





Government of Pakistan
PAKISTAN TELECOMMUNICATION AUTHORITY
www.pta.gov.pk

INVITATION TO BID

CONSOLIDATION AND UPGRADATION OF PTA EXISTING SERVER ROOMS/DATA CENTER, ON TURNKEY BASIS.

Pakistan Telecom Authority, (a Federal Telecommunication regulator in Pakistan) invites sealed bids from the original manufacturers / authorized distributors / suppliers/resellers Contractors etc. registered with Income Tax and Sales Tax Departments and who are on Active Taxpayers List of the Federal Board of Revenue and having three years of experience for the Data Center facility.

Description Of Consolidation And Upgradation Of PTA Existing Server Rooms/Data Center (Turnkey Solution)

Supply, Installation and Commissioning of Fully redundant (N+1) Data Center as per International Standards. All International Standards described in Tender Document shall also be followed i.e. TIA/EIA, ITU, ISO etc. with 3 Years Hardware Warranty, 3 years Maintenance and Support / SLA (during warranty period) and with 3 years Software support (Perpetual Software Licenses).

Bidding documents, containing detailed terms and conditions, method of procurement, procedure for submission of bids, bid security, bid validity, opening of bid, evaluation criteria, clarification / rejection of bids, performance guarantee etc. are available at the office of the undersigned.

A Pre-bid meeting will be held at PTA HOs. Islamabad at 11:00 AM on **3rd January, 2022** for the interested bidders. Price of the bidding documents is Rs. 500/- (in shape of pay order / bank draft, in favor of PTA). or Bidding documents can be downloaded from (www.pta.gov.pk) free of cost.

The bids, prepared in accordance with the instructions in the bidding documents, must reach at PTA Headquarters F-5/1, Islamabad by **7th January, 2022** at 10:30 AM. Technical Bids will be opened on the same day at 11:00 AM. This advertisement is also available on PPRA website www.ppra.org.pk.

Raja Inam UI Haque Kyani, Director (Administration)
Pakistan Telecom Authority, HQs, Sector F-5/1, Islamabad.
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SAY NO TO CORRUPTION

BIDDING DOCUMENTS

Consolidation and Upgradation of existing Server Rooms / data centers

Scope of Work

Pakistan Telecommunication Authority (PTA), (hereinafter referred to as “the Client”) invites bids **from companies** (hereinafter referred to as “the Bidder”) for the award of contract for Consolidation and Upgradation of existing Server Rooms / data centers. The proposal should cover new retrofit covering power, cooling, Data Center Infrastructure Monitoring (DCIM) and entire active and passive infrastructure deployment to achieve smooth and uninterrupted 24 x 7 data center operations. The proposal should cover all aspects for eliminating all single point of failures in power and cooling, with best possible and maximum protection (hereinafter referred to as “the Goods”) and for installation, configuration and after-sale support of said Goods (hereinafter referred to as “the Services”).

The Data Center equipment (Hardware) and its DCIM Software will be delivered and deployed at PTA HQ Islamabad.

Detailed specifications of above-mentioned items are provided at Annex-C of this document. Invitation to bid issued on PTA’s/PPRA’s websites is an integral part of the bidding documents.

The bidder shall bear all costs / expenses associated with the preparation and submission of the bid(s) and the Client shall in no case be responsible / liable for those costs / expenses.

The bids, prepared in accordance with the instructions in the bidding documents, must reach at PTA HQs, F-5/1, Islamabad on or before 7th January 2022 at 10:30 AM. Technical bids will only be opened the same day at 11:00AM. This advertisement is also available on PPRA website at www.ppra.org.pk .

Raja Inam Ul Haque Kyani (Director Administration)
Pakistan Telecommunication Authority (PTA), Headquarters
F-5/1, Islamabad.

Key Terms and Conditions for Data Center Facility

1. GENERAL INFORMATION

- a. Bidding documents duly completed in all respect will be received on or before 7th January 2022 up to 10:30 A.M. The submission and evaluation of bids will be carried out under Rule 36(b) of PP Rules 2004 i.e; “Single Stage Two Envelop Procedure”. Technical bids will be opened by Technical Evaluation Committee, at PTA HQs on the same day at 11:00 A.M, in presence of bidder’s representative, who may choose to attend.
- b. **Bids should be addressed to Director (Admin) Pakistan Telecommunication Authority (PTA), Headquarters F-5/1, Islamabad.**
- c. A bidder will be selected after an open, competitive and transparent bidding process in accordance with Public Procurement Regulatory Authority (PPRA) Ordinance, 2002, Rules, Regulations and Guidelines issued thereunder.
- d. **Bid will comprise of single package containing two separate sealed envelopes. One envelop will contain the “Technical Proposal” and the second envelop will contain the “Financial Proposal”.** After technical evaluation, technically qualified bidders will be informed the date, time and venue for the opening of financial bids. Financial bids of technically disqualified bidders will be returned un-opened.
- e. **Bidder shall quote for turnkey solution for Data Center (all the equipment as per mentioned specifications in Bill of Quantity (BoQ) and compliance to the design requirements)**
- f. **Selected bidder shall be responsible to provide fully functional facility as per agreed contract on turnkey solution basis.**
- g. **The Bidders name must be on Active Taxpayers List (ATL) of FBR for Income tax and sales tax (or any provincial revenue authority for sales tax) as on the closing date of bid submission and onward throughout the period of contract in compliance of the Eligible Bidders (Tax Compliance) Regulations, 2015.**
- h. The Bidder shall provide an undertaking that the Bidder itself or its partner (in case of partner firm) have not been declared black listed by any Government/Semi-Government institutions.
- i. PTA shall not entertain incomplete or partial bids.
- j. Proposals shall be submitted in English language
- k. All prices mentioned in the Financial Proposal shall be in Pak Rupees (PKR).
- l. Each page of the Technical and Financial Proposal shall be signed by an authorized representative of the Bidder. The representative’s authorization shall be confirmed on the company letter head.
- m. **Bidder will be responsible to provide the complete solution for Data Center as desired in these bidding documents or otherwise recommended internationally. All items/parts of the proposed / recommended design should be mentioned in quoted BoQ and financials.**
- n. **Note that provided BoQ and specifications are minimum requirements that must be compliant while complete solution remains responsibility of bidder.**

- o. **Joint ventures for this work are not allowed and PTA shall communicate/execute the work with successful bidder only.**
- p. **The Successful bidder will be responsible for getting all the civil / electric work done as per international data center specifications / standards duly certified by PEC registered consultant / firm.**
- q. **Annex-A, Annex-B, Annex-C and Annex-D are integral part of technical and financial proposals, which shall be read/filled carefully, signed and stamped by the bidders. Further, details of the Annexures are mentioned below: -**
 - i. **Annex-A** consists of mandatory requirements for bidder(s)
 - ii. **Annex-B** consists of technical capabilities of bidder(s), which has total 100 marks, **whereas minimum qualifying marks are 60%**
 - iii. **Annex-C** consists of Scope of Work for technical evaluation of the product and **bidder(s) may quote equal or higher specs, however, quoting lower specs shall disqualify the bidder.**
 - iv. **Annex-D** comprises required specifications (BoQ) for preparation financial bid, to be followed by all bidders, the bidder should quote their rates clearly for each item, in the financial proposal (according to format Annex-E) in figures without any ambiguity.
 - v. **Annex-E** is format for Price Schedules.
 - vi. **Annex-F** is comprised of Agreement/Contract.
 - vii. **Annex-G** is comprised of Non-Disclosure Agreement.
- r. **Clarification of the Bidding Documents**

The interested bidders can seek further information or clarification regarding the Bidding Document by sending email at zeeshankhan@pta.gov.pk on or before 31st December 2021. The clarification and its replies will be shared with all prospective bidders on PTA's Website and will also be communicated at **pre-bid meeting on 3rd January 2022** from 11:00 to 12:00 hours at PTA Auditorium PTA HQs. Interested bidders shall get registered for pre-bid meeting before due date.

Bidders should note that during the period from the receipt of the bid and until further notice from the Contact given herein in this document, all queries should be communicated to following Contact in writing (e.g. e-mail & letter) only.

Contact

Zeeshan Ahmad Khan
IT Officer (ICT), PTA.
zeeshankhan@pta.gov.pk

2. BIDDER'S INFORMATION

Bidders shall submit following documents /information with relevant authorities;

In case of Company	1. Incorporation certificate from Securities and Exchange Commission of Pakistan (SECP). 2. Valid NTN and STRN Certificates
Address	_____ _____
Telephone No	
Fax No	
Primary contact person Name, phone, email:	

3. EVALUATION CRITERIA

- a. Technical bids shall be opened and evaluated by Technical Evaluation Committee in view of **Annex-A (mandatory requirement)**, **Annex-B (Bidder's technical Capability)** and **Annex-C (Scope of Work / Technical Specification)**. Complete Proposals, as per Annex-A shall be evaluated and thereafter subject to obtaining at least **60% in Annex-B** and **fully compliant with Annex-C**, shall be eligible for the participation in financial bid opening.
- b. Financial bids shall be opened and evaluated by Procurement Committee-I of PTA i.e. PC-I or as the case may be **on the basis of Annex-D (BoQ)**
- c. Contract will be awarded to technically qualified and the most advantageous bidder.
- d. If two or more bidders quote equal lowest price in financial proposals, then the contract will be awarded to the one **having higher technical marks** in technical evaluation.
- e. In case of refusal to sign contract by successful bidder the client may award the contract to second most advantageous bidder subject to conditions/ guidelines provided in PPRA letter dated 15-02-2021 having caption "General Clarification Regarding Award of Contract to Second Most Advantageous Bidder" **In such case bid security of the successful bidder (i.e. escabee) will be forfeited by PTA.**
- f. The bidder should quote its rates clearly against each item including all applicable taxes, duties etc. However, the total aggregate amount (it should be same in both figures and words) of bid will be considered for evaluation/competition.
- g. Technically qualified/successful bidder(s) shall be notified in advance as per Rule 35 of PP Rules 2004 and invited for opening of the Financial Proposal(s). The Financial Proposals will be opened at the time and venue indicated by the Client (i.e. PTA) in the presence of the Bidders or their authorized representatives if they choose to attend. However, the financial proposals/bids of the technically disqualified bidders will be returned unopened to the bidders before opening and evaluation of the remaining financial bids.

