installed, tested, and commissioned, with comprehensive documentation and training provided to the designated staff. The project will establish failover and high availability solutions for critical systems, and provide ongoing support and maintenance, ensuring compliance with all relevant laws, regulations, and standards. The aim is to deliver a fully managed and integrated network solution that enhances the operational efficiency and security of the enterprise.

Project Timelines Structure

- **Phase 1**: BOQ and Contract Document – signed and approved by the MTI Swabi
- **Phase 2.** Design and Approval – Report must be submitted to and approved by the MTI Swabi
- **Phase 3**: Deployment and Installation – Report must be submitted to and approved by the MTI Swabi
- **Phase 4**: Testing and Validation – Report must be submitted to and approved by the MTI Swabi
- **Phase 5**: Go-Live and Support – Report must be submitted to and approved by the MTI Swabi

Project Deliverable

1. **Network and Data Center Infrastructure:**
    - Designing, installation, configuration and testing of complete Enterprise network Infrastructure.
    - Deployment of network components such as firewalls, switches, wireless access points, and IP telephony systems.
    - Installation of data center infrastructure including but not limited to servers, storage, modular racks, PDUs, generator and UPS.
    - Complete Passive work, Fiber, VOIP and CCTV solutions for GKMC/BKMC MTI Swabi
2. **Software Solutions and Security:**
    - Configuration of endpoint protection, network management systems (NMS), and security information and event management (SIEM) solutions.
    - Implementation of surveillance systems with IP cameras and network video recorders (NVR).
3. **Connectivity and Integration:**
    - Establishment of site-to-site secure VPN tunnels connectivity – with THQ Chota Lahor and THO Topi.
    - Integration of all systems to ensure seamless operation and high availability.
    - Integration with existing infrastructure services such as CCTV, Network and Telephone.
4. **Support, Training, and Documentation:**
    - Provision of ongoing support and maintenance, including support from principal vendor.
    - Conducting training programs for staff and providing comprehensive documentation and compliance reports.

Project Deliverable Reports

Initial survey and Implementation Report: (Pre implementation Report)

- Detailed documentation of the project implementation process, details of survey conducted at all locations along with timelines, milestones, and HR details.
- High-Level Designs (HLDs) and Low-Level Designs (LLDs) for the network infrastructure.
- Nomination of a Project focal person

Data Center / Server Room Deployments Reports:

- Report on Installation, configuration, testing and commissioning of Data center equipment's. This must include data center setup, including rack layouts, power distribution, cooling systems, and environmental controls.
- Maintenance and operational guidelines for the data center infrastructure including diagrams and topology maps showing the arrangement of network elements.

Surveillance System Report:

- Installation and configuration details of the surveillance system, including camera placements, recording schedules, and storage capacities.
- Diagrams, Maps, Monitoring and maintenance logs for the surveillance system.

VOIP Report:

- Detailed documentation of the VOIP system configuration, including SIP trunk settings, extension mappings, and call routing protocols.
- Diagrams showing the VOIP network topology and integration with the existing network infrastructure.

- Documentation of security measures implemented to protect the VOIP system, including encryption protocols, firewall settings, and access controls.

Testing and Commissioning Report:

- Results of all testing and commissioning activities, including performance tests, security tests, and failover tests.
- Verification of compliance with project specifications and standards.

Passive Equipment Report:

- Detailed documentation of the installation process for all passive equipment, including CAT 6 cables, patch panels, fiber optics, and cabinets.
- Diagrams and photos showing the placement and routing of cables and other passive components. Finalized drawings showing the actual installation of passive components, including cable routes, termination points, and equipment locations.
- Comprehensive list of all passive equipment installed, including quantities, specifications, and locations.
- Serial numbers and warranty information for each component.
- Results of testing and certification for all installed passive components, including cable testing for continuity, signal loss, and performance.

Connectivity Report:

- Establishment of site-to-site secure VPN tunnels to connect the Main Complex, Chota Lahore, and Topi (included in Lot 1).
- Installation of fiber optic cables and related components for high-speed connectivity (Included in Lot 2).
- Maps, chats, layouts, testing and required credentials details.

Final Project Report:

- A comprehensive summary of the entire project, including an overview of all deliverables, achievements, and any deviations from the original plan. This must contain details of all active and passive equipment's details and installation map/plans.

- Comprehensive list of all active/passive equipment installed, including quantities, specifications, and locations.
- Serial numbers and warranty information for each component.
- All the relevant Maps, structures, licenses, protocols, credentials and after sales service structure must be part of this report.
- Recommendations for future improvements and scalability options.
- Troubleshooting guides and/or user manuals.

Note: All reports must be address to Hospital Director MTI Swabi and Concerned Head of IT departments and will be considered accepted after proper sign and stamp of the officials.

Locations:

1. Gajju Khan Medical College (GKMC) / Bacha Khan Medical Complex (BKMC) – MTI Swabi

Lot 1– Turnkey Solution

S No	Description	Details	Approx- Quantity
1	Firewall	Next Generation Firewall	1
2	Core SFP Switch	24 Port SFP	2
3	Aggregation Switch	Network Switch	8
4	Switches (24 Port)	POE Network Switch	50
5	Switches (08 Port)	POE Network Switch	30
6	Wireless LAN Controller	WLAN Controller	1
7	Wireless Access Points	Wireless APs	75
8	Servers (Virtualization Host)	Servers for Services like HIS, CMS, ERP etc.	3
9	Network Storage	50 TB usable storage required	1
10	Data Center Modular Rack for Network and IT Devices	Complete modules for Power with intelligent breakers and regulators, Cooling, Fire, etc. 2 IT Rack solution excluding Power and Colling	1
11	SFP 40G	Single Mode, Dual Strand, 1 KM support	14
12	SFP 10G	Single Mode, Dual Strand, 1 KM support	75
13	30 KVA Generator - AutoStart feature	Concrete bed of Generator, DPs, cables, connectors, allied electrical and power distribution equipment. Complete installation and configuration.	1
14	650 VA UPS	For network switch backup / cabinets	20
15	1KVA UPS	For network switch backup / cabinets	30
16	55-inch LED - Surveillance Grade thin Screen	TCL/Sony/Dahua, 4 CCTV, 2 NMS, 1 Manager MIS	7
17	Laptop for network management	Dell/HP/Lenovo or equivalent	4
18	End point protection - 3 Year, Server based solution	Kaspersky Endpoint Security for Business	150
19	Campus Management Solution –	Required for Unified Management of all associated nodes.	1

