



PORT QASIM AUTHORITY

BIN QASIM, KARACHI-75020



PROCUREMENT NOTICE

PROCUREMENT OF NON-CONSULTANCY SERVICES

1. The Port Qasim Authority invites sealed bids from reputed and experienced firms for "PROCUREMENT OF HARDWARE, IT EQUIPMENT, NETWORKING EQUIPMENT, SERVER INFRASTRUCTURE AND DATA CENTER FOR PORT QASIM AUTHORITY" with the ePADS v2.0 reference as "P125464"
2. **Single Stage-Two Envelope** Procedure of Principal Method of Procurement (i.e. Open Competitive Bidding) will be used by adopting **Quality and Cost Based Selection (QCBS)** Technique for the subject procurement, in line with the Public Procurement Rules, 2004 and any Regulations, and Instructions issued by the Authority (from time to time).
3. All Bids must be accompanied by a Bid Security described in Bid Security Section in Bidding Document in the form of **Pay Order** or Bid Securing Declaration on the prescribed format described.
4. E-Bidding documents, containing detailed terms & conditions, specifications and requirements etc. are available on **e-Pak Acquisition and Disposal System (EPADS)** at <https://epads.gov.pk/opportunities/federal/procurements/125464>.
5. A pre-bid meeting will be conducted on 12th October at **11:30 am** in the Conference Room of DG (Admin) Building-II, Port Qasim Authority.
6. Bids are required to submit their proposals both in hard copy and through the epads v2.0 in accordance with the prescribed procedures.
7. The e-bids, prepared in accordance with the instructions in the e-Bidding documents, must be submitted on or before **20th October, 2026 11:30 am** through **EPADS v2.0** and hard copy reach to the of Manager (IT), Port Qasim Authority, Karachi. E-bids will be opened on the same day at **12:00 PM**. E-bids and Hard copy should be the same. Those vendors who have not yet registered on the new version of **EPADS v2.0**, may register themselves on <https://vendors.epads.gov.pk/>. A tutorial to explain the registration process is available at <https://www.youtube.com/watch?v=MNW6T38v7tc>
8. In terms of Rules 48 of Public Procurement Rules, 2004 Grievance Redressal Committee (GRC) is notified for the subject procurement and notification copy is available on the procuring agency's website and also available on **EPADS v2.0** as well as Authority's website at (www.ppra.org.pk).


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REQUEST FOR PROPOSAL

PQA/IT/HW/RFP/2026

**PROCUREMENT OF HARDWARE, IT EQUIPMENT,
NETWORKING EQUIPMENT, SERVER
INFRASTRUCTURE AND DATA CENTER FOR PORT
QASIM AUTHORITY**



DOCUMENT CONTROL

Field	Detail
Document Title	Procurement of Hardware, IT Equipment, Networking Equipment, Server Infrastructure and Data center for Port Qasim Authority
RFP Number	PQA/IT/HW/RFP/2026
Version	2.1
Prepared For	Port Qasim Authority
Purpose	Tender publication
Procurement Structure	Single Stage Two Envelope process



TABLE OF CONTENTS

DOCUMENT CONTROL	2
1. INTRODUCTION.....	6
1.1. Objectives	6
1.2. Single Stage – Two Envelope Procurement Structure	6
1.3. Bidder Responsibility	6
2. DISCLAIMER AND PROCUREMENT PRINCIPLES.....	6
2.1. Procurement Regulations	6
2.2. Impartiality of Specifications	7
2.3. Bidder Due Diligence	7
2.4. No Guarantee of Award	7
2.5. Conditional Bids.....	7
2.6. Cost of Bidding	7
3. INVITATION TO BIDDERS	7
4. INSTRUCTIONS TO BIDDERS.....	7
4.1. Scope of the RFP	7
4.2. Bid Data Sheet.....	8
4.3. Mandatory Eligibility Criteria	8
4.4. Bid Rejection and Responsiveness	9
4.5. Bidding Procedure	9
4.6. Clarifications and Addenda	10
4.7. Site Survey	10
5. EVALUATION METHODOLOGY AND TECHNICAL QUALIFICATION	10
5.1. Evaluation Stages.....	10
5.2. General Technical Qualification Rules.....	10
5.3. Technical Evaluation Criteria	10
5.4. Financial Evaluation and Combined Score	12
5.5. Award and Tie Handling	12
5.6. Arithmetic and Price Correction	12
6. GENERAL CONTRACT AND ACCEPTANCE REQUIREMENTS.....	12
6.1. Project Governance	12
6.2. Implementation Deliverables.....	12



6.3. Testing and Acceptance	13
6.4. Warranty, Support and SLA.....	13
6.5. Security and Compliance Requirements.....	13
6.6. Training and Knowledge Transfer.....	13
7. SCOPE OF WORK.....	13
8. TECHNICAL SPECIFICATIONS	14
8.1. PQA Data center Bill of Quantities.....	32
8.2. Scope of Work for Tier II Data center	36
8.3. SOW: Deployment of Optical Fiber Network with High-Availability	41
8.4. 3rd Party Validation (TPV)	46
8.5. Training.....	46
8.6. Dedicated Vehicles For On-site IT Deployment, Support and maintenance	47
9. ANNEXURES, FORMS AND LEGAL DOCUMENTATION	48
9.1. Annexure A: Technical Proposal Submission Checklist.....	48
9.2. Annexure B: Cover Letter Format (To be printed on company letterhead & signed by an authorized person)	49
To: Project Director	49
9.3. Annexure C: Power of Attorney Format.....	49
9.4. Annexure D: Undertaking by the Bidder	50
9.5. Annexure E: Integrity Pact.....	50
9.6. Annexure F: Bid Security Form.....	51
9.7. Annexure G: Performance Security Form.....	51
9.8. Annexure H: Manufacturer Authorization and Support Confirmation	51
9.9. Annexure I: Technical Compliance Matrix Format	52
9.10. Annexure J: Financial Proposal Format and Price Schedules	52
9.10.1. Annexure J1: Price Schedule	52
9.10.2. Annexure J2: Payment Milestones.....	53
9.11. Annexure K: Technical Proposal Format	53
9.12. Annexure L: Contract Agreement Outline	54
9.13. Annexure M: Acceptance Certificate Format	54
9.14. Annexure N: CV Format for Proposed Team.....	54
9.15. Annexure O: Similar Project Experience Format	55



9.16. Annexure P: Deviation and Clarification Statement	55
9.17. Annexure Q: Delivery, Deployment and Commissioning Schedule	55
9.18. Annexure R: SLA and Support Matrix Format.....	55
9.19. Annexure S: Warranty, License and Subscription Inventory	56
9.20. Annexure T: Documentation Deliverables Checklist.....	56
9.21. Annexure U: Site Survey Certificate	56
9.22. Annexure V: Bidder Questions and Clarification Format.....	56



1. INTRODUCTION

Port Qasim Authority is a major deep-sea port in Karachi, Pakistan, with operations covering cargo handling, marine services, industrial estate management, infrastructure services, finance, administration and other support functions. PQA requires reliable, secure and scalable IT infrastructure to support the ERP program, business applications, data protection, user services and future digitalization initiatives.

PQA intends to procure and implement hardware, servers, storage, virtualization, backup, network, security, data center passive infrastructure and enterprise LAN components on a single stage two envelope basis. The procurement is intended to provide a stable infrastructure platform for ERP, custom modules, existing applications and future business systems.

1.1. Objectives

- Establish a reliable primary data center environment with required compute, storage, network, security, power, cooling and passive infrastructure.
- Provide enterprise LAN network equipment, fiber connectivity, network monitoring and security controls.
- Ensure complete supply, installation, configuration, testing, commissioning, documentation, training, warranty and post implementation support.
- Ensure that all supplied components are compatible, licensed, supported and fit for enterprise production use.

1.2. Single Stage – Two Envelope Procurement Structure

S. No.	Title	Brief Scope	Award Basis
1	Primary Data center, Enterprise LAN, Security, Backup, Training and Related Infrastructure	Servers, storage, SAN, virtualization, operating systems, backup, tape library, network monitoring, firewalls, modular switches, smart racks, UPS, cooling, genset, passive infrastructure, enterprise LAN switches, racks, fiber network, training and vehicles as specified.	Single Stage Two Envelope

1.3. Bidder Responsibility

The bidder shall submit a complete, integrated and workable solution for the relevant requirement. All cables, transceivers, licenses, rails, accessories, installation material, configuration services, testing tools, documentation and enabling components required to make the solution fully operational shall be included even if not separately listed in a line item.

2. DISCLAIMER AND PROCUREMENT PRINCIPLES

2.1. Procurement Regulations

This bidding document is issued under the applicable public procurement framework and related PQA requirements. The bidder shall comply with all applicable laws, rules, regulations, instructions and directions issued by competent authorities.



2.2. Impartiality of Specifications

Any reference to technology, architecture, standard, capacity, form factor, benchmark or product class is intended to define minimum functional and technical requirements. It shall not be treated as preference for any specific brand unless expressly approved by PQA.

2.3. Bidder Due Diligence

Bidders are expected to examine the complete RFP, site conditions, integration requirements, support requirements, quantities, BoQ, drawings if any, and all annexures before submitting bids.

2.4. No Guarantee of Award

Purchase of the bidding document, participation in pre bid meeting, submission of bid, technical qualification or opening of financial bid shall not create any right of award.

2.5. Conditional Bids

Conditional, incomplete, unsigned, partial, alternative, late or non-compliant bids may be rejected.

2.6. Cost of Bidding

All costs relating to preparation, submission, presentation, demonstration, site visit or clarification of bid shall be borne by the bidder.

3. INVITATION TO BIDDERS

Port Qasim Authority, hereinafter referred to as the Authority, invites sealed proposals from eligible, experienced and qualified bidders for procurement, supply, installation, configuration, testing, commissioning, training, warranty and support of hardware, IT equipment, networking equipment, server infrastructure and data center solutions for PQA on a single stage – two envelope basis.

The successful bidder shall be responsible for delivery of all goods and services within the approved timelines, as per technical specifications, contract conditions, service levels, acceptance criteria and all other provisions of this RFP.

4. INSTRUCTIONS TO BIDDERS

4.1. Scope of the RFP

This RFP seeks qualified vendors for establishment and support of the required infrastructure, including active equipment, passive equipment, software, licenses, configuration, testing, commissioning, training and support. The bidder shall submit a responsive and compliant technical proposal and a separate financial proposal in accordance with the Single Stage Two Envelope method.

4.2. Bid Data Sheet

S. No.	Item	Requirement
1	RFP Reference	PQA/IT/HW/RFP/2026
2	Procurement Method	Single Stage Two Envelope through EPADS 2.0 and physical bid submission as required in NIT.
3	Bid Security	PKR 20,000,000 or as mentioned in NIT, in the required form, enclosed with the Technical Proposal.
4	Bid Validity	180 days from the bid submission date, unless extended with mutual consent.
5	Performance Security	The successful bidder will be required to submit a performance guarantee (refundable) equal to 10% of the contract value in the form of a pay order (to be encashed by PQA) from a scheduled bank in Pakistan having long term rating minimum AA(+/-), in favor of Port Qasim Authority prior to signing of the contract..
6	Currency	Pakistani Rupees for evaluation and payment, except where specifically permitted in financial proposal instructions.
7	Taxes	Prices shall be inclusive of all applicable taxes, duties, levies and charges. Any changes in the applicable taxes after the submission of financial bid, the qualified bidder may submit the respective financial instruments with prevailing taxes.
8	Pre-Bid Meeting	Date, time and venue shall be as specified in NIT or corrigendum.
9	Bid Submission Deadline	Date, time and place shall be as specified in NIT or corrigendum.
10	Contact for Clarifications	Project Director/Manager IT, PQA and nominated IT representative. Written clarification requests must be submitted within the period specified in this RFP or NIT.

4.3. Mandatory Eligibility Criteria

The following mandatory criteria shall apply by the bidder. Noncompliance with any applicable mandatory requirement shall render the bid technically non responsive.