- h. Financial Proposal evaluation will be conducted under the existing Public Procurement Rules. The Price will include all applicable duties/ taxes etc.
- i. In cases of discrepancy between the cost/price quoted in Words and in Figures of a bid, actual quoted cost of all items will be calculated and aggregated by the PTA's Purchase Committee - I (PC-I) and will be taken as the total bid price inclusive of all applicable taxes. This evaluated price will be shared with all bidders.
 - ii. In cases of discrepancy between unit price and total price, the former will prevail.
 - iii. If a bidder does not accept the corrected amount of bid, as explained above, its bid will be rejected together with forfeiture of its Bid Security.
 - iv. In evaluation of the bid of an imported item, the price will be determined and considered inclusive of the customs and other import duties etc.
 - v. The Client will not be responsible for any erroneous calculation of taxes and all differences arising out as above shall be fully borne by the Successful Bidder. However, any subsequent changes in rates or structure of applicable taxes by the Government of Pakistan at any time during execution/evaluation period shall be followed.
 - vi. Bidder should quote its rates clearly in the financial proposal both in figures and words against each item separately in financial proposal Annex-D.
 - vii. Definition of the terms set forth below for the purposes of these bidding documents, shall be as follows:

“corrupt and fraudulent practices” includes the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official or the supplier or contractor in the procurement process or in contract execution to the detriment of the procuring agencies; or misrepresentation of facts in order to influence a procurement process or the execution of a contract, collusive practices among bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the procuring agencies of the benefits of free and open competition and any request for, or solicitation of anything of value by any public official in the course of the exercise of his duty”.

4. BID SECURITY

- a. **Bid security of PKR 2.5 million shall be in the shape of pay order / demand draft in favor of Pakistan Telecommunication Authority, Headquarters, Sector F-5/1, Islamabad from any schedule bank of Pakistan. Bid security shall only be attached with the TECHNICAL PROPOSAL otherwise proposal will not be accepted.**
- b. **Bids without required amount of Bid security will be rejected forthwith without any right of appeal.**
- c. Bid security of unsuccessful bidders will be returned after award of supply order/work order to successful bidder.
- d. **Performance Guarantee (PG) will be equal to 10% of the contract amount. The performance guarantee will be submitted by successful bidder prior to signing of the contract in the shape of bank guarantee in favor of Pakistan Telecommunication Authority. Insurance guarantee shall not be accepted.**
- e. **Bid security of PKR 2.5 million of the successful bidder shall be valid for entire warranty period and shall be considered/ adjusted against the Performance Guarantee (PG). Remaining**

amount of Performance Guarantee will be in the form of irrevocable bank guarantee (encashable when required). The PG shall be deposited with PTA at time of signing of contract and shall be released after successful completion of warranty period and on issuance of the NOC by PTA ICT directorate.

- f. Bid security shall be forfeited if successful bidder is unable to sign the Contract within twenty-one (21) calendar days after issuance of Letter of Intent (LOI).
- g. In case of cancellation of Supply Order due to default of the successful bidder, the Bid security shall be forfeited in favor of PTA.
- h. If selected bidder/ contractor is not able to commission the systems as per industrial best practices or have provided the under rated or under quality (substandard) equipment, Performance Guarantee will be forfeited and supply order will be cancelled, further to add the following conditions shall also lead to forfeiture of Performance Guarantee:
 - i. If the Contractor commits a default under the Contract;
 - ii. If the Contractor fails to fulfill the obligations under the Contract;
 - iii. If the Contractor violates any of the terms and conditions of the Contract.

5. PRICES

- a. The bidder should quote its rates clearly in Pak Rupees inclusive of all applicable taxes, duties etc. in the financial proposal and amount in both figures and words as per format attached at Annex-D
- b. **The rates quoted shall remain valid for 100 days from the date of opening of Technical Proposal.**
- c. PTA will not bear transportation/carriage charges or any other charges and vendor would be bound to make all the deliveries at PTA HQs, F-5/1, Islamabad.
- d. **No escalation claim in the contract price shall be entertained during the contract period**

6. PAYMENT PROCEDURE

- a. No advance payment or secure advance shall be made against the supply of equipment / software mentioned in the bidding document.
- b. Payment shall be made on provision of invoice/bill as per the schedule mentioned in 6(d).
- c. Payment shall be subjected to withholding of applicable taxes as per prevailing/current government rules and after successful completion of milestones mentioned in 6(d) and subject to recommendations and NOC from Director ICT and Technical Supervisory Committee.
- d. Deliverables & Payment Milestone for Data Centre Facility is mentioned as under:

Number of days mentioned in the activities shall be considered as calendar days.

Activity	Payment Schedule	Delivery dead line
<u>Activity 1:</u> <ul style="list-style-type: none"> <input type="checkbox"/> Site survey, design & drawings <input type="checkbox"/> Task Management Document/ Other documents <input type="checkbox"/> Training on Data Center Deployment <input type="checkbox"/> Completion of Civil Work including Cooling system, power and furniture. 	35 % of the quoted bid value (Annex-D)	T = T0 + 120 days
<u>Activity 2:</u> <ul style="list-style-type: none"> <input type="checkbox"/> Delivery of DATA CENTER Equipment (DATA CENTER room, UPS rooms, MMR-1, MMR-2) <input type="checkbox"/> Installation and Configuration Commissioning of DATA CENTER Equipment <input type="checkbox"/> Training on DATA CENTER Operations <input type="checkbox"/> Issuance of Provisional Acceptance Certificate. <input type="checkbox"/> Provision of Network Distribution <input type="checkbox"/> GO Live <input type="checkbox"/> Submission of required documents as per RFP 	45 % of the quoted bid value (Annex-D)	T + 45 days (165 - days)
<u>Activity 3:</u> <ul style="list-style-type: none"> <input type="checkbox"/> Stress testing/ Final performance testing <input type="checkbox"/> Issuance of FAC 	20 % of the quoted bid value (Annex-D)	T + 105 days (225 - days)
<u>Activity 4:</u> Release of Performance guarantee	Performance Guarantee which is 10% of the contract price will be released after expiry of the contract warranty subject to NoC	

T0=Day of Signing Contract

Note1: Trainings may be rescheduled on mutual consent with contractor.

Note2: The 3 years' warranty of the delivered work and maintenance & support services period will start after issuance of Final Acceptance Certificate (FAC) by the head of Supervisory Committee on internal endorsement of ICT Directorate.

7. EQUIPMENT

- a. All the equipment required in this bidding document should be new, not used or refurbished or which have completed their shelf life or close to complete such a time. The components of the equipment should be assembled and verifiable by the manufacturer.
- b. Data Center equipment should be arranged through the legal channels by clearing all customs/duties/taxes (if any) levied by GoP.
- c. **Verification of originality from principle manufacturer will be completed through email or in written letters or through principle manufacturer's website.**
- d. **Configuration, installation, upgradation where technically required and maintenance for 3 years after issuance of FAC will be the responsibility of the contractor without additional cost.**

- e. **All DATA CENTER Equipment and its rating will be checked as per clause 7c.** Both will be asked to replace the under rated equipment, failing to replace the under rated equipment **within 4 weeks** will lead to the termination of the contract and the Hardware equipment will become the property of PTA, and Performance Guarantee will be forfeited in favor of PTA.

8. DELIVERY PERIOD

- a. Delivery & configuration/integration of all items shall be made as per schedule defined in 6(d) after issuance of supply order for Data Center Facility.
- b. Successful bidder will be responsible for the safe supply of equipment at PTA HQs, Islamabad with the provision of warranty / support as mentioned in the bidding agreement.

9. AUTHORIZED DEALER/PARTNER

Bidder shall be an authorized dealer/partner of the quoted brands for the installation, commissioning and testing as well as service support during the warranty period. Bidder must provide Certificate of Active Dealership / Partnership from principle manufacturers. Bidders should also provide Manufacturer's Authorization letter in the favor of PTA with respect to this Work.

10. WARRANTY

- a. **Contractor will be fully responsible for the provision of free at least 3 Years on-site warranty and support (24x7) with labor and parts (Hardware and Software) for all items as part of the contract after issuance of FAC.**
- b. Configuration, installation and maintenance for three years will be the responsibility of the successful bidder. The warranty period will be considered from the date of issuance of FAC.

11. PTA'S RIGHTS

PTA may reject all bids or proposals at any time prior to the acceptance of a bid or proposal. PTA shall, upon request, communicate to any bidder who submitted a bid or proposal, the grounds for its rejection of all bids or proposals, but is not required to justify those grounds.

12. PENALTY

- a. **If the successful bidder/ contractor fails to complete the work or supply the equipment within the given timelines as per execution schedule at 6(d), a penalty for each day @ of 0.1 % of contract value shall be charged maximum up to 10% of the contract value . The penalty amount will be deducted from the Performance Guarantee or payment(s) owe to the contractor whichever is applicable/ available.**
- b. **If the penalty amount reaches to 10% of the contract value and work is still not completed, contract will be either terminated and blacklisting procedure (if required) against the contractor will be initiated or a special extension in the work would be granted with the approval of the Authority subject to recoupment of Performance Guarantee (in full), deducted as per clause 11 (a) of this document, in the first instance by the contractor. In such case, penalty @ 0.2% per day of the contract value shall be charged maximum up to 10% of the contract value and after that contract will be terminated and blacklisting procedure will be initiated as per Rule 19 of PP Rules, 2004. The penalty amount will be deducted from the**

Performance Guarantee or payment(s) owe to the contractor whichever is applicable/ available.