	NMS (virtualized network management system)	On prem system should use technologies such as cloud computing, SDWAN and SDN network, and big data analytics to support SDN protocols (NetConf/YANG protocols or standard) to implement large-scale network device configuration automation and Telemetry to implement device performance, alarm data, and user data statistics and analysis. It should be a hardware-based solution.	
20	SIEM Solution - Open Source - Wazuh	Open-source solution (Wazuh SIEM), complete configuration and management	1
21	Installation, Configuration, testing and commissioning of Active component and complete managed solution as recommended by international/national standards for robustness and security.	Compete Project activities for Enterprise Network Infrastructure project at data center level. Additionally, Integration of old Computer network/hardware with new deployed network. This includes any other equipment not mentioned but required to complete the installation and deployment, testing and commissioning.	
		Data center Building Preparation Approximate size of Data Center 20 * 20 feet	
S. No	**Activity / work**	**Specifications and Details**	**Qty**
22	Anti-static flooring	• Material: Conductive vinyl or rubber • Resistance: Typically, between 1 x 10^6 to 1 x 10^9 ohms • Thickness: Generally, around 2-3 mm Compliance: Meets ESD (Electrostatic Discharge) standards	1
23	Fire detection systems	• Type: Smoke detectors, heat detectors, and flame detectors • Sensitivity: Adjustable sensitivity levels for early detection • Certification: UL or FM approved or equivalent	1
24	Dampa Ceiling / Venial Tiles	• Material: Metal panels for Dampa ceiling; vinyl for tiles • Acoustic Properties: Sound absorption capabilities • Fire Rating: Meets fire safety standards	1
25	AC for datacenter	1.5 ton (18000 BTUs) latest model with standard warranty	2

26	ATS Pannel	• Capacity: Rated for the data center's power load (e.g., 100-1000 Amps) • Switching Time: Fast transfer time (typically <10 ms) • Features: Remote monitoring and control capabilities • Compliance: Meets electrical safety standards • SCHNEIDER components or equivalent.	1
27	Main DBB	• Capacity: Rated for the data center's electrical load • Features: Circuit breakers, surge protection, and metering • Material: Durable, fire-resistant enclosure • Compliance: Meets electrical safety standards • SCHNEIDER components or equivalent.	1
28	Cable Trays/Fiber Trays	• Material: Steel or aluminum • Size: Various sizes to accommodate different cable volumes • Features: Ventilated design for heat dissipation • Installation: Easy installation with support brackets	1
29	Fire Exit Door	Fire Exit Door UL listed	1
30	AVR	• AVR (Automatic Voltage Regulator) • Servo Control/ Microprocessor Controlled • Output Power Factor 0.8 or more	1
31	Air Purifier	Air Purifier for Server Room.	1
32	Complete Installation, testing, commissioning and Miscellaneous items (Power Cables, Earthing, Professional services for data center, Shoe Cover, Rodent Repellant System, tempered glass fire rated, glass partition 12mm for NOC and Surveillance Room, emergency exit door, Access Control etc. etc.)	As per international standards for data centers.	1

Note: Detailed specifications of Lot 1 are mentioned separately

Lot 2 – Turnkey Solution

Passive Item				
S.No	**Item Name**	**Details / Specification**	**Quantity**	**Note**
1	CAT 6 I/O, with faceplate and back box (Single)	Cat6 UTP Tool-Less Keystone Jack, Back Box, IO - complete Unit (3M/ Schneider/ Panduit/ Dlink or equivalent)	600	…
2	1 meter Fiber Patch Cord.	LC-SC Multi mode/Single mode, Duplex Patch Cord, 1m (3M/ Schneider/ Panduit/ Dlink or equivalent) – As per actual Use	300	…
3	1meter Cat-6 Patchcords	Cat6 UTP 24 AWG PVC Round Patch Cord - 1m - Pure Coper (3M/ Schneider/ Panduit/ Dlink or equivalent)	500	…
4	3 meter Cat-6 Patchcords	Cat6 UTP 24 AWG PVC Round Patch Cord - 3m - Pure Coper (3M/ Schneider/ Panduit/ Dlink or equivalent)	200	…
5	5 meter Cat-6 Patchcords	Cat6 UTP 24 AWG PVC Round Patch Cord - 5m - Pure Coper (3M/ Schneider/ Panduit/ Dlink or equivalent)	200	…
6	CAT 6 Cable Roll. (305 meter)	Cat6 UTP 23 AWG PVC Solid Cable - 305m/Roll	65 Rolls	…
7	24 Port patch Panel with I/O	24 Port Cat6 Unshielded Fully Loaded Punch Down Patch Panel - with Tray (3M/ Schneider/ Panduit/ Dlink or equivalent)	81	…
8	Cabinet 9U with	• Conforms to DIN 41494 OR equivalent ISO	60	…

	PDU	Standards • Wall Mount 9U • Front Glass Door (tinted, Toughened), Lock & Key • Basic Frame: Steal <u>Standard Accessories:</u> • 1U Cable Manager (1), • 6-8 Socket Power Distribution Unit (1 No) • Roof Mounted Fan Unit 230V AC (1 No) OR equivalent / higher (3M/ Schneider/ Panduit/ Dlink or equivalent)		
9	PDUs	6-8 port Power Distribution Units with surg protector	5	…
10	Power Socket	3M/ Schneider/ Panduit or equivalent	60	…
11	Power Cable 3.29 dual core. (90 meter), fire resistant	FAST/Pakistan Cable or equivalent	5 bundle	…
12	Cable Manager	Vertical managers for 9 U (3M/ Schneider/ Panduit/ Dlink or equivalent) as per actual use	60	…
13	Duct 16x25	Adamjee or Equivalent – As per actual Use	10 feet or 1 duct	…
14	Duct 16x38	Adamjee or Equivalent – As per actual Use	10 feet or 1 duct	…
15	Duct 40x40	Adamjee or Equivalent – As per actual Use	10 feet or 1 duct	…
16	Miscellaneous items and Installation	Complete services to operationalize, functionalize, testing, deployment, and commissioning. Any damage to infrastructure required during installation must be repaired to original form. + any other item required to complete the activity.	1	…
Fiber Optic				
S. No	**Item Name**	**Details / Specification**	**Quantity**	**Note**
17	12 core optical fiber	12 Core Single mode UnArmoured Indoor/Outdoor Fiber Cable - LSZH Sheath, (300m = 1 box)	12 Box	…

		Premier/Corning / Dlink or equivalent– As per actual Use		
18	48 Core optical fiber	48 Core Single Mode UnArmoured Indoor (2 KM = 1 Drum) Premier/Corning / Dlink or equivalent– As per actual Use	1 Drum	…
19	12 port ODF rack Mounted	Best quality - Imported – As per actual Use	60	…
20	48 port ODF rack Mounted	Best quality - Imported – As per actual Use	8	…
21	12 core joint enclosure (joint box)	Best quality - Imported – As per actual Use	6	…
22	48 Core joint enclosure (joint box)	Best quality - Imported – As per actual Use	5	…
23	Miscellaneous items and Installation	Installation, testing, commissioning including digging of Fiber including HDPE Pipe, warning tape, Hand Hole, fiber Joints, splicing, marker post include Hard Area. Any damage to infrastructure required during installation must be repaired to original form. Please note that each access switch will be connected through Fiber Optic + any other item required to complete the activity	1	…
VOIP Telephone System				
S.No	**Item Name**	**Details / Specification**	**Quantity**	**Note**
24	PBX Exchange	VOIP support	1	Detailed specs mentioned below
25	IP Phone	VOIP Phone	100	Detailed specs mentioned below
26	Operator Console	VOIP Operator Console	1	Detailed specs mentioned below
BKMC Surveillance Enhancement - CCTV Monitoring System				
S.No	**Item Name**	**Details / Specification**	**Quantity**	**Note**
27	IP Camera 4 MP	IP 66 grading, IR, CMOS & Full HD	50	Detailed specs mentioned below