S#	Mandatory Requirement	Documentary Evidence	Result
1	Bidder must be registered on EPADS 2.0 and eligible to participate in public procurement.	EPADS 2.0 registration proof.	Pass/Fail
2	Bidder must be a registered legal entity with valid SECP, registrar or equivalent registration.	Certificate of incorporation or registration.	Pass/Fail
3	Bidder must possess valid NTN, Sales Tax, SRB registration where applicable, and must be on Active Taxpayer List.	Valid certificates and ATL proof.	Pass/Fail
4	Bidder must submit bid security in the prescribed amount, form and validity.	Original bid security in technical proposal.	Pass/Fail
5	Bidder must not be blacklisted by any government, semi government, autonomous body or private entity.	Affidavit on stamp paper or letterhead, as required.	Pass/Fail
6	Bidder must submit audited financial statements for the latest three financial years.	Audited accounts and income tax returns where applicable.	Pass/Fail
7	Bidder must have local support presence in Karachi during implementation and support period.	Office proof, lease, utility bill, support undertaking or support partner document.	Pass/Fail
8	Country of origin of principal and equipment or service platform shall not be from restricted countries as per applicable Government of Pakistan policy.	Country of origin declaration or service location declaration.	Pass/Fail
9	In case of Joint Venture, it must not exceed two entities and must include lead partner, roles, joint and several responsibility and authorization. The lead bidder shall be responsible for all delivery of goods and services.	JV agreement and power of attorney.	Pass/Fail
10	Bidder must submit signed compliance matrix against technical specifications and all RFP clauses.	Clause by clause compliance matrix with page references.	Pass/Fail



11	Bidder must submit complete technical proposal, financial proposal, forms, undertakings and price schedule in the format prescribed in the RFP.	Complete signed and stamped proposal documents.	Pass/Fail
12	OEM authorization, Manufacturer Authorization Form and product support confirmation must be provided for major supplied items.	OEM MAF and support confirmation for servers, storage, network, firewall, backup, tape library and other major equipment.	Pass/Fail
13	Compute servers must comply with Critical Compute Server Security Compliance requirements of the RFP.	OEM BOM, OEM data sheet, OEM MAF, sixty months support confirmation, firmware security confirmation and data control undertaking.	Pass/Fail

4.4. Bid Rejection and Responsiveness

- Unsigned bid forms, missing stamps, missing authorization, missing bid security, late bids, unsealed bids, partial bids, conditional bids, alternative bids without permission, misleading documentation or material deviation may lead to rejection.
- PQA may seek written clarifications; however, such clarification shall not be used to alter the substance or price of the bid.
- The bidder must provide an index with exact page references against every mandatory and scored criterion. Unsupported claims shall not be awarded marks.
- The proposed compute platform shall support Secure Boot, TPM 2.0 (or equivalent), hardware or silicon Root of Trust, secure BMC, customer-controlled telemetry, firmware integrity verification, firmware development declaration, country of final assembly declaration, and compliance with customer data sovereignty requirements. Documentary evidence of compliance shall be provided; failure to comply with these mandatory security requirements shall render the proposed solution technically non-responsive.

4.5. Bidding Procedure

- Technical Proposal and Financial Proposal shall be submitted in separate sealed envelopes and also through EPADS 2.0 where required.
- Technical bids shall be opened first and evaluated without reference to price.
- Financial bids of technically qualified bidders only shall be opened on the date, time and venue communicated by PQA.
- Financial bids of technically non-qualified bidders shall be returned unopened or dealt with as per applicable procedure.
- Award shall be made to the most advantageous bidder based on the stated evaluation methodology and approval of competent authority.



4.6. Clarifications and Addenda

Any bidder requiring clarification shall submit written request within the prescribed period. PQA may issue written clarification, corrigendum or addendum. Such corrigendum or addendum shall form part of this RFP.

4.7. Site Survey

Bidders are encouraged to carry out site survey where required. The bidder shall consider space, power, cooling, cabling, civil requirements, access, delivery route, integration requirements and other site conditions in the bid. No claim arising from lack of site understanding shall be entertained after contract award.

5. EVALUATION METHODOLOGY AND TECHNICAL QUALIFICATION

5.1. Evaluation Stages

Stage	Description	Outcome
Stage 1	Preliminary examination and mandatory eligibility check.	Pass or fail. Only pass bids move to technical scoring.
Stage 2	Technical evaluation against criteria and compliance matrix.	Marks out of 100
Stage 3	Technical qualification threshold.	Minimum 70 percent marks overall and minimum 50 percent in each major category unless otherwise stated.
Stage 4	Financial bid opening of technically qualified bidders.	Financial score calculated using the stated formula.
Stage 5	Technical and Financial score and recommendation of award.	Most advantageous bidder on total score.

5.2. General Technical Qualification Rules

- Technical marks shall be awarded only on verifiable documents attached in the bid.
- Each bidder shall submit a Technical Compliance Matrix against every technical specification, with clear response as Complied, Partially Complied or Not Complied. Partial compliance must include explanation and impact.
- Unsupported brochures or generic web links alone shall not be sufficient unless supported by OEM datasheets, official documentation, MAF, compliance statement or relevant certificates.
- PQA may call bidders for presentation, design walk through, clarification, demonstration or verification. Costs shall be borne by the bidder.
- PQA may verify projects, certificates, OEM authorizations and client references directly. False or misleading information may result in rejection, forfeiture or other action.

5.3. Technical Evaluation Criteria

Only bidders who meet the mandatory criteria shall proceed to technical evaluation. The technical proposal shall be evaluated out of 100 marks. The bidder must secure the minimum technical qualifying marks prescribed in the RFP to qualify for financial opening.



PORT QASIM AUTHORITY



S#	Evaluation Parameter	Description	100 Marks
1	Company Profile and Certifications		15 Marks
A1	Years of incorporation	Years of incorporation: 5 to 10 years: 2 marks Above 10 to 15 years and : 4 marks Above 15 years: 5 marks	5
A2	ISO certifications	ISO certifications: ISO 20000 or ISO 9001: 2 marks ISO 27001: 3 marks Two or more relevant certifications: 5 marks	5
A3	Karachi support setup and dedicated helpdesk or escalation mechanism for PQA.	Karachi support setup and dedicated helpdesk or escalation mechanism for PQA.	5
2	Financial Soundness		15 Marks
B1	Average annual turnover last (3) three years	Average annual turnover last (3) three years: PKR 1,000 million to PKR 1,200 million: 4 marks Above PKR 1,200 million to PKR 1,500 million: 6 marks Above PKR 1,500 million: 7 marks	7
B2	Average working capital last (3) three years	Average working capital: PKR 200 million to PKR 250 million: 4 marks Above PKR 250 million: 8 marks	8
3	Experience and References		25 Marks
C1	Comparable data center or infrastructure projects with value and scope	Comparable data center or infrastructure projects with value and scope: 1 to 3 projects: 4 marks 4 to 6 projects: 7 marks More than 6 projects: 10 marks	10
C2	Public sector or autonomous body infrastructure projects	Public sector or autonomous body infrastructure projects: 1 to 2 projects: 3 marks More than 2 projects: 5 marks	5
C3	Enterprise support contracts covering compute, storage, network, firewall or backup for 24/7 or mission critical operations.	Enterprise support contracts (each project 2.5 marks) covering compute, storage, network, firewall or backup for 24/7 or mission critical operations.	5
C4	Projects involving ERP, virtualization, SAN storage, backup and network security integration.	Projects involving ERP, virtualization, SAN storage, backup and network security integration. (each project 2.5 marks)	5
4	OEM and Solution Compliance		20 Marks
D1	OEM authorization and 5 year support confirmation for all major components.	OEM authorization and 5 year support confirmation for all major components.	5
D2	Compliance with technical specifications and completeness of BoM, licenses and accessories.	Compliance with technical specifications and completeness of BoM, licenses and accessories.	7
D3	OEM market standing Leader or Challenger in recognized analyst report where available, or equivalent independent evidence.	OEM market standing: Leader or Challenger in recognized analyst report where available, or equivalent independent evidence.	4
D4	Proposed high level architecture, integration diagram, redundancy and acceptance approach.	Proposed high level architecture, integration diagram, redundancy and acceptance approach.	4
5	Team Qualification		15 Marks
E1	Project Manager with minimum 10 years relevant IT infrastructure experience and PMP or equivalent.	Project Manager with minimum 10 years relevant IT infrastructure experience and PMP or equivalent.	3
E2	Solution Architect with enterprise infrastructure, virtualization and data center experience.	Solution Architect with enterprise infrastructure, virtualization and data center experience.	3
E3	Network and Security Architects with CCNP, CCIE, CISSP, CCSP, CISA or equivalent, where applicable.	Network and Security Architects with CCNP, CCIE, CISSP, CCSP, CISA or equivalent, where applicable.	4
E4	Data center, backup, system and support engineers with relevant certifications and experience.	Data center, backup, system and support engineers with relevant certifications and experience.	5
6	Methodology, Support and Handover		10 Marks
F1	Implementation methodology, risk plan, testing plan and migration or cutover plan.	Implementation methodology, risk plan, testing plan and migration or cutover plan.	4
F2	Post implementation support model, SLA, escalation matrix and preventive maintenance plan.	Post implementation support model, SLA, escalation matrix and preventive maintenance plan.	3
F3	Training, handover and documentation plan including as built drawings and administration guides.	Training, handover and documentation plan including as built drawings and administration guides.	3
	Total	Total Technical Marks	100 Marks



Note: Marks shall be awarded only on the basis of verifiable documentary evidence submitted with the technical proposal. The bidder shall provide clause wise compliance with page references.

5.4. Financial Evaluation and Combined Score

The evaluation shall use Quality and Cost Based Selection with 80 percent weightage for technical score and 20 percent weightage for financial score.

Item	Formula
Technical Score	$TSa = (BTa / 100) \times 80$, where BTa is the technical marks obtained by bidder A.
Financial Score	$FSa = (BPlowest / BPa) \times 20$, where BPlowest is the lowest evaluated financial bid among technically qualified bidders and BPa is the evaluated financial bid of bidder A.
Total Score	$Ta = TSa + FSa$. The bidder with the highest total score shall be treated as the most advantageous bidder, subject to compliance and approval.

5.5. Award and Tie Handling

- Where two bidders obtain the same total score, the bidder with higher technical score shall rank higher. If still tied, PQA may apply further due diligence or seek decision of the competent authority.
- PQA reserves the right to verify arithmetic, taxes, quantities and scope consistency before award.

5.6. Arithmetic and Price Correction

In case of discrepancy between unit rate and total amount, the unit rate shall prevail unless the context clearly indicates otherwise. In case of discrepancy between amount in words and figures, the lower amount may be considered for evaluation, subject to applicable procurement rules and PQA decision.

6. GENERAL CONTRACT AND ACCEPTANCE REQUIREMENTS

6.1. Project Governance

The successful bidder shall nominate a project manager and implementation team. PQA shall nominate focal persons for coordination. Progress meetings, issue logs, risk logs, action trackers and approvals shall be maintained throughout the project.

6.2. Implementation Deliverables

- Detailed project plan with milestones, dependencies and resource plan.
- Approved bill of materials and product datasheets.
- High level and low-level design documents.
- Rack layout, power layout, network diagram, IP plan, cable schedule and labeling plan.
- Installation, configuration and commissioning reports.
- Testing and acceptance reports signed by relevant PQA representatives.
- As built drawings, administration manuals, user manuals, license records and warranty documents.



- Training completion report and attendance sheets.
- Operational handover report and support escalation matrix.

6.3. Testing and Acceptance

Acceptance shall be based on physical inspection, BoQ verification, license verification, power and connectivity checks, configuration validation, redundancy tests, performance checks, failover tests where applicable, backup and restore tests, security checks, documentation review and successful completion of training. PQA may reject any item or service not meeting the RFP, OEM datasheet, approved design or contract requirements.

6.4. Warranty, Support and SLA

Support Area	Minimum Requirement
Warranty and OEM Support	Minimum 60 months for major hardware and software support where specified, with local support and OEM escalation.
Incident Logging	Single point of contact, ticket number, severity, time of reporting and resolution status.
Critical Severity	Production down, security outage, major service interruption. Immediate remote response and onsite response as per approved SLA.
Preventive Maintenance	Periodic health checks, firmware review, configuration backup and capacity review.
Spares and Replacement	Replacement shall be provided through OEM or authorized channel within agreed time.
Reporting	Monthly support report during warranty/support period, including incidents, actions, pending risks and recommendations.

6.5. Security and Compliance Requirements

- All default passwords shall be changed before handover.
- Administrative access shall be role based and documented.
- Management interfaces shall be secured and restricted as per PQA instructions.
- Configurations shall be backed up and handed over in editable form.
- No data shall be hosted, replicated or transferred outside approved locations without written approval of PQA.
- The bidder shall comply with information security and confidentiality obligations.

6.6. Training and Knowledge Transfer

Training shall cover system administration, virtualization, network administration, cyber security fundamentals, data center operations, backup and restore, monitoring, OEM training and any other training specified in the BoQ. Training material shall be provided in hard and editable soft copy.

7. SCOPE OF WORK

(PRIMARY DATA CENTER, NETWORKING AND RELATED EQUIPMENT)

Supply, installation, deployment and support of hardware and software components required for Port Qasim Authority for PR.



Supply, installation, deployment and support of hardware components for Port Qasim Authority Enterprise LAN network.