- c. Delivery of hardware in case of events or such circumstances which are beyond the reasonable control of a party and prevents or cause to prevent a Party from complying with any of its obligations shall be deemed and considered as Force Majeure, this period will be exempted from any penalty and will be treated accordingly.
- d. **In case of any Force Majeure event, bidder will inform within 7 days in writing to PTA. PTA management will finally decide acceptance of reasons for force majeure or otherwise.**
- e. **A penalty of 0.1% of the last payment per day will be charged if the faulty hardware or software replacement time exceeds the time mentioned in the certificate provided as per Annex-B during the warranty period.**
- f. **In case of failure to perform as per agreed terms during the Warranty and support services period, Client shall be authorized to impose penalty @ Rs. 2000/- per hour, which will be deducted from the Final payment (Activity 4). The contractor will be informed about imposition of such penalty on monthly basis.**
- g. **In case of failure to perform as per PTA requirements during the maintenance and support services period, PTA reserves the right to cancel the contract and forfeit activity 4th payment in favor of PTA.**

13. DISQUALIFICATIONS

Proposals will be liable to be rejected if any deviation is found from the instructions as laid down in the bid document i.e.

- a. Technical bid is submitted without the required Bid Security.
- b. Bids are received after specified date and time.
- c. Specification and other requirements are not properly adhered to or different from those given in the bidding documents.
- d. GST and NTN certificates are not attached.
- e. Contractor is not in Active Taxpayer List (ATL) of FBR for income tax & sales tax/ any provincial revenue authority for sales tax only.
- f. Relevant experience is less than Three years.
- g. Sales and support Service Centers not in Islamabad/Rawalpindi.
- h. Contractor is not an authorized dealer/partner and warranty provider of the principle manufacturer for Pakistan as per section 9 of this document.
- i. Any inferior product / spec / requirement that mentioned at Annex-C.
- j. Non-quoting International Branded items for any of the above hardware item will lead to disqualification.
- k. Non-production of Current principle manufacturer certificates with authorization letter.

- l. Ex-Stock Equipment is not allowed; new verifiable order shall be placed for the all equipment.
- m. Quoting under rated equipment i.e. cables etc.
- n. A certificate is not provided by the bidder that “required Civil and electrical work involved” shall be “get certified/ endorsed by a third party firm/consultant registered with PEC

14. PRE-PROPOSAL BIDDER'S QUERIES

The bidder requiring any clarification(s) regarding queries related to bidding documents may notify in writing. The Director ICT on the recommendations of Supervisory **Committee will respond to any request for clarification which are received with-in ten days of the publication** of the advertisement in National Newspapers and on PTA and PPRA Web site. PTA responses to queries will be published at PTA’s Official website (<https://www.pta.gov.pk>) for the information to all prospective bidders (if not already clarified in the bid if deemed necessary for the bidder). PTA reserves the right to request clarifications in support of the bids from any or all bidders to this bidding document and their proposals.

15. AFFIDAVIT

Affidavit on stamp Paper amounting to Rs. 100/-, to the effect that the firm has not been blacklisted by any government/semi government/autonomous body or company, shall be attached with technical proposal. This would also be verified from the website of PPRA as well.

16. RIGHTS RESERVED

Pakistan Telecommunication Authority Islamabad reserves the rights to cancel the bid, accept or reject any bid as per PPRA Rules.

17. REDRESSED OF GRIEVANCES BY THE PROCURING AGENCY

- a. In light of Rule 48 of PP Rules, 2004, PTA has constituted a Grievance Redressal Committee with proper powers and authorizations to address the complaints of bidder(s) that may occur prior to the entry into force of the procurement contract.
- b. Any bidder feeling aggrieved by any act of PTA after the submission of his bid may lodge a written complaint concerning his grievances as per timelines provided in Rule 48 *ibid* .
- c. The committee shall investigate & decide upon the complaint within 15 days of the receipt of the complaint.
- d. Any bidder not satisfied with the decision of the Grievance Redressal Committee may lodge an appeal to the Authority (i.e. PPRA) whereas the decision of the Authority shall be final and binding.

18. CHECKLIST

1.	Bid Security attached with technical bid in shape of bank draft/pay order.	(Yes/No)
2.	Relevant documents for Annex A-C	(Yes/No)
3.	List of such assignments handled with copies of supply order.	(Yes/No)
4.	List of clients with telephone numbers and addresses.	(Yes/No)
5.	List of employees including CVs of technical staff for this task.	(Yes/No)
6.	Affidavit on legal paper for not being black listed.	(Yes/No)
7.	Copies of authorized dealership etc. of the principle manufacturers for Pakistan.	(Yes/No)
8.	Specification and other requirements are met (Compliance)	(Yes/No)
9.	Sales and support Service center at Islamabad/Rawalpindi	(Yes/No)
10	A certificate to be provided by the bidder that “required Civil and electrical work involved” shall be “get certified/ endorsed by a third party firm/consultant registered with PEC	(Yes/No)
11	Proposed Methodology by the bidder for the execution of the work.	(Yes/No)

Mandatory Requirements

S.#.	Requirement/ Document to be attached	Compliance? Yes/ No
1	Bidder has to produce Sales Tax and Income Tax Registration.	
2	Bidder also should be on Active Tax Payer list of income tax and sale tax of FBR/ any provincial revenue authority (for sales tax only).	
3	Bidder has to provide proof of SECP registration or Form-C issued by registrar of firms valid since last 4 years or more with office for Sales and Support Service at Islamabad/Rawalpindi.	
4	Manufacturer Authorization Letter for both supply and after sale services is required for all participating bidders/contractors and certifying that fresh order shall be placed for the equipment and no ex-stock equipment shall be provided for PTA data Centre.	
5	Minimum Three years of relevant local / international experience of the bidder is required. (References to be attached for proof)	
6	Bidder must have datacenter certified resources i.e. (CDCS/CDCP/CTDC/ATD, TIA 942 etc.). Annex-B part 4 referred.	
7	Submission of affidavit on Stamp Paper of Rs. 100 to the effect that the firm has not been black-listed by any Government / Semi Government / Autonomous body or Company.	
8	Bidder has successfully completed at least one (01) task and its corresponding Principle had carried out deployment of at least three (03) assignments of establishment of IT Data Center Facility implementation of similar or larger in size at Pakistan/International (Proof of PO/Contract along with completion certificates thereof & allied documents is mandatory).	
9	All Software Licenses offered should be perpetual i.e. Software functionality shall work after the completion of 3 years support and warranty (Certificate has to be attached). In case any modification / upgradation is required due to technical reasons, will be done by contractor FOC during warranty period.	
10	UPS, Cooling Units, Racks & Cabinets, DCIM and Power Distribution Module etc should be from reputed manufacturer with bidder taking full responsibility of integration.	
11	Certificate must to be provided stating that no part of Hardware and Software has been manufactured / assembled or developed in India and Israel.	
12	All hardware/equipment should be covered with a minimum 5 years end of life and end of support from the date of installation in PTA.	
13	The Successful bidder will be responsible for getting all the civil / electric work done as per international data center specifications / standards duly certified by PEC registered consultant / firm.	

Note: All supporting documents must be attached with technical proposal.
Non-fulfilling any of the above requirement will result into disqualification of bid.
Please attach all Supporting Documents Serial wise

Annex-B Technical Capabilities of Bidder -Data Center Facility

Sr. #	Attributes	Max. Score	Points Earned	Criteria
1	Detail of Offices	10		Firm has sales and services offices at Islamabad/Rawalpindi (4 marks), Lahore (3marks) and Karachi (3 marks). Same will be verified.
2	Establishment/deployment of Data Center assignments of similar scope in last three (3) years of 06-08 Racks or above configuration. (documentary proof be provided i.e. Supply Orders and completion certificate etc.)	25	10+5+5+5	10 marks for the first assignment and 5 marks for each subsequent completed assignment.
3	Financial Health	10		Provide bank statements of last three years. Marks will be awarded on the following criteria. i. Annual credit transactions of more than Rs. 50 million per year for three years (10Marks) ii. Annual credit transactions of more than Rs. 30 million per year for three years (7.5 Marks) iii. Annual credit transactions of more than Rs. 20 million per year for three years (5 Marks) Annual credit transactions less than Rs. 20 Million per year (0 Marks)
4	Certified Technical staff CDCS/CDCP/CTDC/ATD, TIA 942, etc. technical staff /bidder organization, valid in the last three years i.e. the technical staff certificates should be passed in last three years.	30		Relevant technical certified staff in Pakistan available and deputed for such work. (5 marks per technical staff)
5	Firm Experience (minimum 3years' experience required - National)	15	15	(3 marks per year, beyond 3 years' mandatory experience), Maximum of (5) years marks will be allocated. The mandatory three years does not carry any marks.
6	Solution Presentation, understanding of the requirement and equipment compliance to the deliverables given in RFP would be rated as Excellent, Very Good and Good and Zero marks	10	10	Solution Presentation to the committee for proof of concept, for proposed methodology (as elaborated below in note iii) based on the understanding of the requirement.
			7.5	
			5	
Sub Total		100		

Note:

- i. **Minimum qualifying marks are 60% in above table whereas Annex “C” shall be compulsory.**
- ii. **All supporting Documents to be attached for all relevant pages of Annex-B in order to secure marks.**
- iii. **Methodology** is splitting of development work into distinct phases or stages containing activities with the intent of better planning and management. The methodology includes the pre-definition of specific deliverables and artefacts that are created and completed by a Assignment team to design, implement, scale, migrate and maintain for consolidation and upgradation of existing data center

TECHNICAL EVALUATION

(To be included in Technical Proposal)

Consolidation and Upgradation of existing Server
Rooms / data centers

Scope of Work

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Terms of Reference

The scope of this RFP is to select a system integrator to build Data Center at First Floor of PTA Head Quarters Islamabad as per the guide lines given in this RFP. This RFP is a legal document and compliance to each and every requirement in this RFP will be the responsibility of successful bidder.