28	IP Camera 4 MP PTZ	IP PTZ 4MP, night vision and outdoor	12	Detailed specs mentioned below
29	64 channel NVR with 30 days storage with all accessories	30 DAYS storage with continuous recording, Onvif support	1	Detailed specs mentioned below
30	32 channel NVR with 30 days storage with all accessories	30 DAYS storage with continuous recording, Onvif support	1	Detailed specs mentioned below
31	Fiber Splicer Machine with tool Ket	• Splicer with replaceable electrode (5000 times) OR higher • Automatic splicing & automatic heating • Supports 100 times + of splicing & heating when fully charged OR higher • Fast-splicing in 8s, fast-heating in 18s OR more • 3.5" color high resolution display, stores 10,000 splice records and 100 result images OR More	1	Machine with Full Tool Ket
31	Installation, configuration, testing and commissioning of VOIP and CCTV Monitoring System	Complete installation and deployment of CCTV System. Integration with old CCTV system and cameras. All related services to operationalize and functionalize the VOIP telephone system at MTI Swabi. The successful implementation will ensure seamless communication capabilities, with comprehensive testing to verify system performance and reliability. The commissioning process will confirm that the system is fully functional and meets all specified requirements, providing MTI Swabi with a robust and efficient VOIP solution.	1	…

Note: Sample of all passive and fiber equipment must be approved from IT Department MTI Swabi. Detailed and mandatory Specs of both Lot 1 and Lot 2 Items mentioned below.

"Vendors may apply for Lot 1, Lot 2, or both, depending on their expertise and preference."

Licenses, Warranties, Trainings, Terms and Conditions and other details

- **Warranty and Licenses**: All equipment under Lot 1 and Lot 2 shall be covered by a comprehensive warranty period of three (03) years. This warranty shall include all relevant licenses for the equipment and/or software, unless otherwise specified separately in the detailed specifications.

  The warranty and license period will commence after the deployment of all equipment and upon receipt of a satisfactory letter from the concerned IT department.

- **Active and Passive items (Lot 1 and Lot 2)** will be considered as item / length/unit cost on actual deployment/use/requirement. Any damage to infrastructure occurred or required during installation must be repaired to the original form.

- **Acceptance Criteria for Lot.2 Items:** After installation and deployment of passive items, all cables, fibers, devices etc. will have to be tested by a standards organization at the expense of the bidder. Results of testing and certification for all installed passive components, including cable testing for continuity, signal loss, and performance etc. must be submitted to and approved by BKMC IT department.

- **Installation and Support for Lot.1 Items**: The bidder will be responsible for Network designing, subnetting, VLANs, EtherChannel, Roaming, network segregation, any other service as mentioned in the BOQ and integration with existing computer network, Internet and other services.

- **Training**: The successful bidder shall conduct an on-site training program—free of cost—for the designated staff of MTI Swabi, consisting of 20 working days for Lot 1 and 10 working days for Lot 2. This training shall cover the deployment details, operation and maintenance of the installed and configured equipment. The bidder is required to provide comprehensive documentation, including installation details, network diagrams, user manuals, system credentials, operational protocols, and configuration files to the IT Department.

  Furthermore, the bidder shall explore suitable national and international training and certification opportunities for MTI Swabi's IT staff. As part of this requirement, the bidder must provide relevant certification exam vouchers—also free of cost—for the designated IT personnel. All training plans and course content must be reviewed and approved by the MIS/IT Department of BKMC-MTI prior to implementation. Details are here

- Training voucher will be provided (free of cost) for 1. Storage and Server, 2. Network including Wireless, and 3. cyber-Security to the engineers of MTI Swabi. At least vouchers for three engineers will be provided in each category

Secondly, a network focal person will be nominated by the MTI Swabi who will be part of the deployment team to get better understating of the implemented solution.

- **Data Center or Server Room Location**: The MTI Swabi will designate the area for data center and handover to selected bidder at GKMC/BKMC.
- **Clustering, Failover and High Availability Solutions:** The bidder for Lot 1 will be responsible to configure the server, and storage in cluster for smooth operation, high availability of infrastructure, and auto failover/auto switching. Design and implement failover mechanisms to ensure uninterrupted service for critical systems (e.g., ERP, HIS, LMS).
- **Corporate social responsibility (CSR):** The bidders will find any suitable support both from bidder side and from principal side for the establishment of additional ICT support in term of Hardware, Software and trainings for MTI Swabi.
- **Support and Replacement:** The bidders will be responsible for providing support within 3 hours of reporting of the problem and arranging the replacement of any faulty equipment within 24 hours of receiving a complaint from MTI Swabi. This will be applicable till the completion of warranty period of all equipment's.
- **Implementation Plan:** The bidders will conduct a comprehensive survey prior to deployment and verify the findings with the IT department before the actual implementation of both Lot 1 and Lot 2 equipment. The bidders will submit a complete project implementation plan, which will include the following:
    - **Project life cycle:** detailed overview and project cycle.
    - **Timelines:** Detailed schedules outlining the start and end dates for each phase of the project.
    - **Diagrams:** Visual representations of the project layout and design.
    - **High-Level Designs (HLDs):** Overarching design documents that provide a broad view of the system architecture and its components.
    - **Low-Level Designs (LLDs):** Detailed design documents that specify the configuration and setup of each component within the system.

- **Topology:** Network topology diagrams showing the arrangement of various network elements and their interconnections.
- **Resource Allocation:** A detailed plan of the resources required for the project, including personnel, equipment, and materials.

- **Modularity and Scalability:** The bidder of Lot.1 will ensure that the Data Center solution should be based on a modular design, allowing for flexible scaling of capacity in increments as needed to accommodate future growth and changing IT demands.
- **VOIP Configuration and deployments:** Complete solution of VOIP with SIP, extensions, trunks (Local and external), IVR, CDR and Conferences etc.
- **Open Source:** The bidder will be responsible for installation, deployment, testing and commissioning of proposed open-source solutions included in BOQ with proper training of MTI Staff.
- **Site to Site connectivity:** The bidder of lot. 1 will be responsible to establish a site-to-site secure tunnel via IPSec VPN protocol to connect GKMC/BKMC with TQH Chota Lahor and THQ Topi.
- **Confidentiality**: The bidders must adhere to the confidentiality terms outlined in the existing BOQ. If selected, the bidder must sign a new agreement.
- **Compliance**: The bidders must comply with all relevant laws of land, regulations, and standards applicable to the project.
- **Documentation**: The bidders must provide comprehensive documentation, including user manuals, maintenance guides, and any other relevant materials for all the delivered and installed equipment's.

Service Level Agreement

Following the successful deployment and handover of the project, the bidder is required to adhere to the Service Level Agreement (SLA) criteria for a period of three years. Compliance with the SLA is mandatory for the duration of this period.