8. TECHNICAL SPECIFICATIONS

Description		Total Quantity
Servers Stack		
Servers	Servers on PR site	10
Storage Stack		
Unified Storages	Unified Storages on PR site	2
SAN Switches	SAN Switches on PR site	2
Software Stack		
Virtualization Manager	Virtualization Manager PR site	1
OS Licenses for Virtual Machines	OS Licenses for Virtual Machines on PR site	26
Backup Solution	VM Instances Licenses (10 VMS or higher) and Licenses for 25TB Unstructured Data Backup	
NMS	NMS	1
TAPE Library		
Tape Libraries	Tape Library for PR site	1
	Tape Library for Cold site	1
Networking Stack		
NG Firewalls	NG Firewalls PR site	2
Layer-3 Modular Switches	Layer-3 Modular Switches PR site	2
PR Data center		
Number of Smart Racks		5
Number of UPS		2
Number of Cooling Units		2
Data center passive Infrastructure (Complete Job)		1
Genset		1
Fiber Network		
Deployment of Optical Fiber Network		1
Trainings		
O&M Training for all elements provided against this bid including training required as per BoQ	System Administration (Linux + Virtualization)	10 Persons
	Network Administration (Including all supplied equipment)	
	Fundamentals of Cyber Security CDCP and CDCS	



Description		Total Quantity
	OEM International Trainings	4 Persons
Enterprise LAN Network		
Access Switches		55
Aggregation Switches		2
6U Racks		15
Vehicles		
Vehicles		3



PR EBS/BI SERVERS QTY: 3		
Sr No.	Item	Item Description (Minimum Specifications)
1	Form Factor	1U/2U Rack Server
2	Processor	2 x 32 Core, Intel® Xeon® 6530P Processor 144M Cache, 2.30 GHz Scalable Processors or equivalent
3	Memory Capacity	(16 X 64GB) 2RX4 DDR5 6400MHz RDIMM
4	Hard Drives	2 x 980GB SSD Read Intensive 6Gbps 512 2.5in Hot-plug
5	RAID Configuration & PCI Slots	Raid 0/1/5/6 Must be supported with 2-GB Cache
6	Network Adapter	2 x 4-Port 10Gbps SFP+ & 2 x 4 Port 1GbE BASE-T
7	Power Supply	Dual, Hot-plug, Power Supply Fully Redundant (1+1)
8	FC Features	2 x 2-Port 32-Gbps HBA Gen7 for connectivity to SAN
9	OS	Oracle Linux or RHEL (with five (05) years enterprise level support of 24x7)
10	Virtualization	Oracle Linux Virtualization Manager / RHV (or equivalent) KVM or VMWare with five (05) years enterprise level support of 24x7
11	Hardware Support Services	Next Business Day 60 Months, The OEM must have an established local presence with a registered office in Pakistan for a minimum of five (5) years and with Local Warehouse in Karachi. A valid Incorporated registration certificate shall be provided as documentary evidence.
12	Accessories	With all required accessories All relevant cables / SFP(s) / Transceiver /Rack Rail Kit / CMA and licenses to be included.
13	Deployment Services	Provided through Manufacturer's authorized partner

PR CUST SERVERS QTY: 2		
Sr No.	Item	Item Description (Minimum Specifications)
1	Form Factor	1U/2U Rack Server
2	Processor	2 x 48 Core, Intel® Xeon® 6740P Processor 288M Cache, 2.10 GHz Scalable Processors or equivalent
3	Memory Capacity	(16 X 32GB) 2RX4 DDR5 6400MHz RDIMM
4	Hard Drives	2 x 980GB SSD Read Intensive 6Gbps 512 2.5in Hot-plug
5	RAID Configuration & PCI Slots	Raid 0/1/5/6 Must be supported with 2-GB Cache
6	Network Adapter	2 x 4-Port 10Gbps SFP+ & 2 x 4 Port 1GbE BASE-T
7	Power Supply	Dual, Hot-plug, Power Supply Fully Redundant (1+1)
8	FC Features	2 x 2-Port 32-Gbps HBA Gen7 for connectivity to SAN
9	OS	Oracle Linux or RHEL (with five (05) years enterprise level support of 24x7)
10	Virtualization	Oracle Linux Virtualization Manager / RHV (or equivalent) KVM or VMWare with five (05) years enterprise level support of 24x7

**PR CUST SERVERS QTY: 2**

11	Hardware Support Services	Next Business Day 60 Months, The OEM must have an established local presence with a registered office in Pakistan for a minimum of Five (05) years and with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.
12	Accessories	With all required accessories All relevant cables / SFP(s) / Transceiver /Rack Rail Kit / CMA and licenses to be included.
13	Deployment Services	Provided through Manufacturer's authorized partner

PR CUST DB QTY: 2

Sr No.	Item	Item Description (Minimum Specifications)
1	Form Factor	1U/2U Rack Server
2	Processor	2 x 24 Core, Intel® Xeon® 6520P Processor 144M Cache, 2.40 GHz Scalable Processors or equivalent
3	Memory Capacity	(8 X 64GB) 2RX4 DDR5 6400MHz RDIMM
4	Hard Drives	2 x 980GB SSD Read Intensive 6Gbps 512 2.5in Hot-plug
5	RAID Configuration & PCI Slots	Raid 0/1/5/6 Must be supported with 2-GB Cache
6	Network Adapter	2 x 4-Port 10Gbps SFP+ & 2 x 4 Port 1GbE BASE-T
7	Power Supply	Dual, Hot-plug, Power Supply Fully Redundant (1+1)
8	FC Features	2 x 2-Port 32-Gbps HBA Gen7 for connectivity to SAN
9	OS	Oracle Linux or RHEL (with five (05) years enterprise level support of 24x7)
10	Virtualization	Oracle Linux Virtualization Manager / RHV (or equivalent) KVM or VMWare with five (05) years enterprise level support of 24x7
11	Hardware Support Services	Next Business Day 60 Months, The OEM must have an established local presence with a registered office in Pakistan for a minimum of Five (05) years and with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.
12	Accessories	With all required accessories All relevant cables / SFP(s) / Transceiver /Rack Rail Kit / CMA and licenses to be included.
13	Deployment Services	Provided through Manufacturer's authorized partner



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BACKUP & TAPE SERVER QTY: 1		
Sr No.	Item	Item Description (Minimum Specifications)
1	Form Factor	1U/2U Rack Server
2	Processor	2 x 24 Core, Intel® Xeon® 6520P Processor 144M Cache, 2.40 GHz Scalable Processors or equivalent
3	Memory Capacity	(2 X 64GB) 2RX4 DDR5 6400MHz RDIMM
4	Hard Drives	2 x 980GB SSD Read Intensive 6Gbps 512 2.5in Hot-plug
5	RAID Configuration & PCI Slots	Raid 0/1/5/6 Must be supported with 2-GB Cache
6	Network Adapter	2 x 4-Port 10Gbps SFP+ & 2 x 4 Port 1GbE BASE-T
7	Power Supply	Dual, Hot-plug, Power Supply Fully Redundant (1+1)
8	FC Features	2 x 2-Port 32-Gbps HBA Gen7 for connectivity to SAN
9	OS	Windows Server 2022/2025 (or as per the requirement of Backup Solution)
10	Hardware Support Services	Next Business Day 60 Months, The OEM must have an established local presence with a registered office in Pakistan for a minimum of Five (05) years and with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.
11	Accessories	With all required accessories All relevant cables / SFP(s) / Transceiver /Rack Rail Kit / CMA and licenses to be included.
12	Deployment Services	Provided through Manufacturer's authorized partner

PR UAT SERVER QTY: 2		
Sr No.	Item	Item Description (Minimum Specifications)
1	Form Factor	1U/2U Rack Server
2	Processor	2 x 24 Core, Intel® Xeon® 6520P Processor 144M Cache, 2.40 GHz Scalable Processors or equivalent
3	Memory Capacity	(8 X 64GB) 2RX4 DDR5 6400MHz RDIMM
4	Hard Drives	2 x 980GB SSD Read Intensive 6Gbps 512 2.5in Hot-plug
5	RAID Configuration & PCI Slots	Raid 0/1/5/6 Must be supported with 2-GB Cache
6	Network Adapter	2 x 4-Port 10Gbps SFP+ & 2 x 4 Port 1GbE BASE-T
7	Power Supply	Dual, Hot-plug, Power Supply Fully Redundant (1+1)
8	FC Features	2 x 2-Port 32-Gbps HBA Gen7 for connectivity to SAN
9	OS	Oracle Linux or RHEL (with five (05) years enterprise level support of 24x7)
10	Virtualization	Oracle Linux Virtualization Manager / RHV (or equivalent) KVM or VMWare with five (05) years enterprise level support of 24x7
11	Hardware Support Services	Next Business Day 60 Months, The OEM must have an established local presence with a registered office in Pakistan for a minimum of Five (05) years and with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.

**PR UAT SERVER QTY: 2**

12	Accessories	With all required accessories All relevant cables / SFP(s) / Transceiver / Rack Rail Kit / CMA and licenses to be included.
13	Deployment Services	Provided through Manufacturer's authorized partner

Unified Storage System (Primary)

Sr No.	Item	Description (Equivalent or Higher)
1	Form Factor	2U
2	Controller	Active-Active Dual controllers
3	Storage Capacity	The proposed array should be configured with 150TB Usable capacity with NV Me Flash before data reduction with RAID 6 configuration
4	Expansion Units Support	2U with 24 Hard drives support or higher
5	Chassis	Multi-protocols-FC, iSCSI, NFS, CIFS, FC-NV Me, NV Me over RoCE
6	Disk Components	7.68TB NV Me Encryption Disks
7	IOPS	Proposed storage should be able to deliver at least 125K IOPS, mentioned performance numbers should be achieved with data reduction techniques like Compression and Deduplication
8	Compression	Proposed storage should have 2:1 Guarantee Compression
9	Controller Cards	4*32G FC Port each controller, 2*10/25G iSCSI each controller, Dual Controller, support Single controller and Dual Active controllers, should be provisioned with the system (including required SFPs & Cables)
10	Volume Replication	Must have licensed replication
11	Snapshots	The proposed array must have capability to create up to 255 immutable snapshots of a single source volume.
12	Remote Replication	Replicate data to any global location that includes mirroring thin provisioned pools
13	Self-encrypting drives (SEDs)	Render data useless to unauthorized users with drive-level encryption, even if the drive has been removed from the enclosure
14	Protection	Snapshots, Remote Replication, Encryption Disks
15	Operating System / Plugins	Windows Server 2022 and 2025, RHEL 8.X and 9.X, Oracle Linux 8.X and 9.X
16	Power Supply	Power Supply, Redundant
17	Security features	Secure Socket Layer (SSL), Secure Shell (SSH), user level security, role-based access control (RBAC), LDAP authentication
18	Licenses	The proposed storage system must support thin-provisioning, Data reduction (Compression & deduplication), management, Storage Analytics, Snapshots, clones and Remote Replication.
19	Hardware Support Services	The vendor should provide five (05) years warranty with NBD support with 9x5 SLA response time by OEM with faulty storage media device retention services. The OEM must have an established local presence with a registered office in Pakistan for a minimum of Five (05) years and with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.



Unified Storage System (Backup)		
Sr No.	Item	Description (Equivalent or Higher)
1	Form Factor	2U
2	Controller	Active-Active Dual controllers
3	Storage Capacity	The proposed array should be configured with 150TB Usable capacity with NVMe Flash before data reduction with RAID 6 configuration
4	Expansion Units Support	2U with 24 Hard drives support or higher
5	Chassis	Multi-protocols-FC, iSCSI, NFS, CIFS, FC-NVMe, NVMe over RoCE
6	Disk Components	7.68TB NVMe Encryption Disks
7	IOPS	Proposed storage should be able to deliver at least 125K IOPS, mentioned performance numbers should be achieved with data reduction techniques like Compression and Deduplication
8	Compression	Proposed storage should have 2:1 Guarantee Compression
9	Controller Cards	4*32G FC Port each controller, 2*10/25G iSCSI each controller, Dual Controller, support Single controller and Dual Active controllers, should be provisioned with the system (including required SFPs & Cables)
10	Volume Replication	Must have licensed replication
11	Snapshots	The proposed array must have capability to create up to 255 immutable snapshots of a single source volume.
12	Remote Replication	Replicate data to any global location that includes mirroring thin provisioned pools
13	Self-encrypting drives (SEDs)	Render data useless to unauthorized users with drive-level encryption, even if the drive has been removed from the enclosure
14	Protection	Snapshots, Remote Replication, Encryption Disks
15	Operating System / Plugins	Windows Server 2022 and 2025, RHEL 8.X and 9.X, Oracle Linux 8.X and 9.X
16	Power Supply	Power Supply, Redundant
17	Security features	Secure Socket Layer (SSL), Secure Shell (SSH), user level security, role-based access control (RBAC), LDAP authentication
18	Licenses	The proposed storage system must support thin-provisioning, Data reduction (Compression & deduplication), management, Storage Analytics, Snapshots, clones and Remote Replication.
19	Hardware Support Services	The vendor should provide five (05) years warranty with NBD support with 9x5 SLA response time by OEM with faulty storage media device retention services. The OEM must have an established local presence with a registered office in Pakistan for a minimum of Five (05) years and with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.

SAN Switch QTY: 02		
Sr No	Item	Description (Equivalent or Higher)
1	Form Factor	1U or 2U
2	Generation	Gen 7
3	Number of ports	32 or more



SAN Switch QTY: 02		
4	Number of licenses	32 (All activated)
5	Connectivity	32 GB FC port
6	Security features	Secure Socket Layer (SSL); Secure Shell (SSH); Secure Copy (SCP); Secure FTP (SFTP); user level security, Role-based Access Control (RBAC); LDAP, RADIUS, and TACACS+ authentication; access control lists (ACLs)
7	Cables	LC -LC cables: 32 x 5M
8	Power Supply	Dual Redundant
9	Hardware Support Services	Next Business Day 60 Months
10	Deployment Services	Provided through Manufacturer's authorized partner



Virtualization Manager QTY: 01

Oracle Linux Virtualization Manager / RHV (or equivalent) KVM or VMWare with five (05) years enterprise level support of 24x7. The hypervisor host shall run on a minimal, purpose-built, hardened OS image with a reduced software footprint, limiting exposure to security vulnerabilities and reducing the frequency and scope of security patching required compared to a full general-purpose server operating system. The virtualization software shall provide the capability to create and manage virtual machine templates. The virtualization software shall support the creation of point-in-time snapshots of running and stopped virtual machines, including capture of memory state where applicable, allowing administrators to preview and revert to any prior snapshot state without data loss. The virtualization management software shall support cloning of virtual machines, enabling duplication of workloads for testing, deployment, or recovery purposes. The virtualization software shall support the dynamic addition of compute resources, including virtual vCPUs, memory, and disk capacity, to running virtual machines without requiring a reboot or causing downtime to hosted workloads. The virtualization management software shall support the deployment and export of virtual machines and virtual appliances using the Open Virtual Machine Format (OVF/OVA) standard, ensuring portability and interoperability across compatible virtualization platforms. The virtualization platform shall include native High Availability functionality, ensuring that virtual machines are automatically detected and restarted on alternate healthy hosts within the cluster in the event of a host failure. The virtualization platform shall include an automated cluster resource scheduling mechanism that continuously monitors host utilization across the cluster and dynamically migrates or places virtual machines based on configurable policies, including load balancing, affinity/anti-affinity rules, and power optimization, to ensure optimal performance and resource utilization at all times.