- 1.1 PTA intends to build a scalable, highly available and energy efficient data center and to cater for of all existing workloads running with in existing Server Rooms / data centers to the consolidated & upgraded Data Center.**
- 1.2 Bidders to note that PTA expects a proposal based on 100% turnkey solution and shall include complete design, documentation, preparation of site, installation of all required segments, network infrastructure, configuration, commissioning, implementation, testing, integration services in the proposal as needed and maintenance & support services till completion of warranty period.**
- 1.3 This RFP aims to procure all the key elements including products and services for this upgraded data center including but not limited to the below:
 - 1.3.1 Data Center layout design and associated civil works in accordance with load bearing capacity of floor.
 - 1.3.2 Redundant power system for the data center.
 - 1.3.3 Cooling and containment.
 - 1.3.4 Cabinets and PDU (power distribution units).
 - 1.3.5 Fire detection and suppression.
 - 1.3.6 (Very Early Smoke Detection Apparatus) VESDA system.
 - 1.3.7 CCTV and Access Control
 - 1.3.8 Monitoring system Data Center Infrastructure Management software (DCIM) for data center
 - 1.3.9 Establishment of MMR 1 and MMR 2
 - 1.3.10 Professional services including
 - 1.3.10.1 Network Rerouting
 - 1.3.10.2 Warranty and support services.
- 1.4 The bidder to ensure that the design must meet/comply to the guidelines like:
 - 1.4.1 American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) cooling standards or equivalent standards.
 - 1.4.2 Institute of Electrical and Electronics Engineers (IEEE) standards for Electrical
 - 1.4.3 International Standard Organization ISO-27001:2013 standards for processes and procedures
 - 1.4.4 Under writers Laboratory/CE Standards or equivalent standards etc.
- 1.5 PTA expects the bidders to come up with design/Methodology on how to achieve primary objective i.e. consolidation and upgradation of existing server rooms/datacenters in a modular fashion while using as much as the existing resources as possible.
- 1.6 PTA expect the solutions to show the benefits of the solutions with various factors like PUE (power usage effectiveness) heat flow and pressure management etc.
- 1.7 The proposed DATA CENTER solution should be designed with industry best practices around high availability, scalability, redundancy at physical and logical level along with the right level of security.
- 1.8 The proposal for the upgraded data center should include the Network Rerouting. PTA IT infrastructure is running critical applications and services. PTA would like to have a minimum

downtime/interruption of services during the physical migration if deemed necessary and hence puts a lot of emphasis for the bidder's capabilities and methodology for such activities.

- 1.9 One of the main objectives for this work is to improve PTA IT operations by creating an enterprise class NOC/SOC to help manage and monitor complete IT infrastructure. PTA thus intends to deploy a unified monitoring tool to monitor all its IT assets as part of the scope of this RFP, and the DCIM solution must be provided by the principle manufacturer.
- 1.10 The bidder must conduct a site survey before bid submission and do the load bearing analysis for the proposed site. It shall be bidder's responsibility to enhance the load bearing capacity if needed, before the commencement of other tasks and deliverables. PTA will provide the building drawings and necessary assistance if required.
- 1.11 The DATA CENTER facility should be secure by having two entrances one for the main DATA CENTER premises with (01) hour fire rated glass door and industry standard fire rated doors for DATA CENTER and as mentioned in BoQ.
- 1.12 An automated security door with RFID entrance shall be installed immediately after automatic door mentioned in 1.11.

Bidder must provide all the drawings including but not limited to:

- 1) Cabling System
- 2) Power Distribution
- 3) Fire Suppression and Detection (FSD)
- 4) Security & Surveillance System (CCTV) etc. before and after installation.

2. PTA's Existing Environment

For Network Rerouting migration of existing network infrastructure, bidders are encouraged to carry out a survey of existing Infrastructure.

3. Data Center Layout - General Guidelines

- 3.1 The upgraded DATA CENTER will be located at the First floor of the main building at the location highlighted in the following diagrams.

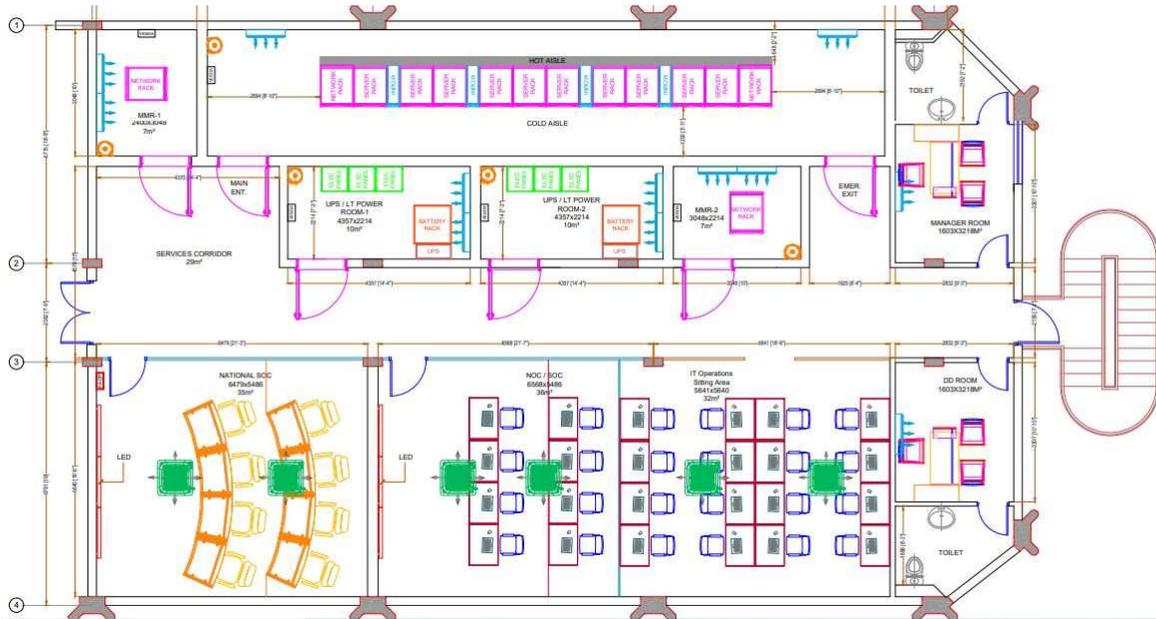
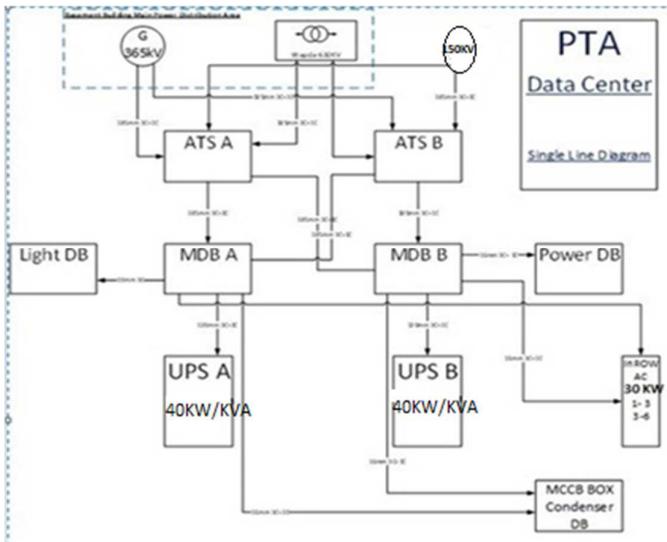


Figure 1 Sample Layout of proposed PTA Data Center
(Minor Improvements in the above Diagram are allowed)



- Note:** SLD is provided for guidance, please suggest to improve the diagram and to include LT panels
- 3.2 The bidders must plan site surveys for exact dimensions and as per the above required layout.
 - 3.3 The table below provides the minimum area/space requirements of PTA. Bidders are expected to propose the data center layout complied with the below areas/spaces for the name specific utilization.

Sr. No.	Area/Space Name	Qty.	Description
1.	Manager Room	1	For Data Center administrator
2.	Dy. Director's Room	1	
3	National Telecom SOC	1	For National Telecom-SOC with capacity of 08Engineers
4.	NOC/SOC Room	1	For PTA NOC/SOC with capacity of 08 Engineers
5.	Data Center Room	1	For all data center equipment
6.	Power Room	2	For electrical panel, UPS and Batteries
7.	MMR	2	Meet Me Rooms 1 & 2
8.	IT Operation Area	1	For IT operations with capacity of 16 Engineers

Table 1: Data center Layout Requirements. The contractor should follow the above layout.

3.4 Manager's Room

- 3.4.1 A separate Manager room with 55" FHD Branded Screen (Samsung, Sony or equivalent) Video Display Unit for physical and environment monitoring.
- 3.4.2 Office Furniture for the manager's room including office desk, comfort chairs with armrest, guest sitting should be (Interwood or equivalent) as per the given samples and will be preapproved by PTA.

3.5 Dy. Director's Room

- 3.5.1 A separate D. D's room with 55" FHD Branded Screen (Samsung, Sony or similar) Video Display Unit for physical and environment monitoring.
- 3.5.2 Office Furniture for the DD's room including office desk, comfort chairs with armrest, guest sitting should be (Interwood or equivalent) as per the given samples and will be preapproved by PTA

3.6 NOC-SOC Room / National Telecom SOC Room

- 3.6.1 A separate National Telecom SOC room for 08 people with Video Wall Display Units for physical and environment monitoring,
- 3.6.2 A separate NOC/SOC room for 08 people with Video Wall Display Units for physical and environment monitoring. Considerations for this room are:
- 3.6.3 All equipment, cabling and other infrastructure requirements for the NOC/SOC operations.
- 3.6.4 Seating Arrangements for 16 x engineers
- 3.6.5 Supply & installation of Comfort Cooling system as per plan mentioned in BoQ(reutilization of existing AC units where possible).
- 3.6.6 All Furniture for NOC/SOC and manager's room including comfort chairs with armrest should be (Interwood or equivalent), as per the given samples and will be pre-approved by PTA. And as per quantity mentioned in diagram.

3.7 MMR – 1& MMR – 2

These rooms will host all the data center active and passive equipment including but not limited to.

- a. Comfort cooling arrangement for MMRs.
- b. All mandatory tools for an ideal MMR for excellent work operations.
- c. 1 x Network Rack for LAN / WAN connectivity in each room.

3.8 UPS Rooms

- 3.8.1 2 x Power Rooms for the placement of electrical panel, switchgears, UPS and batteries equipment etc.
 - 3.8.2 The doors of UPS room should be 1 hr. Fire rated.
 - 3.8.3 Rack mounted batteries shall also be placed in UPS room.
 - 3.8.4 Supply& installation of Comfort Cooling system as per plan mentioned in BoQ(reutilization of existing AC units).
 - 3.8.5 Supply & installation of FSD system as per plan mentioned in BoQ.
- 3.9 PTA expects the bidder to perform a detailed structural survey to ensure the load bearing capacity of the proposed DATA CENTER location to ensure the safety of the facility. Any reinforcement needed for this shall be highlighted to PTA before the commencement of work and shall be included in their proposals.