#	Service	Description	SLA Target	Performance Metric
1	**Incident Acknowledgment**	Acknowledgment of reported issues, problems, or incidents by the vendor.	**30 minutes** response time	MTTA (Mean Time to Acknowledge)
2	**System Recovery**	Restoration of software applications (e.g., SIEM, NMS, NAS, Virtualization), VoIP etc. after a failure.	**Critical: 3 hours**	MTTR (Mean Time to Recovery)
3	**System Availability**	Continuous availability of critical systems (network, Wi-Fi, NAS, Virtualization, etc.).	**99.9% uptime**	MTTR (Mean Time to Repair), MTTF (Mean Time to Failure)
4	**Customization and Updates**	Customization of components and modules or necessary software updates.	**Customization: 72 hours**	MTTR (Mean Time to Resolve)
5	**Replacement and arrangement of Faulty Hardware**	Replacement and arrangement of Faulty Hardware	**24 hours**	Availability and replacement
6	**Backup Success Rate (NAS)**	Backup of data, applications, and surveillance recordings stored on the NAS.	**99.9% success rate per month**	Backup and storage logs
7	**Surveillance Recording Availability**	Ensuring availability and accessibility of camera surveillance recordings.	**99.9% availability**	MTTR, Storage Health Logs

8	**Phone Support**	Technical assistance via phone for critical or high-priority issues.	**30 minutes** response time	MTTR (Mean Time to Resolve)
9	**Email Support**	Technical assistance via email for non-critical issues or general queries.	**30 minutes** acknowledgment time	MTTA
10	**Level I Support**	Basic help desk and troubleshooting services for all deployed solutions.	**1 hour** response time	MTTR, Resource Availability
11	**Level II Support**	Advanced technical support for complex issues or escalations. Replacement of faulty hardware.	**24 hours** response time	MTTR
12	**Preventive Maintenance**	Scheduled maintenance for all infrastructure components (network, NAS, virtualization, etc.).	**Quarterly**	Maintenance Logs and Reports
13	**Log and Event Processing**	Real-time log ingestion and alert generation in SIEM.	**Logs processed within 5 seconds**	SIEM Monitoring Reports
14	**System Monitoring and Alerts**	Real-time network and system monitoring (NMS, NAS, Wi-Fi).	**Critical Alerts: 30 seconds update time**	Network and system health dashboards
15	**Uptime of Wi-Fi Network**	Smooth operation and availability of the managed Wi-Fi solution.	**99.95% uptime per month**	MTTR, MTTF
16	**Training Completion**	Training for staff on deployed systems with proper documentation.	**Within 10 working days post-handover**	Training Completion Report

Detailed Specification of Lot.1 (Active Equipment's)

Item No. 1

Technical Specification Requirement for Next Generation Firewall
10*GE RJ45 + 4*GE SFP + 4*10GE SFP+ or more
Firewall Throughput >=24 Gbit/s
NGFW throughput >= 3.5 Gbit/s
Concurrent Sessions >=3 million
IPsec VPN Tunnels (GW to GW) >=2k
IPsec VPN Throughput >=12 Gbit/s
Concurrent SSL VPN Users >=500
SSL VPN throughput >=2 Gbit/s
HDD>= 450 GB
Security Policies >= 10k
Virtual Domains >=20
Support firewall, VPN, intrusion prevention, antivirus, data leak prevention, bandwidth management, anti-DDoS, URL filtering, and anti-spam functions
Support Switching & routing protocols and features, such as RIP, OSPF, BGP, IS-IS, RIPng, OSPFv3, BGP4+, and IPv6 IS-IS, VLAN
Support transparent, routing, and hybrid working modes and high availability (HA), including the Active/Active and Active/Standby modes
Support multiple highly available VPN features, such as IPSec VPN, SSL VPN, L2TP VPN, and GRE
Support multiple user authentication methods, including local, RADIUS, TACACS, AD, and LDAP.
Support integration with Radius, LDAP, AD, Sandbox
Support report display by user, application, time, traffic, threat, and URL
Support SNMP, SSH, Syslog
3 Year of Threat Protection Service (include IPS, URL, AV) License
OEM must be a Leader by Gartner Network Firewall Magic Quadrant at least once in last 3 years OEM must have in-country presence and local depot
03 Years Warranty & Support

Item No.2

Technical Specification Requirement for Core 24 Port SFP Switch
10 G SFP + ports >= 24
40/100G QSFP28 ports >= 6
Memory >=4GB, Flash>=2GB
Min 2 Tbps switching capacity
Atleast 480 Mpps forwarding capacity
1+1 AC Power
4K VLAN
MAC Address entries >= 380K
ARP Entries >= 135K
ACLs >= 6k
QinQ, LACP, STP, RSTP, ERPS, MSTP/PVST+, LLDP, Jumbo Frames
Static routes, RIP v1/2, RIPng, OSPF, OSPFv3, IS-IS, IS-ISv6, BGP, BGP4+, ECMP, routing policy
IPv4 FIB >= 250K, IPv6 FIB >= 75K
LDP,IPSec VPN, IGMPv1/v2/v3, PIM-DM, PIM-SM, MSDP, MBGP, IGMP snooping and Load balancing of Multicast Traffic
BFD, BFD for OSPF, BGP, ISIS, VRRP & Static routes
VXLAN L2 and L3 gateways, BGP EVPN
Stacking support for upto 8 devices
Support mac authentication and 802.1x authentication
Support 802.1x, Dynamic VLAN, Dynamin ACL, RADIUS CoA
Support Automation with SDN Controller and NETCONF/YANG
CLI and Web interface (HTTPS), Telnet, SSH v2, SNMP v1, v2, and v3
Support Traffic classification, Traffic behavior, Traffic shaping, Congestion avoidance/Management
Support ARP security, DAI, SAI
DoS attack defense, ARP attack defense, and ICMP attack defense, CPU protection, Blaclist
Operating Temperature -5°C to 45°C
OEM must be a Leader by Gartner LAN Wired and Wireless Magic Quadrant at least once in last 3 years OEM must have in-country presence (office and depots) for at least the past 2 years.
03 Years Warranty & Support

Item No. 3

Technical Specification Aggregation Switch
10/100/1000Base-T ports, ports >= 48
10 GE SFP+ ports >= 4
Dedicated Stack Port>=2
Memory >=2GB, Flash>=1GB
Switching Capacity>= 224 Gbps
Forwarding Performance >=168 Mpps
Redundant Power Supply
30K MAC address tables
FIBv4 >=8k , FIBv6>=3k
ARP Entries >= 2K
ACL Rules >= 2K
Must support MAC addresses, IP Address based, protocol-based, and interfaces based VLAN assignment
Support Service interface-based stacking, should support Ethernet Ring Protection Switching
Jumbo frames
Should support stacking up to at least 8 devices
Support MAC, local, 802.1x authentication and other industry leading NAC solutions
Support Static Routing, RIP v1/v2, IPv4 and IPv6, OSPF, OSPF v3, IS-IS, IS-ISv6, BGP, BGP4+, ECMP, VRRP, VRRP6, DHCP Server, PBR, SNMP v1/v2/v3, RMON
Support ARP security, Dynamic ARP Inspection, CPU protection, Defense against ARP, ICMP, DOS attacks
The equipment must support SNMP-based NMS for unified configuration, Telnet, Telemetry, NETCONF/YANG, SSH, CLI,802.1X authentication, Web page-based configuration and management and batch remote upgrade.
Support Traffic classification, Traffic behavior, Traffic shaping, Congestion avoidance, Congestion management
OEM must be a Leader by Gartner LAN Wired and Wireless Magic Quadrant at least once in last 3 years OEM must have in-country presence (office and depots) for at least the past 2 years.
03 Years Warranty & Support