OS Licenses for Virtual Machines on PR site

Number of VMs	26 VMs
OS	Oracle Linux or RHEL (with five (05) years enterprise level support of 24x7).

Backup (non-RMAN Clients)

Sr. No.	Item	Description (Equivalent or Higher)
1	Backup Platform	Disk to Disk to Tape Backup solution with one-month backup data to be kept on disk for easy retrieval. Should be able to de-duplicate data across backup and backup data sets to reduce storage footprint
		Online backup and granular recovery of database platforms like Oracle, MSSQL, MySQL and PostgreSQL. Should support file and block-based backup for Windows File System, UNIX/Linux File Systems, Microsoft SQL Server.
		Take backup from any of the major operating systems like Windows, Linux etc.
		Software based de-duplication to support any storage system, cloud repository and object storage as de- duplicated disk target
		As a backup tool all audit trails must be logged for tracking any changes on backup server.
		Backup solution must integrate with RMAN based backups to perform consistent oracle backups and recoveries. Should be able to perform block level backup and recovery of oracle databases. Should support Oracle online backups of Windows, Linux (RHEL and Oracle Linux).
		The proposed Backup and Data Protection solution should be recognized as a Leader in the Gartner® Magic Quadrant™ for Backup and Data Protection Platforms
		The proposed backup solution should integrate directly with the virtualization manager of proposed virtualization solution.

Backup (non-RMAN Clients)		
2	Oracle Support	Backup solution must support integration with Oracle RMAN to perform consistent Oracle database backups and recoveries. The solution should enable block-level backups and recovery operations through RMAN. It must support online backups of Oracle databases running on Windows or Linux operating systems, including Red Hat Enterprise Linux (RHEL) and Oracle Linux.
3	Licensing Methodology	Required VM Instances Licenses (10 VMS or higher) and Licenses for 25TB Unstructured Data Backup with five (05) years support, and if any specific OS is required to run the backup solution, it should also be included as part of the proposed solution.

Network Monitoring System (NMS)	
The proposed solution shall provide comprehensive fault, traffic, and performance monitoring, including real-time alarm generation.	
The proposed Network Management System (NMS) shall support monitoring of heterogeneous infrastructure, including but not limited to: a) Firewalls b) Switches c) Servers d) Storages e) Tape Library f) and SNMP-enabled devices	
The proposed solution should allow custom alarms creations and administrator can define polling duration.	
The proposed solution shall support interface-level monitoring, including: a) Bandwidth utilization (inbound/outbound) b) Traffic analysis using SNMP/flow-based mechanisms	
The proposed solution shall provide drill-down capabilities for alarms and events, enabling: a) Root cause analysis, b) Historical trend analysis, c) Access to detailed event logs	
The proposed monitoring solution should not be vendor-specific.	
The proposed solution shall provide a web-based interface for real-time event and alarm visualization, dashboards, operational views, and role-based access control	
The proposed solution shall support HTTP, HTTPS, SSH, and other standard protocols for device communication and management.	
The proposed solution shall allow custom report generation for interface monitoring.	
Any required OS and database licenses for NMS should be part of the proposed solution.	
NMS should receive SNMP traps from DR nodes and must have same dashboard for PR and DR	

PQA Responsibilities and Design	
Item	Internet connectivity for PR site would be arranged and provided by PQA as per requirement. Bandwidth management for internet connectivity is out of scope for this project and PQA is responsible for it.
	PQA would provision 4 public IP address pool to assign for web application services in PR data center.

Design	
Item	Data center networks to be established in PR along with provision of DR resources on Cloud. PR site would be established in PQA HQ, whereas DR CSP must be located in Pakistan.

Design	
	PR site would have 2 NG firewalls installed in High Availability (HA) mode as gateway devices of the PR data center network; it must also provide load-balancing and secure delivery of web application services (WAF) in the PR data center. Infra devices would be integrated into 2 switch devices for redundancy.

NG Firewalls (Qty=2):	
No	General Requirements
1	Manufacturer product should be mentioned at least 2 times as Challenger or above for Network Firewalls in last five (05) years in the Gartner Magic Quadrant.
2	OEM Warranty & NBD Support for five (05) years
3	Form Factor = 1 RU
4	At least 8*GE COMBO + 4*GE RJ45 + 4*GE SFP + 6*10GE
	SFP+ fully loaded with Multi-Mode SR SFP & SFP+ modules
5	Hot-swappable SSD SATA Storage = 240GB or more
6	Dual AC power modules. Power Supply (AC)
7	Concurrent Sessions = 8M or greater
8	New Sessions/second = 200K or more
9	IPv4 Firewall Throughput (UDP) = 15 Gbps or greater
10	NGFW Throughput (Enterprise Mix) = 4 Gbps or greater
11	Threat Protection Throughput (Enterprise Mix) = 3.5 Gbps or greater
12	IPsec VPN Throughput (AES-256 + SHA256, 1420-byte) = 12 Gbps or greater
13	Must support IPSEC VPN Tunnels = 18K or greater
14	SSL Inspection Throughput = 2.5 Gbps or greater
15	SSL VPN Throughput = 1 Gbps or greater
16	Concurrent SSL VPN Users = 200
17	Must support Security Policies = 40K or greater
18	Must support Link Aggregation Control Protocol (LACP)
19	Must have WAF features to detect and protect against OWASP Top 10 attacks
20	Must have SSL offloading and Layer 4/Layer 7 server load balancing enabled with a five (5)-year license.
21	5-Year Bundled license including IPS, URL, AV and WAF

NG Firewalls (Qty=2):	
22	High availability: active-active & active-standby modes
23	The OEM must have an established local presence with a registered office in Pakistan for a minimum of five (05) years with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.

Layer-3 Modular Switches (Qty=2):	
No	General Requirements
1	Manufacturer product should be mentioned at least as Challenger in the latest year for Wired and Wireless LAN Infrastructure in the Gartner Magic Quadrant.
2	OEM Warranty & NBD Hardware Support for five (05) years
3	Modular Switch with redundant Control boards and minimum 2 Service (Interface) board slots
4	Maximum Form Factor = 5 RU
5	At least 48*GE RJ45 + 48*10GE SFP+ fully loaded with Multimode modules
6	Dual AC power supplies
7	Fan Redundancy
8	Switching Capacity = 1.8 Tbps or greater
9	MAC Entries = 300K or greater
10	VLans = 4K or greater
11	Must support Access, Trunk and Hybrid modes
12	Must support IPv4 dynamic routing protocols such as OSPF, IS-IS, and BGP
13	Must support Link Aggregation Control Protocol (LACP)
14	Must support access using Telnet, SSH and HTTP/HTTPs
15	Must support Static, dynamic, and blackhole MAC address entries
16	Must support HSRP, VRRP or equivalent
17	Must support Basic and Advanced ACLs
18	The OEM must have an established local presence with a registered office in Pakistan for a minimum of five (05) years with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.

Centralized Network Management and Control solution	
1	The bidder must provide hardware based comprehensive centralized (single plane of glass) solution for management and control of firewalls and switches described in the RFP.
2	OEM Warranty & NBD Hardware Support for five (05) years



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Additional Items
WildCard SSL Certificate for five (05) years
External DNS Management Services with Load Balancing Option five (05) years

Tape Library (PR Site) QTY: 01		
Sr. No.	Item	Item Description (Minimum Specifications)
1	Form Factor	3U
2	Number of slots	24 or more
3	Interfaces	FC
4	Number of Drives	2
5	Drives Support	LTO-9
6	Tape Cartridges (LTO-9)	120 x Tape Cartridges (18TB each)
7	Hardware Support Services	Next Business Day for 60 Months
8	Deployment Services	Provided through Manufacturer's authorized partner

Tape Library (Cold Site) QTY: 01		
Sr. No.	Item	Item Description (Minimum Specifications)
1	Form Factor	3U
2	Number of slots	24 or more
3	Interfaces	FC
4	Number of Drives	2
5	Drives Support	LTO-9
6	Hardware Support Services	Next Business Day for 60 Months
7	Deployment Services	Provided through Manufacturer's authorized partner



Technical Specification: Modular Data center (MDC) Solution		
Project Scope: 5-Rack Smart Row Configuration		
1.	General Eligibility & Compliance	
The following administrative and quality requirements are mandatory for all bidders:		
No.	Requirement	Specification
1	Certification	All equipment must be CE Certified and comply with relevant ISO/IEC international standards for data center infrastructure.
2	OEM Status	All core components (Racks, UPS, Cooling, Monitoring) must be supplied by a single Original Equipment Manufacturer (OEM) to ensure system integration and compatibility.
3	Authorization	Bidders must provide a valid Manufacturer Authorization Form (MAF) issued specifically for this tender by the OEM representative.
4	Professional Services	The proposal must include turnkey Onsite Design, Configuration, and Installation services.
5	Proven Track Record	Bidders must provide a reference list of similar local projects.
6	Integrity Declaration	The Returning Organization (RO) must provide an affidavit confirming they have not been blacklisted by any Federal or Provincial Organization.
2.	Mechanical & Cabinet System	
Mechanical & Cabinet System The solution shall consist of a fully enclosed "Smart Row" to isolate IT equipment from the ambient environment. • Configuration: 5 x Racks + 2 x InRow Precision Cooling Units. 4x Racks for IT equipment and 1x Rack preloaded with power plant, UPS/ Battery bank etc. • Dimensions: Approximately 4200mm (W) x 1200/1400mm (D) x 2000mm (H). • Construction: 9-folded frame structure with a loading capacity of 1300kg per rack. • Protection: Fully closed design for dust and harsh environment protection. • Aisle Containment: Front Doors: Reinforced glass with high-grade thermal insulation backing. - o Rear Doors: Double-leaf steel doors. - o Mobility: All units must include heavy-duty castors and leveling feet. • Security: Integrated 3-in-1 Access Control System installed on both front and rear doors of every rack.		
3	Power Distribution & UPS System	
The power system must support a high-availability 30kW IT load. • UPS Architecture: 2 x 30kVA Three-Phase UPS units in a redundant configuration. • Form Factor: High-density rack-mount (Max height: 3U per unit). • Input Power: 380V / 3-Phase / 50Hz–60Hz. • Power Management Module: Centralized module for distribution, protection, and metering. Must include a Manual Maintenance Bypass. • Rack PDU: * Quantity: 10 units (2 per IT rack). - o Type: Metered, 0U Vertical mounting. - o Outlets: Minimum 12 x C13 + 4 x C19 sockets per PDU.		
4	Thermal Management (Cooling)	



Technical Specification: Modular Data center (MDC) Solution	
• Unit Type: Split DX InRow Precision Cooling with active humidification, with external condenser. • Units & Capacity: 02 x 17kW units • Unit Power input: 380V/3Ph/50Hz-60Hz. • The cooling system indoor unit should be Inrow mounted, with dimensions 300mm(width) * 1200/1400mm(depth) * 2000mm(height). • Compressor: High-efficiency Inverter-driven compressor. • Fans: EC fans for both indoor and outdoor units. • Refrigerant: Pre-charged R410A with "Quick Connection" piping for rapid deployment. • Emergency Protocol: System must support automated emergency door opening (front and rear) for passive ventilation during high-temperature events.	
5	Environmental Monitoring & Management
• Control Interface: 10-inch dedicated touch-screen display mounted on the MDC exterior, not occupying IT space. • Sensors: Unified monitoring of smoke, water leakage, and door status. • UPS Integration: Real-time tracking of working modes, alarms, and input/output electrical parameters. • Cooling Integration: Remote setting of temperature/humidity setpoints, return/discharge air control, and unit switching. • Efficiency Analytics: System must automatically calculate real-time Power Usage Effectiveness (PUE) and total power consumption.	
6	Fire Suppression System
• Agent: FM200 automatic fire-fighting gas. • Hardware: 6U Rack-mounted integrated unit. • Detection: Integrated smoke and temperature sensors. • Capacity: Minimum 8kg gas volume, rated to protect a 4–8 rack enclosure.	
Note:	Scope of work includes the provision of all power cabling, ducting, and associated civil works. The vendor assumes full responsibility for the integration of these elements across the facility, power plant, and cooling infrastructure.