Contractor must do the site survey before the pre-bid meeting and any clarifications can be sent before the Pre-bid meeting to be held on _____ please also registered for pre-bid meeting on email addresses zeeshankhan@pta.gov.pk

4. Power System for the Data Center

(The power infrastructure i.e. power cables, ATS, LT panel shall be laid down for **10+4 racks i.e. must support 80KW/KVA**)

This section provides PTA power system's requirements.

4.1 Power Requirements:

- 4.1.1 Bidder shall install a new ATS and LT panel distribution to serve the Data Center load through two separate electrical paths starting from ATS to racks.
- 4.1.2 Bidder shall supply and install new ATS and LT Panel and connect with the existing PTA power passive infrastructure. Currently PTA has:
 - 4.1.2.1 Existing Transformer having 630KVA rating.
 - 4.1.2.2 Gensets are available: One is 325 KVA and the alternative is in tendering process only for data center i.e. 150KVA.
 - 4.1.2.3 Contractor is expected to visit the site and re-confirm the existing setup and propose the right solution to comply to the required setup.
 - 4.1.2.4 Total IT load requirement for the 14 racks is 70 KW (5KW/Rack).**
 - 4.1.2.5 PTA expects the bidder to design and plan all the passive infrastructure for 14 racks load i.e. 70KW. This includes but not limited to ATS, LT and associated cables till power distribution (output DB of the UPS).

- 4.1.3 Bidder shall install their new Electrical distribution panel with Surge Protection Device (SPD) for the Data Center load.
- 4.1.4 ATS and LT panel should be installed in existing PTA power room at basement. Electrical panel should be installed in the UPS room of Data center to feed power for UPS, Cooling, lightning DB's etc. The panel should be indoor type with an IP rating of 42, fabricated out of 16 SWG sheet and powder coating. The circuit breaker will be four poles as per contractor's design. All meters should be digital display type. Ammeters & voltmeter selector switch should be complete with front plate. Indication lamp should be suitable for flush mounting complete with base, 230V incandescent lamps will have resettles of suitable color, crystal type. The following are the minimum requirement. Please design as per BOQ and Data Center requirements and sizing as below:
 - 4.1.4.1 Main Tap Off/Utility Box.
 - 4.1.4.2 Phase Reversal Protection Panel
 - 4.1.4.3 Data Center Power Distribution Unit.
 - 4.1.4.4 NOC / Lighting DB.

4.2 Power Cables

- 4.2.1 Bidder shall propose the shortest and safest route for the power cable. To supply and install Cable Tray/Cable ladder powder coated with hangers and cover for all power cables.
- 4.2.2 Bidder shall provide the complete SLD from LT panel to Data Center including but not limited to UPS, racks, lighting system and cooling system.
- 4.2.3 Bidder shall provide the new power cable calculation according to Data Center load.
- 4.2.4 Bidders to offer Pakistan/Fast Cables in their solution and provide the data sheets to confirm the ratings.

Note: Please conduct a survey for exact sizing and measurements.

4.3 UPS (Uninterrupted Power Supply)

Total maximum power drawn in the Data Center is expected to be 80KW/KVA or above Bidder shall propose **02 x UPS 40KW/KVA or above (for two separate paths)** with following features:

Precision conventional Integrated Un-Interruptible Power Backup System

UPS: Minimum **40 KW/KVA (N+1) parallel scalable to 80KW or above** with power distribution module for UPS distribution to racks and utility power distribution to precision cooling units. Power distribution module should be installed in Power Room.

Basic Requirements

- 4.3.1 The integrated UPS of a single cabinet should be integrated with the UPS input, UPS output, maintenance bypass route, IT power distribution and lighting power supply.
- 4.3.2 **The topology of UPS should be online double conversion (with 3 phase in and 3 phase out).**
- 4.3.3 The UPS should be modular or Conventional designed and supports manual and automatic built-in maintenance by pass system. The rated output power of 1 XUPS should be 40KW/KVA Unity power factor. When there is a failure in UPS, the UPS should shut down automatically from the system in time without affecting other normal modules or causing output interruption.
- 4.3.4 Display: 3 inch or above-inch LCD+LED

- 4.3.5 The UPS system with a built-in maintenance bypass route should adopt centralized bypass route. It must also support the self-load function to carry out the self-test before connecting to load.
- 4.3.6 The switching time is 0ms when the power supply mode is switched from mains to battery, battery to mains, mains to bypass, or the bypass to mains modes.
- 4.3.7 The UPS system efficiency should reach to 90% at 50% and 70% load under the mains mode, and should be greater than or equal to 92% at 25% and 50% load. A third-party test report of IEC or equivalent standards is needed.
- 4.3.8 The UPS bypass route can support 10min running on 125% overload (ambient temperature $\leq 30^{\circ}\text{C}$)
- 4.3.9 The case solidly coated with good spraying and no paint peeling, corrosion, or crack, flat host surface. All signs, tags, and text symbols should be clear, correct, and tidy. Switches are easy, flexible, and reliable to operate. Key switches such as bypass control switch and emergency shutdown switch should have protection devices and warning labels.
- 4.3.10 An insulation protection is required for the power distribution unit of cabinet.
- 4.3.11 Ventilation and heating dissipation: The power supply structure should be designed for good ventilation and heating dissipation
- 4.3.12 The Integrated UPS should support man-machine interaction, provide English user interface. Parameter setting and manual operation should meet the following requirements:
- 4.3.13 Parameter setting: Support access to the monitoring module and parameter setting function. Hierarchical authority or simple access protection is implemented by using passwords, and parameter settings are stored in the case of a power failure.
- 4.3.14 Manual operation: Password protection and warning are provided for important operations. Manual intervention is supported under abnormal conditions.
- 4.3.15 The integrated UPS system should provide RS232 or RS485/422, FE (SNMP communication interface), dry contact and ambient/internal monitoring sensor interface, and should provide communication cables to connect the communication interfaces and a variety of alarm signal terminals. The system should have following main functions:
 - 4.3.15.1 Real-time monitoring over the UPS working status: system normal operation/battery inverter/bypass power supply, overload, battery low discharge voltage, battery charging/discharging status, mains power failure, power module status (normal/abnormal quit), UPS system errors, and operation status
 - 4.3.15.2 Real-time monitoring over the ATS/main input switch status: UPS input switch status, UPS output switch status, UPS maintenance bypass switch status, IT power distribution switch status, and air conditioner power distribution switch status
 - 4.3.15.3 Collecting and storing system operation data:
 - 4.3.15.4 UPS main input voltage, UPS bypass input voltage, UPS output voltage, UPS output current, UPS output frequency, UPS module output current, battery voltage, charge/discharge current.
 - 4.3.15.5 Main input phase voltage, current, frequency, power factor, power energy, active power, reactive power, apparent power, load ratio, voltage-current harmonic wave ratio, bus bar temperature
- 4.3.16 Current, power energy, contact point temperature, and load ratio of IT and air conditioner branch power distribution; monthly and yearly statistics on power energy
- 4.3.17 The UPS system should support battery number adjustment, have the function of regular automatic floating charge, charge/discharge conversion

The UPS must comply with following Operational conditions

- a. Protection level: IP20
- b. Operation Temperature: 0°C to $+40^{\circ}\text{C}$ (no de-rating)
- c. Relative humidity: maximum 95% ($20^{\circ}\text{C}\pm 5^{\circ}\text{C}$)

- d. Altitude: 0–1000 m without de-rating. For each additional 100 m above 1000 m, the load will be reduced by 1%.
- e. UPS cooling mode: forced air cooling (smart speed adjustment for fans)
- f. Battery Unit for 15 minutes backup by each UPS and 30 minutes collectively by both.
- g. Further unforeseen requirements

4.4 Auto Transfer Switch Panel

- 4.4.1 Supply & installation of Standard ATS designed for total Data Center Load with all safety features.
- 4.4.2 Complete installation (RCC Foundation, power & control cable provisioning & laying) with transportation is required, 2 earth pits for each along with ground cable, input / output power cable as per the requirement & standards.

4.5 AVR (Automatic Voltage Regulator)

Supply, Installation, testing & commissioning of **175KVA AVR (imported)** having following main features including all installation accessories. Complete in all respects:

- a. Servo Motor Controlled Technology
- b. Fast Response for Fluctuations
- c. Reliable Stabilization for Secure Energy
- d. High efficiency in each model
- e. Short circuit protection
- f. Ability to work with non-linear loads
- g. Manual Bypass Switch
- h. Wide input voltage range version
- i. Electro-mechanic (breaker module) high-low voltage protection
- j. Output Isolation Transformer (optional)
- k. Digital Display option available
- l. Higher IP applications are available
- m. Phase Independent Voltage Regulation for Three Phase Models

5. Cooling and Containment System for the Data Center

In-Row Precision Temperature and Humidity Control System Units:

Supply of In-Row Precision Air Conditioning Unit Capacity 30KW or above with (internal or external) Dual input power supply, Humidifier Electric Reheating and matching with ≥ 4 inch or above LED color Display and air-cooled condensers. The cooling unit must have following features

- 5.1 EC type FANs
- 5.2 Air flow ≥ 3200 m³/h or above.
- 5.3 Humidifier capacity ≥ 1.5 kg/h
- 5.4 Heating capacity 3KW-6kW
- 5.5 The unit could achieve stable & fast dehumidification at min 10% low IT load and larger than 95% relative humidity conditions, to avoid the condensation risk on IT equipment at extreme conditions
- 5.6 PAC unit should be equipped with PTC or stainless-steel tubular fin electrical heater, used for heating while low temperature conditions to improve reliability
- 5.7 PAC evaporator should be equipped with high-performance inner grooved copper pipe and blue hydraulic aluminum fin to improve heat exchanging capability. The evaporator should adopt “V” type design to get better air distribution system and less air pressure drop. Vendors can also propose equivalent evaporator type while ensuring same or better performance.
- 5.8 PAC unit should be configured with surge protection device to increase safety and reliability. No less than 6kV ability is recommended. Vendors can also propose as per their own electrical design confirming to a minimum of 6 kV load already mentioned.