Item No.4

Technical Specification Requirement POE Switch 24 port
10/100/1000Base-T ports, ports >= 24
10 GE SFP+ ports >= 4
Dedicated Stack Port>=2
Memory >=2GB, Flash>=1GB
Switching Capacity>= 176 Gbps
Forwarding Performance >=132 Mpps
PoE >=400W
4K VLANs
MAC Address entries >=30K
ARP Entries >= 2K
ACL Rules >= 2K
QinQ, LACP, STP, RSTP, ERPS, MSTP/PVST+, LLDP, Jumbo Frames
IPv4 Static Routing, RIP, RIPing, OSPF, OSPFv3
FIBv4 >=4k , FIBv6>=1k
IGMPv1/v2/v3, PIM-DM, PIM-SM, MSDP, IGMP snooping and Load balancing of Multicast Traffic
Stacking support for upto 4 devices
Support MAC authentication and 802.1x authentication, Dynamic VLAN, Dynamic ACL, RADIUS CoA
Support Integration with industry standard NAC Solutions
CLI and Web interface (HTTPS)
Telnet, SSH v2, RMON, SNMP v1, v2, and v3, Telemetry
Support Automation with SDN Controller and NETCONF/YANG
Support NETCONF/ Netstream / Netflow
8 Queues per port, Support Traffic classification, Traffic behavior, Traffic shaping, Congestion avoidance/Management
Support ARP security, DAI, SAI, CPU Defense, Storm Control and Strom Suppression
Operating Temperature -5C to +50C Humidity 5% to 95%RH
OEM must be a Leader by Gartner LAN Wired and Wireless Magic Quadrant at least once in last 3years OEM must have in-country presence (office and depots) for at least the past 2 years.
03 Years Warranty & Support

Item No.5

Technical Specification Requirement POE Switch 8 Port
10/100/1000Base-T ports, ports >= 8
10 GE SFP+ ports >= 4
Memory >=2GB, Flash>=1GB
Switching Capacity>= 95 Gbps
Forwarding Performance >=70 Mpps
PoE >=120W
4K VLANs
MAC Address entries >=30K
ARP Entries >= 2K
ACL Rules >= 2K
IPv4 Static Routing, RIP,RIPing, OSPF, OSPFv3
FIBv4 >=4k , FIBv6>=1k
IGMPv1/v2/v3, PIM-DM, PIM-SM, MSDP, IGMP snooping and Load balancing of Multicast Traffic
Stacking support for upto 4 devices
Support MAC authentication and 802.1x authentication, Dynamic VLAN, Dynamic ACL, RADIUS CoA
Support Integration with industry standard NAC Solutions
CLI and Web interface (HTTPS)
Telnet, SSH v2, RMON,SNMP v1, v2, and v3 , Telemetry
Support Automation with SDN Controller and NETCONF/YANG
Support NETCONF/ Netstream / Netflow
8 Queues per port, Support Traffic classification, Traffic behavior, Traffic shaping, Congestion avoidance/Management
Support ARP security, DAI, SAI, CPU Defense, Storm Control and Strom Suppression
Operating Temperature -5C to +50C Humidity 5% to 95%RH
OEM must be a Leader by Gartner LAN Wired and Wireless Magic Quadrant at least once in last 3years OEM must have in-country presence (office and depots) for at least the past 2 years.
03 Years Warranty & Support

Item No.6

Technical Specifications Wireless LAN Controller
WLC must support 802.11 a/b/g/n/ac/ac/be wave 2/ax
The AC should have at least 8GE interface and 2x 10GE SFP+ interface.
Support and manage >= 500 APs.
Supported Users >= 4K, portal based authentication
MAC address entries >=8K
Forwarding performance >= 9Gbit/s
ARP entries >= 6K
ACLs >= 4K
IPv4 routing entries >= 8K & IPv6 routing entries >= 2K
Support static routes, OSPF, BGP, IS-IS, routing policies, and policy-based routes.
IPv6 dynamic routing protocols, including OSPFv3 and BGP4+.
Intelligent roaming based on 802.11k and 802.11v
Application identification and set control policies based on identified applications.
preferential scheduling and frequency band guidance function
Device configuration synchronization between the active and standby ACs.
CLI, web management, SSH management, and SNMPv1/v2/v3.
OEM must be a Leader by Gartner LAN Wired and Wireless Magic Quadrant at least once in last 3 years OEM must have in-country presence (office and depots) for at least the past 2 years.
03 Years Warranty & Support

Item No.7

Technical Specification Requirement Wireless Access Point - Indoor
The AP should support IEEE 802.11ac Wave 2/ax/be.
The AP should support multiple radios frequencies, one 802.11be 2*2 MIMO on 2.4 GHz band, and one 802.11be 2*2 MIMO on 5 GHz band
The AP should support system minimum rate up to 3 Gbit/s.
The AP should support 2.5GE port

The AP should support Bluetooth low energy 5.4
The AP should support USB port; the port can be used for external IoT expansion
The AP should support Bluetooth serial remote wireless operation and maintenance
The AP should support DC power supply.
The AP should support PoE power supply: in compliance with 802.3at/af.
The AP should support cloud management mode allows users to switch to the cloud mode.
The AP should support Operating temperature: -10°C ~ +50°C.
The AP should support minimum 15 SSIDs for each radio.
The AP should support minimum 250 users.
The AP should support built-in smart antennas.
The AP should support application Traffic statistics: globally, by SSID, or by user.
The AP should support load balancing during smart roaming.
The AP should support smart roaming.
OEM must be a Leader by Gartner LAN Wired and Wireless Magic Quadrant at least once in last 3 years OEM must have in-country presence (office and depots) for at least the past 2 years.
03 Years Warranty & Support

Item No.8

Technical Specifications of Server (Virtualization Host)	
Form Factor	2U, 2 Sockets Rack Mount Server (GPU Capable) OR Higher
Chassis	Chassis supporting up to 16 x 2.5” SAS/SATA Drives OR Higher
Processor	2 x Intel Gold 6448Y 2.10 GHz 32C/64T OR Higher
Memory	04 x 64 GB RDIMM, 3200MT/s, Dual Rank OR Higher
Network Card	1 x Dual Port 10/25GbE SFP28 Adapter with Transceivers OR Higher
	1 x Quad Port 1G Base-T NIC OR Higher
Host Bus Adapter (HBA)	1 x Dual Port 32GB Fiber Channel HBA OR Higher
Storage/Raid Controller	RAID Controller with 8GB Cache Supporting RAID level 0, 1, 5, 6 & RAID Span 10, 50, 60 OR Higher
Hard Drives	At least 1TB x 3 of 6Gbps 2.5” SSD, Hot Plug Drive or Higher
PCIe Slots	As per standard
Systems Management	Enterprise License with Dedicated OOB Network Port. Supports remote

	management, Configuration & Troubleshooting
Power Supply	Dual Redundant Power Supply Hot Swapable OR Equivalent
Rack Rails	Rack mounting kit along with cable management arm
Warranty	On Site 3-YearComprehensive Warranty including licenses if any
OS License	4 x Windows Server® 2025 Standard, 16 CORE OEM License with multi language media kit.
OEM Standing	Quoted OEM must be in Leader Quadrant of Gartner Magic Quadrant for Primary Storage 2024