Enterprise LAN Network	
Access Switches (Qty=55):	
No	General Requirements
1	Manufacturer product should be mentioned at least 2 times as Challenger or above Wired and Wireless LAN Infrastructure in last five (05) years in the Gartner Magic Quadrant.
2	OEM Warranty & NBD Hardware Support for five (05) years
3	Maximum Form Factor = 1 RU
4	Must be AC power
5	At least 24*GE RJ45 ports, 4*10 GE SFP+ ports and 2 stack ports, fully loaded with Single-Mode LR SFP+ modules
6	Must support PoE+
7	Device Switching Capacity = 160 Gbps or greater
8	Forwarding Performance = 120 Mpps or greater
9	VLANs = 4K or greater
10	Must support Access, Trunk and Hybrid modes
11	Must support OSPF and Static routing
12	Must support Link Aggregation Control Protocol (LACP)
13	Must support remote access using Telnet & SSH
14	Must support Static, dynamic, and blackhole MAC address entries
15	Must support Basic and Advanced ACLs
16	The OEM must have an established local presence with a registered office in Pakistan for a minimum of five (05) years with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.

Aggregation Switches (Qty=2):	
No	General Requirements
1	Manufacturer product should be mentioned at least 2 times as Challenger or above Wired and Wireless LAN Infrastructure in last five (05) years in the Gartner Magic Quadrant.
2	OEM Warranty & NBD Hardware Support for five (05) years
3	Maximum Form Factor = 1 RU
4	Must have dual AC power modules
5	At least 48*10 Gig SFP+, 6*40/100 Gig QSFP28, fully loaded with 4 multi-Mode SR SFP+ and 44 Single-Mode LR SFP+ modules
7	Device Switching Capacity = 2 Tbps or greater
8	Forwarding Performance = 450 Mpps or greater



Aggregation Switches (Qty=2):	
9	Must support stacking of switches
10	VLans = 4K or greater
11	Mac Addresses = 350K or greater
12	ARP entry = 100K or greater
13	IPv4 routes = 200K or greater
14	Must support Access, Trunk and Hybrid modes
15	Must support OSPF and Static routing
16	Must support Link Aggregation Control Protocol (LACP)
17	Must support remote access using Telnet & SSH
18	Must support Static, dynamic, and blackhole MAC address entries
19	Must support Basic and Advanced ACLs
20	The OEM must have an established local presence with a registered office in Pakistan for a minimum of five (05) years with Local Warehouse in Karachi. A valid Incorporated certificate shall be provided as documentary evidence.



6U Wall mount Rack (Qty=15)	
NO	General Requirements
1	Imported Wall Mount Rack with minimum IP 50 Protection with PDU
2	19-inch standard; Removable Side Panels, side locks
3	Knock-off hole for entering cable on both top cover, bottom panel, rear panel Including Cable Management Solution
4	Turning angle of front door must be 180+ degrees
5	Surface Finish must be Powder coated

45 KVA Genset	
TECHNICAL CRITERIA & SPECIFICATION	
Details of Genset	45 KVA
FUEL	DIESEL
Prime rating	45 KVA
Standby rating	50 KVA
RPM	1500
Phase	3
Power Factor	0.8 or better
Frequency Hz	50 Hz
Water Cooled	Radiator mounted
Governor	Mechanical / Electronic prefer
Fuel Tank	8 Hours Operation base tank
Genset Engine	Cummins/Perkins/CAT/Baudouin /Equivalent
Genset Alternator	CAT/Leroy Somer/Stamford
Assemble (CBU)	100% Imported Complete Built Unit (CBU)
Assemble (CKD)	100% Original Engine & Alternator Import by genset supplier only. Supplier name Mention on GD Mandatory.
IP Rating	IP23
Insulation	Class H
Excitation System	PMG
Sound Proof Canopy 85dBA at 1 Meter	Weather & Sound Proof Canopy
AMF/ATS Panel(3P)	Imported & European Branded Components only.

45 KVA Genset	
Pakistan Engineering Council Registration	C 3 Category
Offices in Sindh	Karachi/Hyderabad/Sukkur
Experience in Related Field	15-20 Years

8.1. PQA Data center Bill of Quantities

S/n	Description	UOM	QTY
Key Note	The b/m specifications are for reference and minimum requirement only. Bidder has to conduct Site Survey and after verification of design, shall propose their own design with ownership of full turnkey establishment of production grade Data center environment from room readiness onward, including MDC, power, cooling, fire suppression, monitoring, access control, NOC, and all allied civil and electro mechanical works, including room readiness, floor treatment, wall cladding, fire rated doors, cable pathways, controlled entry lobby, NOC room, electrical segregation, earthing, condenser route, drainage, and acceptance criteria while primary objective would be the establishment of Data center from Scratch		
1	6-inch-thick solid concrete block masonry constructed with cement-sand mortar, properly aligned and cured. Blocks with compressive strength reinforced as required. Including 12mm thick cement-sand plaster on both sides with smooth finished surface. Complete in all respects, ready for paint application.	SQFT	240
2	Paint Work Surface preparation including cleaning, sanding and minor crack filling with putty. One coat of approved primer suitable for plastered surfaces. Two coats of premium quality acrylic emulsion paint on walls and ceiling. Complete with smooth, uniform finish in approved color shade.	SQFT	1200
3	Fire Rated Steel Metal double leaf door with 40mm thick door leaf Fire Rating for minimum 60 minutes as per International Fire Standards UL-10C and NFPA-252. Heavy Duty Reinforcement Clips Factory Applied Anti-Rust Primer and Color. (Survey required)	NOS	2
4	Supply and installation of 600×600mm/Roll Type anti-static PVC/vinyl ESD tiles with surface resistance 10^6 – 10^9 ohms. Tiles to be laid over properly leveled surface using conductive adhesive. Provision of copper grounding strip network beneath tiles connected to earthing system. Complete with testing and certification of ESD resistance, ready for operation.	SQFT	250
5	Supply and installation of 600×600mm suspended LED panel lights, Philips or equivalent approved brand. Minimum 40W, ≥ 120 lm/W efficacy, 4000K–6500K CCT, CRI ≥ 80 , glare-free diffuser. Complete with suspension kit, driver, wiring and proper ceiling supports. Ready for operation including testing and commissioning.	NOS	14
6	Supply and installation of LED emergency lights with minimum 3-hour battery backup (lithium type). Automatic charging with auto cut-off and instant illumination during power failure. Wall/ceiling mounted type with minimum 3–5W LED output and charging indicator. Complete with wiring, testing and commissioning, ready for operation.	NOS	4



PORT QASIM AUTHORITY



S/n	Description	UOM	QTY
7	Supply and installation of LED illuminated exit sign board with minimum 3-hour built-in battery backup. Double-sided acrylic/PC body with clear "EXIT" marking and directional arrow as required. Auto charging with automatic changeover during power failure. Complete with mounting, wiring, testing and commissioning, ready for operation.	NOS	2
8	Supply and installation of modular technology box with provision for UPS power, raw power, and data/voice outlets. Each box equipped with 13A/15A industrial sockets, RJ45 data ports, and labeling for easy identification. Flush or surface-mounted as per site requirement with proper cable management and faceplate. Complete with wiring, testing, and ready for operation.	NOS	8
9	Supply and installation of modular light switch board for controlling all lighting points in Data center and NOC. Equipped with high-quality switch modules, flush-mounted in metal/FRP enclosure. Wiring from board to all light points using copper cables in conduits. Complete with labeling, testing, and ready for operation	NOS	4
10	Supply and installation of 3-in-1 access control system (RFID card, Biometric fingerprint, and PIN) for Data center and NOC. Includes electromagnetic lock, exit push button, and power supply/SMPS. System integrated for logging, monitoring, and user management. Complete with wiring, testing, and commissioning, ready for operation.	NOS	2
11	Supply and installation of 4 MP IP dome CCTV cameras for Data center and NOC with PoE support. Cameras with IR night vision, wide-angle lens, and minimum 30m IR range for 24/7 monitoring. NVR with minimum 8 channels, 2TB HDD (or equivalent) for continuous recording up to 30 days. Complete with mounting, cabling, configuration, testing, and ready for operation.	NOS	2
12	Supply and installation of 6"x4" MS perforated cable tray, powder-coated for corrosion protection. Separate trays for Data/Fiber cabling and Power cabling, suspended from ceiling with proper supports. Complete with bends, tees, couplers, and accessories as required for a neat layout. Installed, aligned, grounded, tested, and ready for cable routing.	RFT	80
13	Supply and installation of fabricated MS/CRCA sheet metal distribution box for lighting, access control, and technology boxes. Equipped with MCBs, and busbars as per load requirements, powder-coated finish. Provision for proper cable entry, labeling, and segregation of circuits. Complete with mounting, earthing, wiring, testing, and ready for operation.	NOS	1
14	Supply and installation of 16 Sq.mm, 4-core copper armored cable for power feed from main electrical supply to distribution module. Complete with 10 Sq.mm copper Earth Continuity Conductor (ECC) for proper grounding. Laid in conduit or cable tray as per site requirements with proper termination at both ends. Complete with testing, continuity check, and ready for operation.	RFT	120
15	Supply and installation of 10 Sq.mm 4-core copper armored cable from Power Distribution Module (PDM) to local power distribution box. Includes 6 Sq.mm single core copper ECC for proper earthing and safety. Laid in conduit or cable tray with proper terminations at both ends. Complete with testing, continuity check, and ready for operation.	RFT	60



PORT QASIM AUTHORITY



S/n	Description	UOM	QTY
16	Supply and installation of 3-core 2.5 Sq.mm FRLS copper cable for powering technology boxes and switch sockets. Laid in PVC conduit or cable tray as per site routing requirements. Proper termination at distribution board and technology boxes/sockets with ferrules and labeling. Complete with continuity testing and ready for operation.	NOS	8
17	Supply and installation of 3-core 1.5 Sq.mm FRLS copper cable from Electrical Distribution Board (EDB) to light switch board, and from switch board to first light point, then point-to-point wiring to remaining lights. Laid in PVC conduit or cable tray as per site routing, with proper support and protection. Termination with ferrules, switches, and light fittings as per standard practice. Complete with continuity testing and ready for operation.	NOS	10
18	Supply and installation of 3-core 1.5 Sq.mm FRLS copper cable from Electrical Distribution Board (EDB) to emergency lights, illuminated exit signs, and 3-in-1 access control systems. Laid in PVC conduit or cable tray as per site routing with proper support and protection. Termination at EDB, devices, and control panels with ferrules and labeling. Complete with continuity testing and ready for operation.	NOS	6
19	Supply and installation of earth pit with copper plate or copper rod (as per soil resistivity) for Data center earthing. Connect to Electrical Control Panel (ECP) using 25 Sq.mm bare copper conductor. Complete with backfilling with charcoal and salt as per specification, chamber with cover, and proper bonding. Tested for earth resistance and ready for operation.	NOS	2
20	The cooling works include supply and installation of copper pipes (Muller USA) of required diameter with insulation where required, supported on GI powder-coated cable trays complete with bends, tees, couplers, and covers. UPVC drain pipes with fittings are laid for proper condensate drainage. Electrical works for the cooling system include flexible 2.5 mm ² 3-core control cables from indoor to outdoor units and 1.5 mm ² 2-core signal cables, both laid in conduits with proper termination, along with earthing connections. PPRC pipes are provided for humidification systems. Refrigerant R410A is supplied and charged as per manufacturer specification. Outdoor units are mounted on MS angle supports, and all piping and connections are flushed with nitrogen, pressure tested, and certified leak-free, complete with supports, fittings, insulation, labeling, and ready for operation.	Job	1
21	Supply and installation of UTP Cat 6 cable for CCTV cameras, 3-in-1 access control systems, and technology boxes. Laid in conduits or cable trays with proper support, bends, and labeling as per site routing. Termination with RJ45 connectors, patch panels, and proper testing for continuity and signal integrity. Complete with testing, certification, and ready for operation.	Box	2
22	Supply and installation of 1.5 Ton split AC unit for the NOC area, including indoor and outdoor units. Complete with copper piping, insulation, mounting, supports, and UPVC drain piping. Electrical connections with proper control and signal cabling, earthing, and safety compliance. System charged with refrigerant, tested for operation, airflow, cooling capacity, and ready for use.	NOS	1
23	Supply and installation of ergonomic workstations for 2-person NOC setup, including desks and chairs. Tables with durable tabletop, cable management provision, and sturdy frame. Chairs with adjustable height, swivel, and comfortable padding suitable for long-duration use. Complete with assembly on-site, ready for immediate use.	Job	1



S/n	Description	UOM	QTY
24	The works include installation, and commissioning of all materials and services for the Data center and NOC, covering civil works (partition walls, plaster, painting, and anti-static flooring), electrical systems (LED lights, emergency lights, exit signs, switch boards, technology boxes, access control, UPS, sockets, wiring, cable trays, distribution boards, earthing, and CCTV with NVR), and cooling/HVAC systems (copper piping with insulation, GI cable trays, UPVC drains, humidification piping, control and signal cabling, earthing, refrigerant charging, outdoor unit supports, nitrogen flushing, and pressure testing). All items are provided with proper supports, fittings, labeling, testing, and certification, including skilled labor and supervision, ensuring the Data center and NOC are fully operational and compliant with standards.	Job	1



8.2. Scope of Work for Tier II Data center

Scope of work for the construction of a Tier II compliant data center within office premises.

1. Phase I: Site Survey and Space Design

The interested bidders are responsible for visiting the site as per scheduled date and time before proposal submission, to understand, finalize technical requirements of data center and perform site survey of the designated premises.