- 5.9 PAC indoor unit should use high efficiency energy saving variable speed EC fans to reduce fan power consumption
- 5.10 The indoor unit should adopt swappable maintenance for power box and control and power modules, to make the maintenance work faster and easier. Vendors can also propose as per their own standard design.
- 5.11 The PAC unit should be configured with 4-inch or above LCD true color touch screen to provide good human-computer interaction and a vivid interface the controller should support to display max. 30 day's temperature & humidity color curves, and should also be able to graphically display the operation status of the unit components. Display parameters as per standard interface design is also acceptable.
- 5.12 PAC unit should have the one-key touch function for display and collection of faulty messages into a USB disk. PAC unit should have the fault alarm function and operating logs record function. The recorded history of alarms messages should not be less than 500, Operating logs should not be less than 200. Logging, alarm history and data extraction as per each brand's standard interface design is also acceptable.
- 5.13 CFD Analysis of proposed cooling system design should be submitted with bid document.

5.14 Single Row HOT/COLD AISLE with following mandatory feature:

- a. An aisle containment consists of the ceiling panels, end doors, and cabinets. The ceiling panels are flat or ribbed. Both ends of the aisle can be installed with the camera, temperature and humidity sensor, smoke detector, aisle lighting, infrared sensor (optional), and reserved hole for fire extinguishing nozzles. The ceiling panels can be fixed and rotated or dropped (automatically controlled by the magnetic locks). Opening ceiling panels can activate the fire extinguishing linkage alarm signal in the aisle. In case of fire, the magnetic locks open and ceiling panels open automatically due to gravity force. The design ensures that fire extinguishing gas enters the cold/hot aisle containment.
- b. The doors at both ends of the cold /hot aisle containment must be sliding doors. The sliding door adopts a push-and-pull design to ensure that the cold/hot aisle containment is properly sealed and separated
- c. Single-row deployment:
- d. Adopts the modular design and features the cold or hot aisle containment. A single containment should integrate the cabinet system, power supply and distribution system, cooling system, management system, and cabling system. The rated power of a single Rack is 5 kW
- e. The smart module should provide electric and extra-low voltage (ELV) cable troughs, and support engineering-free installation and expansion in the unit of cabinet. The cable troughs should support cross-column, cross-cabinet row, and cross-module installation or as per standard cable trough design.
- f. Cable troughs can separate signal cables from power cables. The positions of the partition plates can be adjusted based on the number of cables. Material requirements: high-intensity class A carbon cold rolled steel plates with a thickness of no less than 1.5 mm or equivalent as per each brand's standard design is also acceptable
- g. Optional horizontal and vertical cable management units should be configured inside the cabinets. The comfort cooling reversible roof mounted cassettes/wall mount of DC inverter of VRF/VRV technology for Server Room, Electrical rooms, National SOC, NOC/SOC, MMR1&2, Manager's Room, D.D's Room, and IT Operation sitting area of renowned brand like Daikin, Acson, Mitsubishi or equivalent shall also be included with the three (03) year of maintenance and support.

6. Cabinets & PDUs

The scope of Cabinets includes design, procurement, installation, implementation / grounding, testing and commissioning.

6.1 The table below provides summary for PTA cabinets and PDU requirements in Phase-I.

Sr No	Power System	Size
1.	Network Racks	~750/800x1200, 42U
2.	Server Racks	~600x 1000/1060/1070, 42U
3.	Smart PDU's	28 x 0U
4.	Blanking Panel	1U/2U tool-less

Table 2 Cabinets and PDU Requirements

Note: slight changes in rack sized are allowed to accommodate different principle manufacturers.

- 6.2 PTA expects a design to have 10 server racks and 4 network racks in current RFP. The proposals showing scalable and modular solution will be preferred in the design.
- 6.3 Installed racks / containment should have provision for expansion and for installation of any third-party rack.
- 6.4 Each IT Racks should have 2 x vertically mounted smart metered PDUs with 32Amp single phase having 2 x 20 Power Outputs (C19, C13).
- 6.5 The racks shall support a load of >1,000 kg. The racks must have perforated front door, perforated split rear doors, two (02) side panels, roof with cable access holes, four (04) adjustable vertical mounting rails, four (04) vertical 0U accessory mounting brackets, four (04) leveling feet and four (04) casters, baying and grounding hardware pre-installed by the manufacturer.
- 6.6 All weight bearing components shall be constructed from steel with a thickness no less than 1.0mm (19 gauge). All sheet metal parts shall be painted using a powder coat paint process. Plastic materials shall comply with good international standards. All interior components of the cabinets shall not have electroplated zinc coating to minimize zinc whiskers near active equipment.
- 6.7 The smart PDUs should have tool-less mounting pegs for easy installation and replacements in racks, there should be local metering display for real-time equipment connectivity and load balancing guidance as well as network management port to access and configure remotely via web, SNMP, and Modbus.
- 6.8 The Racks should be of same manufacturer as of in-row cooling Equipment and containment.
- 6.9 There should be vertical and horizontal cable managers in the cabinets for network cabinets only.

7. Network Cabling Design

The scope of cabling solution includes design, procurement, implementation, testing and commissioning for complete network cabling solution for PTA data center and access network wherever required.

- 7.1 PTA is looking for a high-density network cabling solution for existing and future requirements of the data center.
- 7.2 Primary and Secondary cabling must be installed within the data cabling containment system across separate routes to ensure that diversity is maintained at all times.

- 7.3 24 Copper Ports Cat-6A from each server rack going to each network rack in a scalable and redundant fashion.
- 7.4 12 + 12 fiber Ports Single Mode SFP28 from each server rack going to each network rack in a scalable and redundant fashion.
- 7.5 10G design capable of scalability to higher designs.
- 7.6 The products used must be compliant with industry standards on fire rating, Low Smoke-Zero halogen, Flame retardant and Non-corrosive.
- 7.7 Network data cabling solution must be compliant with industry standards EN 50173-5
- 7.8 N+N redundancy with respect to data center network cabling and connectivity.
- 7.9 All nodes and cable bunches should be properly labeled as per international standards. The origin and ending of all nodes should be clear.
- 7.10 Grounding & Bonding System as per TIA/EIA 607-A.
- 7.11 24 Copper Ports Cat-6A from each Network rack going to each MMR rack in a scalable and redundant fashion.
- 7.12 12+12 fiber Ports Single Mode SFP28 from each Network rack going to each MMR rack in a scalable and redundant fashion.

7.13 Fiber Cabling Solution

- a. Inter Rack Connectivity Design should include distributed data cabling from server racks, Horizontal Distribution Area Racks in the row & Main Distribution Area Racks (if required) wired with OS2 Single mode fiber System.
- b. It should be modular solution for Fiber and is to be designed to allow easy patching from any switch to any device without any need to run additional cabling.
- c. The products used must be compliant with industry standards on fire rating, Low smoke, Zero-Halogen, Flame retardant and Non-corrosive material.
- d. It must be an optical cabling system, High density and Bend insensitive.
- e. Offered solution should be expendable and scalable to accommodate additional Distribution Area Racks in Future.

7.14 Copper Cabling Solution

- a. Inter Rack Connectivity Design which includes distributed data cabling from server racks, Horizontal distribution Area Racks in each row & Main distribution Area Racks (if required) wired with Cat-6A Copper Shielded System.
- b. The Copper cable solution should be tested up to 550MHz and provides transmission performance meeting Cat-6A specifications EN-50288, IEC 61156-5 and “Cat-6 augmented” in compliance with TIA/EIA 568.

Note: The network cabling solution shall be complete covering (2) Network Racks with-in DATA CENTER. Please enclosed a complete solution plan with HL diagram as per given guidelines.

8. Fire Suppression and Detection System (FSD) & VESDA

- 8.1 Bidder will provide Fire Alarm / Detection system and Manual Fire extinguishers for ABC Classes of Fire in complete facility.
- 8.2 Bidder to provide HSSD (High Sensitivity Smoke Detection) in Data Center and Power Rooms and conventional system for rest of the areas in facility.
- 8.3 Automated Fire Suppression and System (NOVEC-1230 or equivalent (European)) in Data Center/Server Room and Power Room.

- 8.4 Fire detection in all the rooms of the Data Center facility including Rack Area and Power Rooms.
- 8.5 FSD is expected to have the following features:
 - 8.5.1 Programmable temperature sensors should be provided.
 - 8.5.2 The detection and suppression systems within the premises shall be linked to the electronic monitoring system.
 - 8.5.3 The control panel should be programmable to allow adjustments to sensitivity and parameters, such as time delays, threshold, passwords and other features.
 - 8.5.4 Fire alarm monitors, control panels and notification mechanisms should be installed. Automated alerts when thresholds are reached should also be sent to the relevant staff through DCIM/management system.
 - 8.5.5 Addressable fire alarm panels shall have the capability to be connected to the EMS.

9. Security, Surveillance and CCTV

- 9.1 Bidder will be responsible to supply, install and commission Access Control System (ACS) with magnetic locks. The Biometric and RFID door readers and controllers should be mounted according to the design.
- 9.2 The detailed technical specifications of the products will be as follows.
 - 9.2.1 Access control system shall be installed on doors as per design. The Main Access controller units (Door processing units)
 - 9.2.2 The monitoring of the access control will be done in NOC/SOC.
 - 9.2.3 All doors of facility will have (3 in 1) RFID + keypad + Biometric readers.
 - 9.2.4 IP based CCTV monitoring system for indoor / outdoor.
 - 9.2.5 IP Cameras should be HD (High Definition) and have a minimum resolution of 8 megapixel
 - 9.2.6 NVR for recording (01 Month)
 - 9.2.7 Entry Control - Integrated with CCTV for monitoring / permitting / denying facility access at critical entry points.
 - 9.2.8 Multilevel authentication i.e. Password, Biometric integrated with centralized command and control system for all rooms in datacenter facility.

9.3 Monitoring System for Data Center - DCIM

PTA Intends to procure a monitoring, and reporting system which provides detailed physical and logical monitoring of its IT infrastructure and applications to be used by PTA NOC and business teams. DCIM Suite Software to integrate and monitor all appliances installed in Data Center with perpetual license for required no of racks and nodes.