Item No.09

Technical Specifications of Network Storage		
1	Storage Architecture	Unified Storage System unit should be built with Active-Active Controllers. Proposed Storage controllers should work in active-active mode. LUNs do not belong to any controller. Service loads are balanced among two or more controllers.
2	Controllers	Active-Active dual controllers, with 64GB of onboard Cache per controller for unified SAN&NAS service without addition gateway, excluding any other performance acceleration module, Flash Cache, SSD cache or SCM.
3	Processor	Each processor should have at least 16-core and 1.8 GHz
4	Disk Drives	The storage should support SSD, SAS, and NL-SAS disks
5	Front-end Host Ports	2 x 4 x GE ports, 2 x 4 x 10GE SFP+ ports, and 2 x 4 x 16Gbps FC ports, all ports should be activated with SFPs
6	Back-end disk channels	Provide 12Gb/s SAS 3.0 disk channels for back-end disk channels
7	Max Drives	Maximum number of disks supported by the Dual controller is greater than or equal to 500
8	RAID Level	Storage should support RAID 0, 1, 10, 5, 6 or more

9	Storage Capacity	**50 TB usable on RAID 6 with 70% HDD and 30% SSD**, at least 1 hot spare disk for each disk type. This must have capacity to enhance up to 100 TB in future
10	Data Snapshot	Support data snapshots. Snapshots at a certain time can be recovered without snapshot loss at other time.
11	Remote Replication	Support both synchronous and asynchronous replication.
12	NAS Features	Support NAS features including but not limited NFS, CIFS, NDMP, etc.
13	Thin Provisioning	The storage should provide thin provisioning of volumes
13	Auto Tiering	Support automated storage tiering, i.e. automated progression or demotion of data across different tiers of storage media (SSD, SAS and NL-SAS)
14	Redundancy	The storage array shall be configured with no single point of failure so that failure of storage node / controller shall not impact the operations. - Redundant power supplies - Redundant cooling system - Redundant disk arrays - Redundant I/O modules
15	Management	Graphical management software with comprehensive functions. Storage array and volume management software are included. Graphical management software and monitoring software are configured
16	Compatibility	Support mainstream operating systems and virtualization such as Red Hat Linux, SUSE Linux, Windows Server 2012, and VMware ESXi
17	OEM Standing	Quoted OEM must be in Leader Quadrant of Gartner Magic Quadrant for Primary Storage once in last three years (2024/2023/2022)
18	Warranty	Three Years Standard Warranty with (24x7) support including licenses if any

Item No.10

Specification for Modular Rack for Network and IT Devices

1. **Modularity, Scalability and capacity:** The Data Center solution should be based on a modular design, allowing for flexible scaling of capacity in increments as needed to accommodate future growth and changing IT demands. The data center adopts modular architecture. The hot and cold aisles containment. A single module must be integrated with the cabinet system, power supply and distribution system, cooling system, management system, and integrated cabling system of same OEM.
2. **Capacity and integration:** The proposed modular data center solution must provide **2 managed rack spaces for IT & networking equipment, excluding spaces dedicated to power** and cooling infrastructure. The company will provide separate Racks for power and cooling. The solution should be pre-engineered and factory-integrated to minimize on-site installation and maximize space efficiency.
3. **Energy Efficiency:** The solution should incorporate energy-efficient components and design principles to minimize power consumption and operating costs. Specify a minimum PUE (Power Usage Effectiveness) value.
4. **Cooling System - Precision air conditioners**: The Data Center must include a robust and efficient cooling system designed to maintain optimal operating temperatures for IT equipment, with options for different cooling technologies (e.g., air cooling, liquid cooling, free cooling). This project must have rack-mounted precision air conditioners. The cooling capacity of a single air conditioner would at least 12.5 kW.
5. **Management and Monitoring:** The solution should provide comprehensive management and monitoring capabilities, including remote monitoring, environmental sensors, and alarms for critical events.
6. **Security:** The Data Center must incorporate physical security measures (e.g., access control, surveillance) and cybersecurity features to protect critical IT infrastructure and data.
7. **Compliance and Standards:** The solution should comply with relevant industry standards and regulations (e.g., ASHRAE, ISO, TIA-942) for Data Center design and operation.
8. **Integration and Compatibility:** The Data Center solution should be easily integrated with existing IT infrastructure and support various IT equipment and technologies (NOTE: There are no modular racks in BKMC/GKMC at this point in time)

9. **Rapid Deployment:** The modular design should enable rapid deployment and commissioning of the data center to minimize time-to-market.
10. **Factory Integration:** The data center modules should be prefabricated and factory-integrated with IT and infrastructure components, including power, cooling, and cabling, for faster deployment and reduced on-site installation time.
11. **High Density Cooling:** The solution should support high-density computing environments with advanced cooling technologies capable of handling the heat loads generated by modern IT equipment.
12. **Pre-engineered Fire Suppression Module:** Pre-engineered Fire Suppression Module: The data center solution should offer a pre-engineered and integrated fire suppression module that is factory-tested and pre-installed within the modular unit. The module can automatically release fire extinguishing gas and extinguish fires in the module in an emergency. The fire extinguishing module must meet the following requirements: * module should be rack-mounted and can be directly installed in the cabinet. * must be flushed with environment-friendly fire extinguishing gas (capacity is not less than 6 kg)
13. **Clean Agent Suppression:** The fire suppression system should utilize a clean agent extinguishing agent that is non-toxic, non-conductive, and leaves no residue, ensuring the safety of personnel and minimizing damage to sensitive electronic equipment.
14. **Integrated UPS:** The data center solution should include a UPS system that is fully integrated within the modular unit, eliminating the need for separate UPS installation and minimizing space requirements.
15. **UPS Monitoring and Management:** The UPS system should integrate with the data centre's management and monitoring system, providing real-time visibility into UPS status, performance, and alarms.
16. **Uninterruptible Power Supply (UPS):** The data centre solution must include a UPS system to provide continuous power to critical IT equipment in the event of a power outage.
17. **UPS Capacity and Runtime:** 2 x 10 KVA with 60 minutes backup to support the IT load and bridge the gap until backup power sources are available. The 10 kVA UPS must have a wide input voltage range (80–280 V AC).
18. **Fire Detection and Alarm System:** The data center solution must include a fire detection and alarm system with smoke detectors, heat detectors, and audible/visual alarms to provide early warning of a fire event.