- **Survey & Design:** Perform a full site survey to finalize technical requirements and create a data center topology compliant with TIA-942-A/B standards.
- **Modular Layout:** The design must adopt a modularized concept to allow for flexible future expansion, integrating IT racks, power, cooling, and security into a cohesive unit.
- **Airflow Management:** The space design must strictly separate hot and cold airflows to improve cooling efficiency, utilizing an alternating pattern for rack installation.

2. Phase II: Dismantling and Site Readiness

After approval and validation of site survey reports and proposed data center design, the vendor should clear the existing space and make it ready for the construction and required civil work.

- **Dismantling Tasks:** Perform all required dismantling of existing room structures (e.g., partitions, existing office furniture, or legacy cabling) to prepare the premises for construction.
- **Waste Removal:** All dismantled items and materials must be removed from the site to ensure the space is ready for civil work.
- **Civil Readiness:** Complete necessary civil works to make the room suitable for a critical physical infrastructure environment.

3. Phase III: Critical Infrastructure Requirements

The design must accommodate the following high-density components to achieve state-of-the-art performance:

- **Precision Cooling:** Installation of a redundant Precision Cooling system. This must include a Smart Aisle/Hot Aisle Containment solution to physically isolate airflow.
- **Power System (N+1 Redundancy):**



- UPS (Power Factor = 1) to support the load.
 - Battery backup designed for 10-15 minutes of runtime.
 - Integration of a Backup Generator (Genset) for long-term power failure protection.
- Rack Infrastructure: Deployment of 42U racks equipped with metered PDUs and all necessary accessories for IT equipment.

4. Phase IV: Safety, Security, and Monitoring

To meet Tier II standards and ensure operational continuity, the following systems must be integrated:

- Fire Safety: A complete fire detection and suppression system tailored for data center environments.
- Security: Multi-layer security including Access Control and a CCTV System.
- Centralized Monitoring (DCIM): A comprehensive DCIM solution to monitor Precision Cooling, UPS, PDUs, and environmental factors like water leakage.
- Network Connectivity: Complete passive networking work, including tagging and Fluke test reports to verify installation quality.

5. Final Handover and Training

- Compliance: The entire installation must follow TIA-942 guidelines and achieve Tier II compliance.
- Knowledge Transfer: The vendor is required to provide technical training for at least two engineers on all installed equipment and modules.

The following outlines the high-level scope of work to be executed under this scope. All the requirements shall be verified and finalized based on the detailed site survey to be conducted by the bidder. The bidder is required to submit a comprehensive survey report addressing all items listed herein, along with any additional requirements identified as necessary to ensure the complete and successful delivery of the scope on a turnkey basis

- 6 inches thick solid concrete block masonry constructed with cement-sand mortar, properly aligned and cured. Blocks with compressive strength reinforced as required, including 12mm thick cement-sand plaster on both sides with smooth finished surface. Complete in all respects, ready for paint application.



- Paint Work Surface preparation includes cleaning, sanding and minor crack filling with putty. One coat of approved primer suitable for plastered surfaces. Two coats of premium quality acrylic emulsion paint on walls and ceiling. Complete with smooth, uniform finish in approved color shade.
- Fire Rated Steel Metal double leaf door with 40mm thick door leaf Fire Rating for minimum 60 minutes as per International Fire Standards UL-10C and NFPA-252. Heavy Duty Reinforcement Clips Factory Applied Anti-Rust Primer and Color. (Survey required)
- Supply and installation of 600×600mm/Roll Type anti-static PVC/vinyl ESD tiles with surface resistance 10^6 - 10^9 ohms. Tiles to be laid over properly leveled surface using conductive adhesive. Provision of copper grounding strip network beneath tiles connected to earthing system. Complete with testing and certification of ESD resistance, ready for operation.
- Supply and installation of 600×600mm suspended LED panel lights, Philips or equivalent approved brand. Minimum 40W, ≥ 120 lm/W efficacy, 4000K-6500K CCT, CRI ≥ 80 , glare-free diffuser. Complete with suspension kit, driver, wiring and proper ceiling supports. Ready for operation including testing and commissioning.
- Supply and installation of LED emergency lights with minimum 3-hour battery backup (lithium type). Automatic charging with auto cut-off and instant illumination during power failure. Wall/ceiling mounted type with minimum 3-5W LED output and charging indicator. Complete with wiring, testing and commissioning, ready for operation.
- Supply and installation of LED illuminated exit sign board with minimum 3-hour built-in battery backup. Double-sided acrylic/PC body with clear "EXIT" marking and directional arrow as required. Auto charging with automatic changeover during power failure. Complete with mounting, wiring, testing and commissioning, ready for operation.
- Supply and installation of modular technology outlet box with provision for UPS power, raw power, and data/voice outlets. Each box should be equipped with 13A/15A industrial sockets, RJ45 data ports, and labeling for easy identification. Flush or surface mounted as per site requirement with proper cable management and faceplate. Complete with wiring, testing, and ready for operation.
- Supply and installation of modular light switchboard for controlling all lighting points in Data center and NOC. Equipped with high-quality switch modules, flush-mounted in metal/FRP enclosure. Wiring from board to all light points using copper cables in conduits. Complete with labeling, testing, and ready for operation
- Supply and installation of 3-in-1 access control system (RFID card, Biometric fingerprint, and PIN) for Data center and NOC. Include electromagnetic lock, exit push button, and power supply/SMPS. System integrated for logging, monitoring, and user management. Complete with wiring, testing, and commissioning, ready for operation.

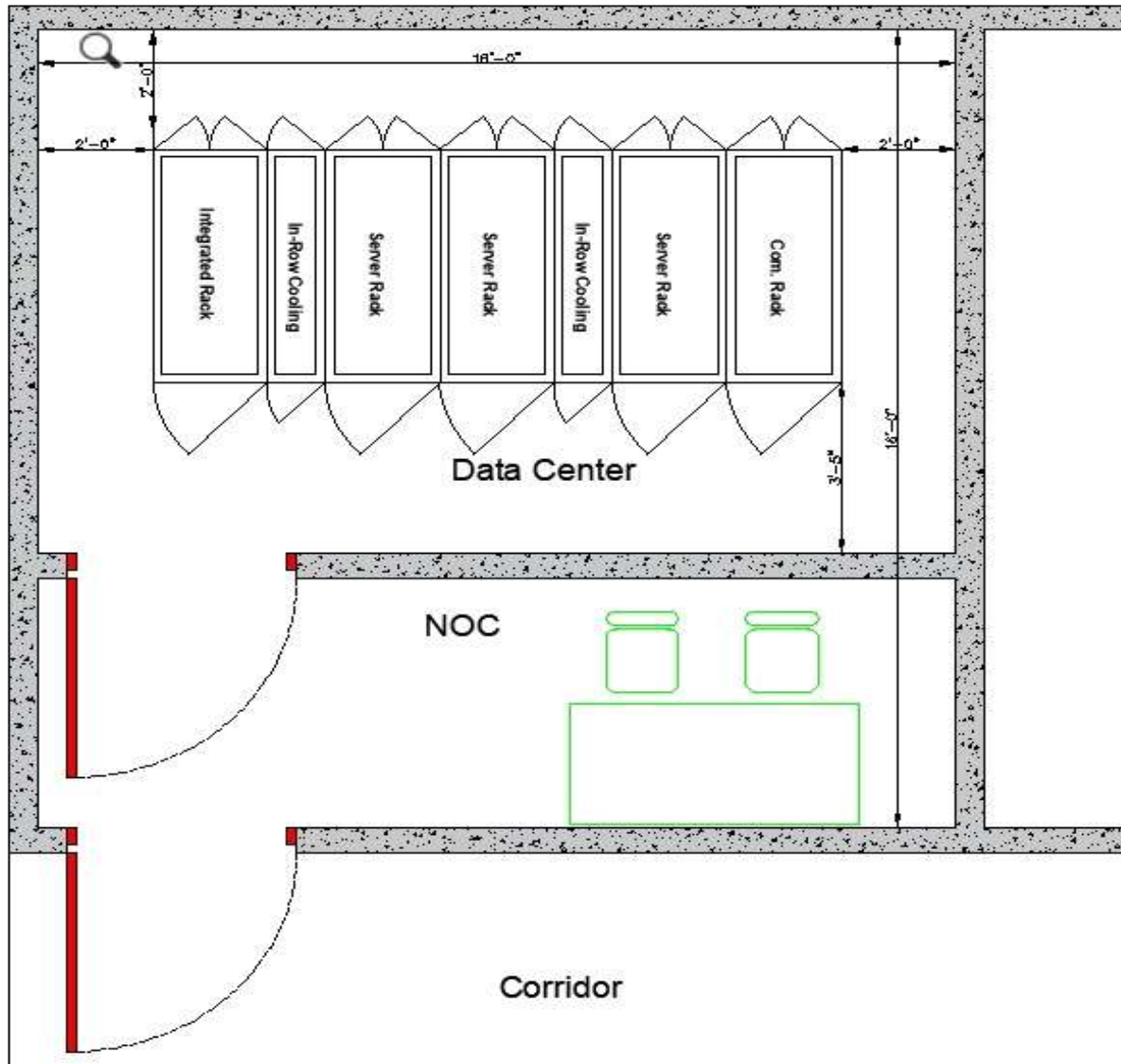


- Supply and installation of 4 MP IP dome CCTV cameras for Data center and NOC with PoE support. Cameras with IR night vision, wide-angle lens, and minimum 30m IR range for 24/7 monitoring. NVR with minimum 8 channels, 2TB HDD (or equivalent) for continuous recordings of up to 30 days. Complete with mounting, cabling, configuration, testing, and ready for operation.
- Supply and installation of 6"×4" MS perforated cable tray, powder-coated for corrosion protection. Separate trays for Data/Fiber cabling and Power cabling, suspended from ceiling with proper support. Complete with bends, tees, couplers, and accessories as required for a neat layout. Installed, aligned, grounded, tested, and ready for cable routing.
- Supply and installation of fabricated MS/CRCA sheet metal distribution box for lighting, access control, and technology boxes. Equipped with MCBs, and busbars as per load requirements, powder-coated finish. Provision for proper cable entry, labeling, and segregation of circuits. Complete with mounting, earthing, wiring, testing, and ready for operation.
- Supply and installation of 16 Sq.mm, 4-core copper armored cable for power feed from main electrical supply to distribution module. Complete with 10 Sq.mm copper Earth Continuity Conductor (ECC) for proper grounding. Laid in conduit or cable tray as per site requirements with proper termination at both ends. Complete with testing, continuity check, and ready for operation.
- Supply and installation of 10 Sq.mm 4-core copper armored cable from Power Distribution Module (PDM) to local power distribution box. Includes 6 Sq.mm single core copper ECC for proper earthing and safety. Laid in conduit or cable tray with proper terminations at both ends. Complete with testing, continuity check, and ready for operation.
- Supply and installation of 3-core 2.5 Sq.mm FRLS copper cable for powering technology boxes and switch sockets. Laid in PVC conduit or cable tray as per site routing requirements. Proper termination at distribution board and technology boxes/sockets with ferrules and labeling. Complete with continuity testing and ready for operation.
- Supply and installation of 3-core 1.5 Sq.mm FRLS copper cable from Electrical Distribution Board (EDB) to light switch board, and from switch board to first light point, then point-to-point wiring to remaining lights. Laid in PVC conduit or cable tray as per site routing, with proper support and protection. Termination with ferrules, switches, and light fittings as per standard practice. Complete with continuity testing and ready for operation.
- Supply and installation of 3-core 1.5 Sq.mm FRLS copper cable from Electrical Distribution Board (EDB) to emergency lights, illuminated exit signs, and 3-in-1 access control systems. Laid in PVC conduit or cable tray as per site routing with proper support and protection. Termination at EDB, devices, and control panels with ferrules and labeling. Complete with continuity testing and ready for operation.



- Supply and installation of earth pit with copper plate or copper rod (as per soil resistivity) for Data center earthing. Connectivity to Electrical Control Panel (ECP) using 25 Sq.mm bare copper conductor. Complete with backfilling with charcoal and salt as per specification, chamber with cover, and proper bonding. Testing for earth resistance and ready for operation.
- The cooling works include supply and installation of copper pipes (Muller USA) of required diameter with insulation where required, supported on GI powder coated cable trays complete with bends, tees, couplers, and covers. UPVC drainpipes with fittings are laid for proper condensate drainage. Electrical works for the cooling system include flexible 2.5 mm² 3-core control cables from indoor to outdoor units and 1.5 mm² 2-core signal cables, both laid in conduits with proper termination, along with earthing connections. PPRC pipes are provided for humidification systems. Refrigerant R410A is supplied and charged as per manufacturer specification. Outdoor units are mounted on MS angle supports, and all piping and connections are flushed with nitrogen, pressure tested, and certified leak-free, complete with supports, fittings, insulation, labeling, and ready for operation.
- Supply and installation of UTP Cat 6 cable for CCTV cameras, 3-in-1 access control systems, and technology boxes. Laid in conduits or cable trays with proper support, bends, and labeling as per site routing. Termination with RJ45 connectors, patch panels, and proper testing for continuity and signal integrity. Complete with testing, certification, and ready for operation.
- Supply and installation of split AC unit for the NOC area, including indoor and outdoor units. Complete with copper piping, insulation, mounting, supports, and UPVC drain piping. Electrical connections with proper control and signal cabling, earthing, and safety compliance. System charged with refrigerant, tested for operation, airflow, cooling capacity, and ready for use.
- Supply and installation of ergonomic workstations for 2-person NOC setup, including desks and chairs. Tables with durable tabletop, cable management provision, and sturdy frame. Chairs with adjustable height, swivel, and comfortable padding suitable for long-duration use. Complete with assembly on-site, ready for immediate use.
- The works include installation, and commissioning of all materials and services for the Data center and NOC, covering civil works (partition walls, plaster, painting, and anti-static flooring), electrical systems (LED lights, emergency lights, exit signs, switch boards, technology boxes, access control, UPS, sockets, wiring, cable trays, distribution boards, earthing, and CCTV with NVR), and cooling/HVAC systems (copper piping with insulation, GI cable trays, UPVC drains, humidification piping, control and signal cabling, earthing, refrigerant charging, outdoor unit supports, nitrogen flushing, and pressure testing). All items are provided with proper support, fittings, labeling, testing, and certification, including skilled labor and supervision, ensuring the Data center and NOC are fully operational and compliant with standards.