The DCIM suite shall be able to integrate with third party devices (SNMP v1/v3, Modbus IP enabled), and scalable to add more devices in future. The DCIM software shall show temperature of individual racks as well as data from cooling units, UPS, PDUs and all other connecting sensing devices and compute the data intelligently. The software shall be able to generate graphs, reports, alarms and warnings. The containment shall also humidity monitoring.

The DCIM data can be viewed through web browser with customizable viewing panes as well a desktop client.

- a. Must generate alarms in colors, e-mail or SMS
- b. The Data Center centralized collector or centralized controller should adopt internal or external dual-power supply design to ensure the reliability of data center monitoring

- c. In order to improve the reliability of the monitoring system, all the intelligent node signal transmission and the sensor power supply are all adopted by POE ring circuit or manufacturer's standard methodology.
- d. The monitoring system in the data center is of the same brand as the power, cooling and racks.
- e. The infrastructure management system provides through reporting and management of Data Center infrastructure which also provide the 3D view of Data Center (Optional).
- f. The monitoring shall be done in NOC and it must have different user's authentication options. It should be able to attain detailed logs of power, cooling and environmental conditions of Data Center.

10. DCIM Monitoring and Reporting Requirements

- 10.1.1 The scope of the monitoring system includes the complete, the proposed data center infrastructure by the bidder including PDUs, Power & UPS, Batteries and Cooling components etc.
- 10.1.2 The system should support near/ real time monitoring of its SNMP supported devices, systems and applications.
- 10.1.3 The system should have the ability to define various thresholds and alerts.
- 10.1.4 Ability to configure polling intervals to minimize the monitoring overhead.
- 10.1.5 The system must support real time and historical data with the retention period of twelve (12) months or as per standard parameters of quoted brand.
- 10.1.6 The monitoring tool should be able to present the data in form of customizable dashboards in real time or user defined duration.
- 10.1.7 The dashboards should be customizable for various organizational levels of PTA ICT team and users.
- 10.1.8 Roles based access control should be implemented for the various users of the monitoring system.
- 10.1.9 The proposed system should be able highlight alerts and events information.
- 10.1.10 The system should be able to propagate/notify any event in form of an Email or SMS generation.
- 10.1.11 The system should provide a built-in reporting module which can generate customized reports using a scheduler, daily / weekly / monthly basis or on demand.

10.2 Deployment Requirements

- 10.2.1 The system should be deployed Hardware/Software based with redundant power supply and completely secured. The bidder should assess the deployment of this system as per PTA requirements.
- 10.2.2 All software and hardware needed for this system to be deployed shall be bidder responsibility.
- 10.2.3 The system should be highly scalable to support future growth of PTA requirements for up to 100 monitoring nodes.
- 10.2.4 supply and installation furniture as per design diagram and 55" inch ultra-narrow bezel (3x4)1 x video wall screens for National SOC and 55" inch ultra-narrow bezel (3x2)1 x video wall screens for Internal NOC/SOC

11. Infrastructure and Environment Monitoring

- 11.1 Environmental monitoring system to monitor all environmental sensors, access controls, IP cameras including 3rd Party Devices on following interfaces (SNMP, Modbus485, Dry contacts, Analog signals).

- 11.2 Monitoring of UPS and cooling.
- 11.3 Records Data and Logs of historical information of alarms and notifications.
- 11.4 Integration of Fire suppression system and Power Switchgear (DBs) may be quoted in optional.
- 11.5 OEM support should also be available in case of any issue. OEM support is required 24x7. The support should be valid for 3 years with year wise breakup.

12. Civil & Miscellaneous Items:

PTA expects bidders to include all the relevant miscellaneous items for a data center like:

- 12.1 Current VRF/AC system shall be utilized for the work however routes and piping need to be reinstalled as per layout/diagram.
- 12.2 Take necessary measure to avoid condensation through wall and floor, prevention of seepage for wall and ceiling of DATA CENTER.
- 12.3 Installation / Configuration of overhead cabling pathways, galvanized trays.
- 12.4 Providing bricks masonry work wherever required inside the premises.
- 12.5 ICI or equivalent fire-retardant paint work on the walls and partitions free from contamination and asbestos (complete in all respects.)
- 12.6 Glass door with carbonite, driven through Access Control, double leaf sliding and wide (as per design) for Data Center Main Entrance.
- 12.7 Fire rated door double leaf of at least 7 ft. height and 4ft wide for Data Center Entrance and Fire rated single leaf door 7 ft. height and 3.5ft wide for Emergency exit.
- 12.8 Fire rated single leaf door made of 16gauge door with frame, door closer, panic lock, mortise lock set, size 7" x 3.5' ft. for Electric/Power rooms and MMR1&2
- 12.9 Hand held CO₂ Type fire extinguishers 5kg Class - C.
- 12.10 Imported (USA/European Make) Antistatic vinyl flooring, thickness 3mm minimum with complete installation for DATA CENTER, MMRs and electric rooms.
- 12.11 Supply and fixing of 10mm anti blast lamination tempered glass partition/window in in Rooms as per the design and requirement.
- 12.12 Fire Resistant DAMPA/Gypsum 2' x 2' False Ceiling as per the approved sample for NOC/SOC Area and IT Staff Room.
- 12.13 Supply & install new lighting point's c/w light switches and using 2 x 1C/1.5mm sq. PVC cable in PVC pipe for DATA CENTER, NOC/SOC, MMR1&2and Electric room lighting.
- 12.14 Supply, installation and fixing of data center special lights LED (min 500 LUX) antiglare size 2' x 2' or as per the approved sample.
- 12.15 Supply & installation of Emergency Light c/w battery pack and accessories.
- 12.16 Supply and installation of Ultrasonic anti-rodent mechanism (Repellent) for DATA CENTER, NOC/SOC, MMR and Power rooms.
- 12.17 Telephone points (Wiring for each telephone point in preinstalled floor outlet boxes with 4 pair telephone cable 1071C-giga, UTP, from respective patch panel to telephone point in and including cost of 1" dia. PVC conduit). (For NOC/SOC and Operation Room)
- 12.18 Installation of in-row Cooling Indoor/Outdoor Units covered with Liquid and Hot gas hard copper piping in powder coated trays c/w, nitrogen, refrigerant charging, water tank etc. all accessories and fittings.
- 12.19 Supply & Installation of Earth pits for Data Center including digging, boring, grounding material, main hole, earth bar (Separate Earth Pit for Data Center, UPS and Generator).
- 12.20 Supply & Installation of Automatic Water Leakage Detection System (Imported).
- 12.21 First Aid Box
- 12.22 Shoe Cover Machine
- 12.23 Safety Blankets from Fire

12.24 Any other requirement identified during design or implementation/commissioning phase.

13. Professional Services

- 13.1 Bidders to note that PTA expects a proposal based on 100% turnkey solution (Complete) and shall include complete design documentation, installation, commissioning, implementation, and configuration testing and integration services in the proposal as needed.
- 13.2 Installation, commissioning and testing services for all the elements quoted in this RFP including but not limited to:
- 13.2.1 Cooling and containment systems,
 - 13.2.2 Power systems including Genet Cabling UPS, batteries and cabling etc.
 - 13.2.3 Fire detection and suppression system
 - 13.2.4 Water leakage detection system
 - 13.2.5 Rodent repellent system
 - 13.2.6 Racks and PDUs
- All consumables can be evaluated during the site surveys and shall be included in the proposal.
- 13.3 Training and Knowledge Transfer: - Bidder is required to provide complementary professional training (i.e. Free of Cost). The training and knowledge transfer activity shall be completed before issuance of FAC.
- 13.4 Work management services shall be the responsibility of bidder.
- 13.5 Development of Standard operating procedures (SOPs): The lowest successful Bidder shall provide / develop SOP for Datacenter and the solutions / services provided.
- 13.6 Following documents should be delivered as part of the work.
- 13.6.1 PTA IT Infrastructure Assessment document
 - 13.6.2 Existing network infrastructure migration plan and test document
 - 13.6.3 Data Center physical layout-as built documents
 - 13.6.4 SLD (Single Line Diagram) for power systems
 - 13.6.5 UPS design and test documents
 - 13.6.6 Data Center cooling design and test documents
 - 13.6.7 Monitoring system design and test documents
 - 13.6.8 Fire suppression system design and test documents
 - 13.6.9 CCTV system design and test documents
 - 13.6.10 Workflow document for remote monitoring services
 - 13.6.11 The Contractor will work with PTA for Tier 3 Data center Certification.

14. Network Cabling Design for Floors

PTA Network cabling from different floors needs to be physically migrated to the upgraded data center as part of the scope of this RFP.

- 14.1 The proposal for the upgraded data center should include the Rerouting network of the existing PTA data center to the established data center including LAN, network etc. PTA IT infrastructure is running critical applications and services. PTA would like to have a minimum downtime/interruption of services during the migration and hence puts a lot of emphasis for the bidder's capabilities and methodology for such migrations.
- 14.2 Following should be included in the scope of the DATA CENTER migration services
- 14.2.1 Detailed assessment of existing Network infrastructure.
 - 14.2.2 Migration strategy with minimum or no downtime.
 - 14.2.3 Rack placement in the upgraded data center as per the industry best practices.
 - 14.2.4 Other necessary services which may be needed to ensure minimum or no down time.
 - 14.2.5 Responsibilities assumed by the bidder, PTA and any existing PTA supplier

- 14.2.6 Connectivity of the PTA LAN services at different floors of the PTA building from the established data center location by the contractor. The connectivity between distribution and access switches must be 10 G fiber dual connectivity.
- 14.2.7 Provided recommendations by the contractor based on site survey for any infrastructure requirements will be discussed with PTA for implementation
- 14.2.8 Any new requirement i.e. (cables / connector, ODF/MDF etc.) which are required for physical migration will be the responsibility of the contractor.
- 14.3 There should be no impact on the existing LAN/WAN services due to the DATA CENTER migration.
- 14.4 The bidder is expected to provide as-built drawings with new connectivity schema for the LAN services.
- 14.5 PTA expects a professional cabling approach for extending the new LAN services.