19. **Integration with Building Systems:** The fire suppression system should integrate with the building's fire alarm system and other safety systems for coordinated response in case of a fire emergency
20. **Warranty and Software:** 3-year warranty and software licenses if any

Item No.11

SFP 40 G: Single Mode, Dual Strand, 1 KM or higher support

Item No.12

SFP 10 G: Single Mode, Dual Strand, 1 KM or higher support

Item No.13

Technical Specifications for 30 KVA Generator
30 kVA Generator Specifications with Auto Start

General Requirements:
1. **Power Output:** 30 kVA continuous power output at 220/440V 50Hz
2. **Deployment:** Concrete bed of Generator, DPs, allied electrical and power distribution equipment's
3. **Engine:** Reliable diesel engine from a reputable manufacturer with 3 years warranty. Engine compliance with relevant emission standards (e.g., Euro Stage IIIA, EPA Tier standards).
4. **Alternator:** High-quality alternator with suitable voltage regulation and protection features.
5. **Fuel Tank:** Integral fuel tank with sufficient capacity for 8 hours at full load.
6. **Grounding Kit**: - Provided with a grounding kit for safe operation.
7. **Cooling System:** Efficient cooling system suitable for the intended ambient temperature range (25 Celsius).
8. **Control Panel:** Digital control panel with comprehensive monitoring and control functions, including:
o Engine parameters (speed, oil pressure, temperature)

○ Alternator parameters (voltage, current, frequency)
○ Fuel level
○ Running hours
○ Alarms and shutdown protections
9. **Sound Attenuation:** Sound-attenuated enclosure to minimize noise levels as per Environmental standards. The Bidder will deploy with Anti-Vibration Mounts (AVM) to reduce the noise and make it appropriate for a hospital environment.
10. **Additional devices to install:** Equip the generator with high-quality exhaust silencers or mufflers for noise reduction.
11. **Auto Start:** Automatic start functionality with integrated ATS (Automatic Transfer Switch) for seamless transition to generator power upon mains failure.
12. **Protection Features:** Overload protection, overcurrent protection, low oil pressure shutdown, high engine temperature shutdown.
13. **Testing and Commissioning:** Comprehensive testing and commissioning procedures to ensure proper operation.
Specific Requirements for Auto Start:
• **ATS (Automatic Transfer Switch):** Specify the required ATS rating and configuration (e.g., 3-pole, 4-pole) to match the electrical load.
• **Start Delay:** Configurable start delays to allow for brief mains fluctuations.
• **Cool-down Time:** Configurable cool-down time before automatic shutdown after mains restoration.
• **Battery Charger:** Automatic battery charger to maintain the starting battery in optimal condition.
• **Exercise Mode:** Automatic exercise mode for periodic testing of the generator and ATS.
• **Onsite Warranty:** 3 Years including licenses if any

Item No. 14

Technical Specifications for 650VA UPS for Cabinets

1. Capacity: 650VA with 90% power factor
2. Topology: Line-interactive UPS with Automatic Voltage Regulation (AVR) to correct voltage fluctuations without switching to battery power. Pure sign wave output.
3. Outlets: Multiple outlets with surge protection, including universal sockets for compatibility with various devices.
4. Communication: USB connectivity for monitoring UPS status and managing shutdown procedures on connected computers.
5. Backup Time: Standard backup.
6. Battery: Sealed lead-acid or Lithium-Ion batteries with user-replaceable design.
7. Software: UPS management software for advanced monitoring and control.
8. Warranty: 1 Year

Item No. 15

Technical Specifications for 1000 VA UPS

1. Capacity: 1000VA with 90% power factor
2. Topology: Line-interactive UPS with Automatic Voltage Regulation (AVR) to correct voltage fluctuations without switching to battery power. Pure sign wave output
3. Outlets: Multiple outlets with surge protection, including universal sockets for compatibility with various devices.
4. Communication: USB connectivity for monitoring UPS status and managing shutdown procedures on connected computers.
5. Backup Time: standard backup.
6. Battery: Sealed lead-acid or Lithium-Ion batteries with user-replaceable design.
7. Software: UPS management software for advanced monitoring and control.
8. Warranty: 1 Year

Item No. 16

Technical Specifications for LED Screen 55 Inches CCTV/Network Operations

> Industrial level LCD panel, suitable for continuous 24/7 operation > 4K Ultra-HD resolution or above > Using tamper-proof metal housing > Built-in 3D COMB filter and 3D noise reduction > 6ms response time for no motion blur, judder or ghosting > High fidelity digital processing for a brilliant and vivid video > Professional thermal design to extend equipment lifespan > Support multiple signals, such as HDMI, DP, USB multimedia, Audio etc. > Warranty: 3 years

Item No. 17

Technical Specification Requirement for LAPTOP System	
Processor	Intel Cori7, 14 Generation or more, suffix T series or above
Memory / RAM	16 GB DDR5 or above
Network Card	Gigabit supportive NIC
Hard Drives	512 GB SSD M2 or higher
Screen	Antiglare 14 inch with camera
Battery	Minimum 8 hours backup
Warranty	On Site 3-Year Comprehensive Warranty
Accessories	Leather, padded carrying bag
OS License	1 x Windows 11 Professional

Item No. 18

- Kaspersky End point for Business solution - 3 Year license with Server based solution.
- No. of User License: 150 computer systems.
- Configuration and Deployment of client software on client and server machines.

Item No. 19

Campus Management Solution – NMS (virtualized network management system)

Rights- and domain-based management	Should supports hierarchical management of the system administrator, MSP, and tenant. Rights- and domain-based management is supported. Tenant administrators can customize region administrators to manage network deployment and O&M by region, reducing O&M workload. The bidder must provide function screenshots.
LAN-WAN convergence	The provided solution should support to have integrated unified management of LAN, WAN, and services, automatic management of underlay and overlay networks, terminal authentication, and security policy management capabilities if required in future.
User management	Support multiple authentication data sources, including local accounts and passwords, connected user identity systems (such as the MS AD/LDAP system), and built-in CA servers. Users and roles can be mapped. A single account can be bound to multiple roles, and network access authorization management can be performed based on user roles.
Free mobility	Should support Free mobility. Users could be decoupled from IP addresses where accounts are users. Security groups can be authorized based on login conditions (5W1H). Based on the UCL policy matrix, mutual access between users is restricted, ensuring consistent service access rights at anytime and anywhere.
	IP-group synchronization should be supported to separate admission authentication points and service policy enforcement point, and free mobility is supported on heterogeneous networks.
Terminal identification	Should support built-in 3600+ types of terminal fingerprints, supporting intelligent identification of terminals when accessing the network; network entry anti-spoofing based on terminal identification.
	Should supports intelligent access of massive IoT devices, automatic policy matching, automatic delivery, and plug-and-play of IoT devices.
IoT compatibility	Should supports IoT card management of APs and allows IoT devices to transmit information to the IoT management and O&M platform through AP signals.
Intelligent O&M	Should supports proactive problem identification, minute-level fault locating, and intelligent fault prediction using AI algorithms continuously trained by terminals, and identifies 90% potential network problems and provides effective rectification suggestions.
	Should supports full-journey playback of user access and draws user profiles to help

	administrators quickly locate root causes that affect user experience. Should be able to provide refined analysis of user access problems, root causes of user access failures, and troubleshooting suggestions.
	Should be able to provide the intelligent radio calibration function and uses AI algorithms to calibrate radio resources based on historical big data.
Capability openness	Provides RESTful-compliant northbound APIs, including 170+ APIs for user management, topology management, access authentication, service configuration, and performance monitoring, meeting the integration requirements of third-party systems.
General O&M	Should supports automatic identification of network issues based on Big Data analysis and machine learning algorithms: connectivity, air interface performance, roaming, and device issues. The issues include authentication failure, weak-signal coverage etc.
License	perpetual license

Item No. 20

Details of Wazuh SIEM solution (Open Source)
Security information and event management – SIEM
Installation, deployment, testing, commissioning and training of Wazuh
1. **Data loss prevention** module (DLP)
2. **Assets to Integrate:** All data center equipment like databases, routers, switches, firewall, access points etc should be configured with Wazuh SIEM solution
3. **Log Management:** Collect, index, and store security logs from a wide variety of sources (servers, firewalls, applications, databases) in various formats.
4. **Real-time Correlation and Analysis:** Correlate events from different sources in real-time to identify security incidents and patterns.
5. **Threat Detection:** Detect known and unknown threats using rule-based and anomaly-based detection methods.
6. **Incident Response:** Provide tools and workflows for investigating and responding to security incidents, including alert management, case management, and automated response actions.