NOTE: Any items or services mandatory for the completion and successful operations must be mentioned and highlighted by the bidder. Being a Turnkey requirement if any additional item or services is required for the completion of the scope, will be the responsibility of the bidder and any additional cost shall be borne by the bidder



8.3. SOW: Deployment of Optical Fiber Network with High-Availability

1. Introduction



The organization invites proposals from qualified vendors for the design, supply, installation, testing, and commissioning of an optical fiber network based on ring topology and high availability. The proposed network shall interconnect approximately twenty-two (22) departments/buildings and integrate seamlessly with the Data center core infrastructure.

2. Objective

The objective of this RFP is to establish a resilient, scalable, and high-performance fiber optic backbone that ensures uninterrupted connectivity through a ring architecture, along with comprehensive documentation and testing. The primary objectives of this project are:

- Resilience: Implementing a self-healing ring architecture to eliminate single points of failure.
- Performance: Delivering high-speed, low-latency connectivity capable of supporting current and future bandwidth demands.
- Scalability: Ensuring the infrastructure can accommodate future building expansions or 10G/40G/100G upgrades.

3. Scope of Work

3.1 Site Survey and Assessment

- Conduct a detailed site survey of all identified locations (22 departments/buildings).
- Assess existing infrastructure, pathways, and constraints.
- Identify optimal routes for fiber deployment.
- Prepare a detailed Survey Report including CAD-based route maps, distance matrices, and a comprehensive Risk Mitigation Plan for civil works.

3.2 Network Design

- Design an **optical fiber ring topology** ensuring redundancy and fault tolerance.
- Provide detailed network architecture diagrams.
- Define core, distribution, and access layers.
- Ensure integration with Data center core network.
- Include provision for future scalability and expansion.

3.3 Optical Fiber Backbone

- Supply and install approximately **4.5 KM (or as per survey)** of optical fiber cables.
- Fiber type (SM/MM), core count, and specifications to be finalized based on-site survey.
- Ensure adequate spare cores for redundancy and future use.

3.4 Passive Infrastructure



- Supply and install all required passive components, including but not limited to:
 - Optical fiber cables
 - Patch cords and pigtails
 - Splice closures and joint enclosures
 - Fiber distribution boxes, ODF etc.
 - Cable trays, ducts, and protection conduits
 - Finalization of cable routes.
 - Digging for underground optical fiber cable laying. Civil work required.

- Ensure compliance with industry standards.

3.5 Fiber Termination and Management

- Installation of:
 - LIU and ODF
 - Rack-mounted or wall-mounted enclosures
- Proper termination and dressing of fiber cables.
- Use of structured patch panels for organized connectivity.

3.6 Splicing and Installation

- Perform fusion splicing for all fiber joints.
- Ensure minimal insertion loss and adherence to standards.
- Protect all splicing points using closures/enclosures.

3.7 Labeling and Identification

- Implement standardized labeling for:
 - Fiber cables
 - Ports and patch panels
 - Network nodes and termination points
- Provide labeling scheme documentation.

3.8 Testing and Certification

- Conduct complete testing and certification of the network, including:
 - OTDR testing for all fiber links
 - Power loss measurements
 - Fluke testing (where applicable)
- Submit detailed test reports for approval.

3.9 Documentation



- Provide comprehensive documentation, including:
 - As-built drawings
 - Fiber routing diagrams
 - Cable schedules and core allocation
 - Test reports (OTDR, Fluke)
 - Configuration details of active equipment
- Submit both hard and soft copies.

3.10 Integration and Commissioning

- Integrate the deployed network with the Data center core.
- Configure switching and routing protocols as required.
- Perform end-to-end testing and commissioning.

4. Technical Requirements

- Network must support high availability with automatic failover.
- Compliance with international standards (ISO/IEC, TIA/EIA).
- Use of high-quality, certified materials and components.
- All equipment must be brand new and unused.

5. Deliverables

Phase 1: Site Survey Report & Finalized Bill of Quantities (BOQ).

Phase 2: High-Level and Low-Level Design (HLD/LLD) documents.

Phase 3: Physical installation and Civil completion.

Phase 4: OTDR/Fluke Test Reports and Integration Logs.

Phase 5: As-Built Documentation: Detailed logical/physical maps and core allocation charts.

6. Vendor Qualifications

- Proven experience in fiber optic network deployment.
- At least three (3) similar projects completed successfully.
- Availability of certified technical staff.

7. Project Timeline

- Site Survey: [To be specified]
- Design Submission: [To be specified]
- Implementation: [To be specified]
- Testing & Commissioning: [To be specified]



8. Warranty and Support

- **Hardware Warranty:** Minimum five (5) years of 24x7 OEM support.
- **SLA:** Define response times for critical link failures (e.g., 4-hour onsite response).

9. Evaluation Criteria

- Technical compliance
- Vendor experience and capability
- Commercial competitiveness
- Project timeline adherence

10. Conclusion

Vendors are required to submit comprehensive turnkey proposals addressing all aspects of this SOW. The solution must ensure a reliable, scalable, and future-ready optical fiber network with high availability and full integration with the existing infrastructure. This is a Turnkey Project. The selected vendor is responsible for providing a fully functional system. Any component, license, or accessory not explicitly mentioned in the BOQ but required for the operational success of the network shall be provided by the vendor at no additional cost to the organization.

8.4. 3rd Party Validation (TPV)

#	TPV Tasks	Description	Third Party Qualification	Third Party - Engagement Milestone	Vendor Responsibility
1	Implementation Audit	Auditing implementation and design of Data center Network & Systems, based on components provided by vendor in this solution.	The Auditors must be either CCIE/HCIIE/CISA and OCI Architect Associate certified.	Third party consultant engagement would close upon successful completion of following milestone: 1-Project implementation workshop: Successful validation of the final implementation document (LLD) locked during project implementation workshop. 2- Testing: Confirmation of implementation as per the implementation document (LLD) locked in the Project implementation workshop.	Following would be the responsibility of the vendor during TPV. 1-Project implementation workshop: Incorporate recommendation of third-party consultant in the implementation document (LLD). 2- Testing: Successful demonstration, based on test cases, to establish the deployment is executed as per the final implementation document (LLD) locked during the Project Implementation workshop.
2	Security Audit	Network Security design, Risk Assessment, Security Policy definition and guidelines and risk appetite.	The Auditor must be CISSP Certified by ISC2 and ISO 27001 Auditor to conduct the security audit.	Post Implementation during operation/warranty period: Submission of report providing comprehensive view of security posture of the Data center Network, providing threat vector analysis and recommendations.	Post Implementation during operation/warranty period: Vendor to implement the mitigations proposed by the third-party consultant, according to the provisions available in the deployed components/licenses/features.
3	Vulnerability Assessment	Vulnerability Assessment of network and system component deployed components of this RFP	To conduct the vulnerability assessment, consultant must be either CEH/OSCP certified.	Post Implementation during operation/warranty period: Submission of report providing known vulnerabilities on deployed solution and providing suggestions of their removal and ensuring its remedial measures.	Post Implementation during operation/warranty period: Vendor to provide plan to address the vulnerability, the plan would entail the timelines to address these vulnerabilities. The implementation to mitigate the vulnerability would be done during the operations/warranty tenure as per the committed timeline.

8.5. Training

#	Item	Description (Equivalent or Higher)
1	No of Participant	4 for each module
2	No of Days	Bidder to provide
3	Training (O&M and Installation)	System Administration (Linux + Virtualization) Network Administration (Including all supplied equipment) Fundamentals of Cyber Security CDCP and CDCS
4	Venue	International and Local
5	Outline/Instructors	To be approved by PQA before training

**Notes:**

For Warranty claim of SSDs/HDDs, faulty drives will not be returned in replacement, due to sensitive nature of data.

Detailed Project Implementation Plan for each mile stone along with Low Level Design (LLD) must be submitted along with proposed solution.

Support means feature or components must be enabled and provisioned

Trouble ticketing and support account access must be provided directly to the end user.

All ancillaries, cables, connectors and patch cords required to integrate and interface all components altogether, and must be considered be considered part and parcel of submitted proposal, and providing those will be solely responsibility of successful bidder and no separate amount will be claimed out of contract under this tender.

the bidder shall remain fully responsible for complete interoperability, compatibility, performance, and successful end to end deployment of all supplied and integrated components, including external service coordination, ISP coordination, allied network rollout, storage, security, backup, and facility integration

The bidder shall submit a High-Level Design (HLD) with the bid and a detailed Low-Level Design (LLD) after contract award as mandatory design deliverables. The HLD and LLD shall incorporate the design and integration requirements of the ERP and software development teams and shall clearly define the data center architecture, ERP application layer, database layer, backup layer, virtualization and management layer, DMZ, security zones, network segmentation, redundancy, high availability, disaster recovery connectivity, and all inter-component communication and integration flows.

This hardware and infrastructure procurement is to support ERP, BI, and custom digital systems of PQA, and all proposed components must be aligned with production workload, continuity requirements, future expansion objectives, logical network segmentation for ERP, database, backup, management, DMZ, monitoring, and allied network zones, along with redundancy philosophy and failover logic, to strengthen design clarity and reduce ambiguity at implementation stage

8.6. Dedicated Vehicles For On-site IT Deployment, Support and maintenance

Due to the extensive geographic spread and operational complexity of the facilities managed by Port Qasim Authority, the execution of IT hardware deployment, configuration and ongoing support requires reliable on-site transportation. The port's multiple terminals, security zones, administrative buildings and industrial areas require frequent movement of technical personnel, tools and sensitive IT equipment.

To ensure timely installation, quick response to technical issues and uninterrupted maintenance across all operational locations, the vendor shall provide dedicated vehicles for the project. These vehicles shall enable efficient mobility, reduce downtime and ensure compliance with service level requirements within the high security, 24 hours and 7 days operating environment of the port.

The dedicated vehicles shall be new, unused and preferably latest model at the time of delivery, and shall remain available throughout the project execution, installation, commissioning, warranty and support period, as required by PQA. The vehicles shall be maintained in good working condition, properly registered, insured and fit for use within PQA operational areas. The vendor shall bear the fuel cost, maintenance, insurance, taxes, permits and all running expenses during the project, warranty and support period, and the same shall be included in the quoted price. Fuel shall be managed by the vendor through its own arrangement or through fuel card, as deemed appropriate by the vendor. No separate fuel, loyalty card, POL, running cost or reimbursement



claim shall be admissible to PQA during the project, warranty or support period. Upon completion of the project and expiry/completion of the warranty and support period, the ownership of the dedicated vehicles shall be transferred to Port Qasim Authority without any additional cost, claim or liability to PQA. The vendor shall ensure transfer of registration, original documents and all related ownership papers in favour of PQA, free from any lien, lease, bank charge, encumbrance or third-party claim.

MINIMUM VEHICLE SPECIFICATIONS

S. No.	Vehicle Category	General Specification	Seating Capacity	Purpose
1	Small Vehicle	Small fuel efficient vehicle with petrol engine, automatic or auto gear transmission, suitable for routine movement within PQA operational areas.	Minimum 4 persons	Routine movement of technical staff, tools and small IT equipment.
2	Compact Vehicle	Compact petrol vehicle with automatic transmission, suitable boot space and adequate ground clearance for movement between offices, terminals and field locations.	Minimum 5 persons	Movement of support staff, equipment and material across PQA locations.
3	Sedan Vehicle	Sedan or equivalent petrol vehicle with automatic transmission, larger boot capacity, comfortable seating and suitable for longer operational movement.	Minimum 5 persons	Movement of project team, senior technical staff, sensitive equipment and site coordination.