7. **Reporting and Dashboards:** Generate comprehensive reports and dashboards to visualize security posture, track key metrics, and demonstrate compliance.
6. **Scalability and Performance:** Handle high volumes of data and provide fast search and analysis capabilities, even with large datasets.
7. **Advanced Analytics and Machine Learning:** Utilize machine learning algorithms for advanced threat detection, anomaly detection, and predictive analytics.
8. **User-Friendly Interface:** Offer an intuitive and user-friendly interface for searching, analysing, and visualizing data.
9. **Extensive App Ecosystem:** Provide a wide range of apps and integrations to extend functionality and connect with other security tools.
10. **Flexible Deployment Options:** Support on-premises, cloud, and hybrid deployment models to meet various needs and environments.

……End of Lot-1 Items……...

Detailed Specification of Lot.2 (Passive Work, Equipment's, CCTV and VOIP)

Note: Most of the specification of the items are mentioned in the lot 2. sheet while specifications of some items are hereby mentioned.

Item No.24

Technical Specification Requirement PABX Exchange for VOIP	
Analog Telephone FXS Ports	2 RJ11 Ports
	All ports have lifeline capability in case of power outage; number of ports can be expanded by peering with an FXS gateway
PSTN Line FXO Ports	2 RJ11 Ports
	All ports have lifeline capability in case of power outage; number of ports can be expanded by peering with an FXO gateway
Network Interfaces	Three self-adaptive Gigabit ports (switched, routed or dual mode) with PoE+
NAT Router	Yes (supports router mode and switch mode)
Peripheral Ports	1*USB 2.0, 1*USB 3.0, 1*SD card interface
LCD Display	320x240 color LCD with touch screen for Shortcut Keys and Scroll Bar
Network Protocols	Standard Protocols for SIP and VOIP
Media Encryption	SRTP, TLS, HTTPS, SSH, 802.1X, ZRTP
Universal Power Supply	Input: 100 ~ 240VAC, 50/60Hz; Output: DC 12V, 1.5A
Mounting	Wall mount & Desktop
Customizable Auto Attendant	Up to 5 layers of IVR (Interactive Voice Response) in multiple languages
Maximum Call Capacity	Users: => 500 Concurrent calls (G.711): 75 Max concurrent SRTP calls (G.711): standard
Call Features	Standard Features
Compliance	Compliance with standard regulations
Warranty	On Site 3-Year Complete Warranty including licenses if any

Item No. 25

Technical Specification Requirement IP Telephone set	
Protocols/Standards	Standard Protocols for SIP and VOIP
Network Interfaces	Dual switched auto-sensing 10/100 Mbps Ethernet ports (RJ 45), integrated PoE (GXP1610P/GXP1615 only)
Graphic Display	LCD display
Feature Keys	Standard features required for VOIP Phone
Telephony Features	Standard telephony features
Headset Jack	RJ9 headset jack (allowing EHS with Plantronics headsets)
Base Stand	Yes, 2 angled positions available, wall mountable
Wall Mountable	Yes
QoS	Layer 2 QoS (802.1Q, 802.1P) and Layer 3 (ToS, DiffServ, MPLS) QoS
Warranty	On Site 3-Year Comprehensive Warranty including licenses if any

Item No.26

Technical Specification Requirement Operator Console Set	
Protocols/Standards	Standard Protocols for SIP and VOIP
Network Interfaces	Dual switched auto-sensing 10/100/1000 Mbps Gigabit Ethernet ports with integrated PoE
Graphic Display	4.3 inch (480x272) TFT color LCD
Bluetooth	Yes, integrated
Feature Keys	Standard Features for VOIP Consol set
Voice Codecs	Support for G7.29A/B, G.711μ/a-law, G.726, G.722(wide-band), G723.1, iLBC, Opus, in-band and out-of-band DTMF(in audio, RFC2833, SIP INFO), VAD, CNG, AEC, PLC, AJB, AGC
Auxiliary Ports	RJ9 headset jack (allowing EHS with Plantronics headsets), USB, extension module port
Telephony Features	Standard Features

HD Audio	Yes, HD handset and speakerphone with support for wideband audio
Base Stand	Yes, 2 angle positions available, Wall Mountable
QoS	Layer 2 QoS (802.1Q, 802.1P) and Layer 3 (ToS, DiffServ, MPLS) QoS
Warranty	On Site 3-Year Comprehensive Warranty including licenses if any

Item No. 27

IP Camera 4 MP

Type:
Camera Type: Bullet
Feature: High Dynamic Range (WDR) for clear images in challenging lighting conditions
Specifications:
Usage: Outdoor
Compliance: ONVIF compliance and support
Protection: Dustproof and waterproof (IP66 or higher rating recommended)
Night Vision: Equipped with night-vision capability
Resolution:
Image Resolution: 4 Megapixels
Warranty:
Coverage: Standard manufacturer warranty
Additional Features:
Connectivity: Ethernet port for network connection (PoE support recommended)
Operating Temperature: Suitable for extreme weather conditions

Item No. 28

IP Camera 4 MP PTZ for boundary wall surveillance

Type:
Camera Type: PTZ – best for boundary wall security
Feature: High Dynamic Range (WDR) for clear images in challenging lighting conditions

Specifications:
Usage: Outdoor
Compliance: ONVIF compliance and support
Protection: Dustproof and waterproof (IP66 or higher rating recommended)
Night Vision: Equipped with night-vision capability
Resolution:
Image Resolution: 4 Megapixels
Warranty:
Coverage: Standard manufacturer warranty
Additional Features:
Connectivity: Ethernet port for network connection (PoE support recommended)
Operating Temperature: Suitable for extreme weather conditions

Item No. 29 & Item No.30

Technical Specification Requirement NVR 64 Channel and 32 Channel
1. **Capacity/Resolution:** Support 32/64 IP camera channels, recording at least 4K (8MP) resolution with H.265/H.264 compression.
2. **Storage/RAID:** Sufficient storage with RAID support (e.g., RAID 0, 1, 5, 6) for data redundancy. Minimum 30 days storage is desirable with full coverage of channels.
3. **Networking/Access:** Gigabit Ethernet, remote access via web browser/client software.
4. **Video Analytics:** Built-in motion detection, intrusion detection, object recognition.
5. **AI/ePoE:** Advanced AI (facial recognition, people counting) and ePoE support for extended camera range.
6. **ONVIF/ANPR:** ONVIF compliance for third-party camera integration and ANPR compatibility.
7. **Cybersecurity:** Robust security features like user authentication, access control, and data encryption.
8. **Warranty:** Standard 1 year

…End of Lot.2 Specification and BOQ…