9. ANNEXURES, FORMS AND LEGAL DOCUMENTATION

9.1. Annexure A: Technical Proposal Submission Checklist

S. No.	Document	Attached Yes or No	Page Reference
1	Cover Letter and Bid Form		
2	EPADS registration proof		
3	SECP or firm registration certificate		
4	NTN, GST, SRB and ATL proof		
5	Bid security in prescribed form		
6	Audited financial statements for latest three years		
7	No blacklisting declaration		
8	OEM Manufacturer Authorization Forms		
9	Technical compliance matrix		
10	BoQ and datasheets		
11	Project experience evidence		
12	Project team CVs and certificates		
13	Implementation plan and support plan		
14	Financial proposal in separate sealed envelope		



9.2. Annexure B: Cover Letter Format (To be printed on company letterhead & signed by an authorized person)

To:

Project Director

Port Qasim Authority (PQA)

[Insert Address]

Subject: Submission of Proposal for [Project Name]

Dear Sir,

- a) Having examined the Request for Proposal (RFP) document, along with the provided appendices, we, the undersigned, in conformity with the stated requirements, offer to provide the requested ERP services under the terms and conditions specified in the contract.
- b) The information provided in this bid is true and correct, and no material fact has been concealed.
- c) We undertake that, if awarded the contract, we shall commence services immediately upon the receipt of notification of award, ensuring timely execution as per the agreed schedule.
- d) We agree to abide by this proposal for a period of ____ days from the date of bid submission, and it shall remain binding upon us during this period.
- e) We acknowledge and accept that Port Qasim Authority (PQA) reserves the right to accept or reject any bid without providing justification.
- f) We certify that our company has not been blacklisted by any government entity and has not engaged in any fraudulent, collusive, or coercive practices in bidding.
- g) This proposal shall constitute a binding contract until the formal contract agreement is executed.
- h) We have reviewed the PQA ERP RFP document and agree to comply with all conditions, deliverables, and obligations therein.
- i) We shall bear full responsibility for any misrepresentation or fraudulent documentation submitted in the bidding process.
- j) If awarded the contract, we shall execute the services with due diligence and in accordance with best industry practices.

Sincerely,

[Authorized Signature]

[Name & Designation]

[Company Name]

[Official Address]

[Company Seal]

9.3. Annexure C: Power of Attorney Format

(To be printed on legal stamp paper as per prevailing laws)

POWER OF ATTORNEY

Know all men by these presents, we [Company Name & Address], do hereby appoint and authorize Mr./Ms. [Full Name], presently employed with us as [Designation], to act on our behalf and perform all necessary acts, deeds, and submissions related to our bid for [Project Name], in response to the RFP issued by Port Qasim Authority (PQA).

This includes but is not limited to:



- Signing and submitting bid documents
- Representing us in all interactions and meetings with PQA
- Providing additional information and clarifications
- Executing agreements, affidavits, and declarations as required

We hereby ratify and confirm all lawful actions undertaken by our authorized representative under this Power of Attorney.

Signed this ____ day of [Month, Year] at [Location].

For & on behalf of [Company Name]

[Authorized Signatory]

[Designation]

[Company Seal]

Accepted By:

[Authorized Representative]

[Name & Designation]

[Signature]

9.4. Annexure D: Undertaking by the Bidder

- The bidder has reviewed the full RFP and accepts all terms, conditions, specifications, deliverables and obligations.
- The bidder shall execute the contract with due diligence and best industry practices.
- The bidder shall not submit false, misleading, forged or concealed information.
- The bidder shall comply with applicable laws, rules, tax requirements, security requirements and PQA instructions.
- The bidder accepts that violation may result in rejection, forfeiture, blacklisting or other action as per law and contract.

Authorized Signature, Name, Designation, Company Seal, Date

9.5. Annexure E: Integrity Pact

(To be submitted on legal stamp paper)

We, [Name of the Bidder / Supplier / Service Provider], hereby solemnly affirm and declare under oath that:

1. No Undue Influence or Bribery:
 - Neither we nor any of our representatives, employees, agents, or affiliates have offered, paid, promised, or agreed to pay any form of bribe, commission, kickback, or gratification—directly or indirectly—to any officer, employee, or representative of Port Qasim Authority (PQA) for any undue advantage in securing, influencing, or facilitating the award of this contract.
 - We have not engaged in collusion or coercive practices to manipulate the bidding process, contract execution, or evaluation procedures.
2. Representation Through Authorized Agent:
 - In case we are participating through an authorized agent/representative, the individual named [Mr./Ms. Full Name] is fully authorized to submit this bid on our behalf.
 - Such authorization is legally binding and verifiable under company law and public procurement regulations.
3. Full Disclosure & Transparency:
 - We certify that we have made full disclosure of all agreements, financial arrangements, and understandings related to this contract, including any third-party relationships, partnerships, or subcontracting commitments.
 - We shall not take any action, enter into any undisclosed agreements, or conduct any business practices that circumvent, violate, or undermine the spirit of this declaration.



4. Liability for False Declaration & Corrupt Practices:
 - We accept full responsibility and strict legal liability for any false declaration, non-disclosure, misrepresentation, or omission in connection with this Integrity Pact.
 - If found guilty of any corrupt or unethical business practices, including fraud, collusion, bribery, or misrepresentation:
 - a) Our bid may be disqualified, and any contract awarded to us shall be immediately terminated.
 - b) We shall indemnify PQA for any financial losses, damages, or reputational harm suffered due to our actions.
 - c) We shall pay a penalty equivalent to ten (10) times the sum of any bribe, gratification, or unlawful commission paid.
5. Right of PQA to Void the Contract:

We acknowledge that if any breach of this Integrity Pact is detected at any stage of contract execution, PQA shall have the right to:

 - a) Immediately void, terminate, or cancel the contract without any financial liability towards us.
 - b) Blacklist our company from future procurements for a period determined by the competent authority.
 - c) Report our violation to relevant regulatory and enforcement agencies for further legal action.

This declaration is executed under free will, without any coercion or undue influence, in full knowledge of its legal implications.

Signed & Sealed By:

[Authorized Representative]

[Name & Designation]

[Company Name][Company Seal]

Date: _____

Witness:

1. [Name] [CNIC/ID Number]

2. [Name] [CNIC/ID Number]

Sworn & Subscribed Before Me This _____ Day of _____ 20__

Notary Public

9.6. Annexure F: Bid Security Form

Bid security shall be submitted in the amount, form, validity and wording required in the NIT and RFP. It must be issued by an acceptable scheduled bank in Pakistan in favor of Port Qasim Authority and enclosed in the technical proposal.

9.7. Annexure G: Performance Security Form

The successful bidder shall submit performance security equal to 10 percent of the contract value before signing of contract. The format shall be acceptable to PQA and shall remain valid until completion of obligations as specified in the contract.

9.8. Annexure H: Manufacturer Authorization and Support Confirmation

OEM Item Category	Required Confirmation
Servers and Compute	Authorization to quote, supply, install and support the proposed equipment for PQA.
Storage and SAN	Authorization, warranty, replication and support confirmation.
Firewall and Security	Authorization, license, subscription and support confirmation.
Network Switches and NMS	Authorization, warranty and support confirmation.
Backup and Tape Library	Authorization, license, media, support and compatibility confirmation.
Data center Passive Infrastructure	Authorized installation and warranty/support confirmation.

9.9. Annexure I: Technical Compliance Matrix Format

RFP Ref.	Requirement	Bidder Response	Make/Model/Version	Complied Yes or No	Page Ref.
Example	Minimum requirement from RFP	Bidder to provide exact offered specification	Offered product details		

9.10. Annexure J: Financial Proposal Format and Price Schedules

Financial proposal shall be submitted in a separate sealed envelope and shall be aligned with the scope, BoQ, requirements and payment terms. Prices shall be complete, inclusive of taxes, duties, levies, licenses, support, installation, configuration, testing, commissioning, documentation, training and all accessories required for full working solution.

9.10.1. Annexure J1: Price Schedule

S. No.	Product Description	Qty	Unit Price	Tax Amount	Total Price
1	Servers Stack				
	Servers	10			
2	Storage Stack				
	Unified Storage	2			
	San Switches	2			
3	Software Stack				
	Virtualization Manager	1			
	OS Licenses for Virtual Machines	26			
	Backup Solution (VM Instances Licenses (10 VMS or higher) and Licenses for 25TB Unstructured Data Backup)				
	NMS	1			
4	TAPE Library				
	TAPE Library for PR Site	1			
	TAPE Library for Cold Site	1			
5	Networking Stack				
	NG Firewall	2			
	Layer – 3 Modular Switches	2			
4	PR Data center				
	Number of Smart Racks	5			
	Number of UPS	2			
	Number of Cooling Units	2			
	Data center passive Infrastructure (Complete Job)	1			
	Genset	1			
5	Fiber Network				

S. No.	Product Description	Qty	Unit Price	Tax Amount	Total Price
	Deployment of Optical Fiber Network	1			
6	Trainings				
	O&M Training for all elements provided against this bid including training required as per BoQ	10			
7	OEM International Training	4			
8	Enterprise LAN Switches				
	Access Switches	55			
	Aggregation Switches	2			
	6U Racks	15			
9	Vehicles	3			

9.10.2. Annexure J2: Payment Milestones

1	Mobilization Advance (on the request of Supplier and upon submission of Secure Advance bank Guarantee of equal amount issued from the AA rated bank.	10%
2	Completion/Approval of site survey, layouts, detailed design, etc.	05%
3	Onsite Delivery of hardware & relevant software at PQA.	20%
4	Completion of Civil Works for development of data center duly verified by PQA ERP Implementation Committee.	10%
5	Installation of Hardware and Software.	20%
6	Testing and acceptance of installed HW/SW Commissioning of whole infrastructure.	15%
7	Removal and remedial measures as per third party validation final reports.	10%
8	Project Sign-off & Go Live	10%

9.11. Annexure K: Technical Proposal Format

- Executive summary of proposed solution.
- Statement of participation.
- Mandatory eligibility documents with page index.
- Detailed technical compliance matrix.
- Bill of Material with make, model, version, quantity, license and support details.
- High level and low-level design.
- Project implementation plan.
- Testing and acceptance plan.
- Training and knowledge transfer plan.
- Warranty and support plan.
- Risk and assumptions register.
- Signed undertaking and compliance statement.



9.12. Annexure L: Contract Agreement Outline

- Contract documents and order of precedence.
- Scope of work and deliverables.
- Contract price and payment schedule.
- Delivery, installation, testing and acceptance.
- Performance security and warranties.
- Service levels, support and penalties.
- Confidentiality and information security.
- Tax and statutory compliance.
- Force majeure.
- Termination and default.
- Dispute resolution and jurisdiction.
- Integrity pact and anti-corruption obligations.

9.13. Annexure M: Acceptance Certificate Format

Item	Details
Contract Reference	
Equipment or Service Accepted	
Inspection Date	
Testing Completed	Yes or No
Documentation Received	Yes or No
Training Completed	Yes or No
Pending Observations	
Recommended for Acceptance	Yes or No
PQA Representative Signature	
Bidder Representative Signature	

9.14. Annexure N: CV Format for Proposed Team

Field	Details to be Provided
Name of Resource	
Proposed Role	
Qualification	
Professional Certifications	
Total Experience	
Relevant Experience	
Employment Status with Bidder	
Projects handled with client names	
Availability for PQA project	



Field	Details to be Provided
Signature of Resource or Authorized HR	

9.15. Annexure O: Similar Project Experience Format

S. No.	Client	Project Title	Scope Summary	Contract Value	Start and Completion Date	Document Proof Page Ref.

9.16. Annexure P: Deviation and Clarification Statement

Any deviation from the RFP must be stated in the following format. If no deviation is listed, the bidder shall be deemed fully compliant with the RFP.

RFP Reference	Requirement	Proposed Deviation	Reason	Impact on Scope, Cost or Risk

9.17. Annexure Q: Delivery, Deployment and Commissioning Schedule

Milestone	Deliverable	Planned Date	Responsible Party	Acceptance Evidence
Mobilization	Kickoff, project plan, team deployment			Approved project plan
Design	HLD, LLD, BoM confirmation, site plan			Approved design documents
Supply	Delivery of equipment and licenses			Delivery challans, inspection report
Installation	Rack, power, network, configuration			Installation report
Testing	FAT/SAT, redundancy, backup/restore, security checks			Test reports
Training	Admin and user training			Attendance and material
Handover	As built documents, support matrix, acceptance			Acceptance certificate

9.18. Annexure R: SLA and Support Matrix Format

Severity	Definition	Response Time	Resolution or Workaround Target	Escalation
Critical	Complete outage or major production impact			
High	Degraded service affecting major function			
Medium	Limited issue with workaround available			
Low	Query, minor defect or routine support			



9.19. Annexure S: Warranty, License and Subscription Inventory

Item Category	Make and Model	Serial or License Number	Warranty Start	Warranty End	Support Level	OEM Case Portal Details

9.20. Annexure T: Documentation Deliverables Checklist

S. No.	Document	Required Format	Submitted Yes or No	Remarks
1	High Level Design	Hard and editable soft copy		
2	Low Level Design	Hard and editable soft copy		
3	Rack Layout and Cable Schedule	Hard and editable soft copy		
4	IP Plan and VLAN Plan	Hard and editable soft copy		
5	As Built Drawings	Hard and editable soft copy		
6	Configuration Backup	Editable soft copy		
7	Admin Manuals	Hard and editable soft copy		
8	Training Material	Hard and editable soft copy		
9	Warranty and License Records	Hard and editable soft copy		

9.21. Annexure U: Site Survey Certificate

We certify that we have inspected the relevant PQA site or have made our own arrangements to understand all site conditions. We accept responsibility for all space, power, cooling, access, cabling, installation and integration requirements included in our bid.

Authorized Signature, Name, Designation, Company Seal, Date

9.22. Annexure V: Bidder Questions and Clarification Format

S. No.	RFP Section	Clause Text	Clarification Requested	PQA Response