15. Video Wall Display (LG/Samsung/Sony or Equivalent)

15.1 1 x Video Walls (3 x 4) Matrix with 55” (FHD or above) display panels (Whichever is latest available in the market) with maximum 0.8 mm bezel along with Video Wall Controller and all necessary accessories. (Complete Solution). For national SOC.

15.2 1 x Video wall (3X2) Matrix with 55” FHD or above display panels (Whichever is latest available in the market) with maximum 0.8 mm bezel along with Video Wall Controller and all necessary accessories. (Complete Solution). For internal SOC.

16. Remote Monitoring Services

- 16.1 The main objective for this service is to:
 - 16.1.1 Support PTA IT team during peak load conditions or during non-working hours.
 - 16.1.2 Self-monitor the proposed monitoring system.
 - 16.1.3 Configurable Alarm notification mechanism through SMS, email etc.
- 16.2 Following are the requirements
 - 16.2.1 The bidder is supposed to provide both on/off-premises Level 1 support services to support PTA team from the NOC built on its own premise
 - 16.2.2 This service shall utilize the proposed monitoring system by the bidder as part of this RFP.
 - 16.2.3 Only Level 1 support services shall be required. Following services are included in the Level 1 support services
 - 16.2.3.1 Alarm monitoring
 - 16.2.3.2 Trouble ticket creation
 - 16.2.3.3 Problem resolution
 - 16.2.3.4 Coordination with PTA’s contractors on behalf of the PTA
 - 16.2.3.5 Escalation to the PTA team for Level 2 services
- 16.3 PTA expects at least one (1) resource available PTA NOC, capable to handle operational problems and incidences across the complete DATA CENTER infrastructure. The bidder is required to propose their staffing plan to support PTA objective.
- 16.4 All software and hardware required for this service shall be bidder responsibility.
- 16.5 In case of off-premises support, bidder will be responsible for secure connectivity between its premises and PTA data center.

17. Warranty and Support Services

All equipment should have warranty and back to back support of OEM for minimum 3 years with warranty/maintenance & support services, Spares, Maintenance support & service etc.

18. Work Management

Bidder's Project Manager will establish a framework for work Management, communications, reporting, and other activities for Services under the scope of this bidding following PMI guidelines

- 18.1 Establish and maintain work Management, communications through PTA Point of Contact.
- 18.2 Would provide detailed work Plan and Communication plan as per PTA guidelines
- 18.3 Review and administer the work Change Control Procedure with PTA Point of Contact
- 18.4 Provide Weekly and Monthly working Status Report
- 18.5 PTA would establish a work management and steering committee with defined TOR's where contractor representative would be part of PM committee and Steering Committee.
- 18.6 Develop a work Plan, track progress against the work Plan and help resolve deviations from the work Plan with PTA Point of Contact.

19. BoQ Items and Remarks

As mentioned before, Contractors must do the survey and submit their own proposal including complete BoQ for civil, electrical, furniture, DATA CENTER, etc. in all respects covering description of activity, Specifications, Unit of Measurement, Quantity, Unit price and Gross price of each line item inclusive of applicable taxes, Overheads etc. Final payment of the contractor shall be made as per BoQ by measuring actual quantities at site. PTA want to upgrade the Data Center, for guidelines some items have been listed below. **Annex – D is the suggested format of the BoQ** in which bidders will propose their Bids. However requirements as per international standards remains the responsibility of bidder to include in BOQ.

Summary of Bill of Quantities (BoQ)

<i>S.No.</i>	<i>Description</i>	<i>Remarks</i>
1	Site Readiness	
2	Civil & Miscellaneous Works	
3	ICT Manager's Rooms	
4	NOC/SOC Room	
5	Low Voltage Cables	
6	LV Switchgears and LV Distribution Panels / Boards	
7	Uninterrupted Power Supply (UPS)	
8	Fire Detection & Suppression System and VESDA	
9	Access Control System	
10	Security & Surveillance System	
11	Cooling and Aisle System for Data Center	
12	Professional Services	
13	DCIM / EMS / NMS	
14	Racks / Network Passive Cabling	
15	MIGRATION of Existing network infrastructure	
16	TRAINING	
17	EXTRA (Optional) ITEMS	
18	MMR Rooms	

Site Readiness:

<i>S.No.</i>	<i>Description</i>	<i>UOM</i>	<i>QTY</i>
1	Site Readiness		
1.1	Dismantling all Electrical Fixtures, wiring and Air-Conditioning System .	Job	Job
	Original building and windows structure shall be preserved.		
1.2	Removal of debris from site and dumped outside as per the client requirement.	Job	Job
	Chiseling of existing floor tiles and removal of debris		
	Dismantling of brick walls, partitions and existing ply / wood works.		
1.3	Also take necessary measure to avoid condensation through wall and floor, prevention of seepage for wall and ceiling of Data Center.	Job	Job
1.4	Disposing all unserviceable material, obtained in the process of dismantling, outside the PTA premises.		

Civil Works:

<i>S.No.</i>	<i>Description</i>	<i>UOM</i>	<i>QTY</i>
1	Civil & Miscellaneous Works		
1.1	Providing bricks masonry of 9 " or 4.5 " work wherever required inside the premises.	Cft	As per proposal of the bidder
	Plaster Work in ratio of 1:4 at 1 st floor from Lawrencepur Sand	Sq. Ft	do
1.2	ICI or equivalent fire-retardant paint work on the walls and partitions free from contamination and asbestos (complete in all respects.)	Sq. Ft	do
1.3	Supply and installation of Fire rated doors with glass panels having rating of 1 hr. double leaf including accessories of at least 7 ft height and 4ft wide for Data center Entrance, Minimum 16 Gauge	Nos	1
1.4	Supply and installation of Fire rated doors having rating of 1 hr. single leaf including accessories of at least 7 ft height and 3.5ft wide for Data center Emergency Exit, Minimum 16 Gauge	Nos	1
1.5	Supply and installation of Fire rated doors with glass panels having rating of 1 hr. single leaf including accessories door made of 16 gauge. Door with frame, door closer, panic lock, mortise lock set. Size 7 x 3.5' ft for Power rooms.	Nos	2

1.6	Supply and installation of Fire rated doors with glass panels having rating of 1 hr. single leaf including accessories door made of 16 gauge. Door with frame, door closer, panic lock, mortise lock set. Size 7 x 3.5' ft for MMR rooms		2
1.7	Imported (USA/UK/European Make) Antistatic vinyl flooring, thickness 3mm minimum with complete installation for DATA CENTER, NOC/SOC and Power rooms.	SqFt	
1.8	Fire Resistant DAMPA/Gypsum 2' x 2' False Ceiling as per the approved sample for NOC / SOC, IT Operation, manager's room etc. and Floor tiles as per approved sample by the PTA Technical Committee.	SqFt	
1.9	Supply & install new lighting point's c/w light switches and using 2 x 1C/1.5mm sq. PVC cable in PVC pipe for DATA CENTER, NOC, SOC, MMR and Electric room lighting.	No	
1.1.1	Supply, installation and fixing of data center special lights LED (min 500 LUX) antiglare size 2' x 2' or as per the approved sample.	Nos	
2	Supply & installation of Emergency Light c/w battery pack and accessories. (3 hrs. battery Backup)	Nos	
	Power points, Light Power Plugs etc. of make Clipsal, Schneider or equivalent with complete wiring.	Nos	
2.1	Supply and installation of Ultrasonic anti-rodent mechanism (Repellent) for DATA CENTER, NOC and Electrical room. (Imported)	Nos	6
2.2	Telephone point (Wiring for each telephone point in preinstalled floor outlet boxes with 4 pair telephone cable 1071C-giga, UTP, from respective patch panel to telephone point in and including cost of 1" dia. PVC conduit). (For NOC) cable, Pakistan or Fast cable	Job	1
2.3	Installation of In-Row Cooling Indoor/Outdoor Units covered with Liquid and Hot gas hard copper piping in powder coated trays c/w, nitrogen, refrigerant charging, water tank etc. all accessories and fittings. Initially 2 units will be installed.	Job	3
2.4	Supply & Installation of Earth pit for Data Center including digging, boring, grounding material, main hole, earth bar (Separate Earth Pit for DATA CENTER, UPS and Generator). Digging up to 160 to 200 Feet up to water.	Job	1
2.5	Supply and Installation of Single leaf Safety/Security glass door with Handle and dual side opening motor for NOC / SOC, Manager Rooms and DD's Room with anti-blast lamination	Job	4
2.6	Supply and Installation of Main Sliding Double leaf (Carbonite Glass) Door with Automatic Door Opening Sensor Operated with Access Control Device with Mesh Shutter door Security at the back of Sliding Door.	Job	1
2.7	Supply & install Wall mounted & Workstation Sockets point's and using 3 x 1C/2.5mm sq. PVC cable in PVC pipe in all areas.	Job	1
2.8	Supply and Installation of Automatic Shoe cover Machine to be placed near door of Data Center, with Shoe covers provision of 3 Year	job	1
2.9	First aid box equipped in accordance with local medical regulations are to be provided and mounted in Data Center facility.		
3	Safety Blankets from Fire	Nos	3
3.1	Any other requirement identified at the time of actual commencement of the work	Job	1
RACEWAYS AND CABLE TRAY			

1	Supply and installation of 16 SWG MS Powder coated Perforated Cable Tray with 18 SWG Cover. Complete with all supporting hangers, brackets, elbows, Tee & mounting accessories etc.		
1.1	Tray for Power Cables	Lot	1
2	Supply and installation of 6mm dia wire S.S 304 Grade Mesh Type Cable tray. Complete with all supporting hangers, brackets, elbows, Tee & mounting accessories etc.		
2.1	Tray for Data Cables	Lot	1
3	Supply and installation of glass fiber reinforced polyester or protective PVC construction, free of silicone and halogen. including allied hardware and suspension system, complete in all respect.		
3.1	Tray for Fiber Optics Cable	Lot	1
4	Installation, Laying & commissioning	Job	1

ICT Manager's Rooms:

S.No.	Description	UOM	QTY
	Manager's Room		
1	A separate Manager room with 55" FHD Branded Screen (Samsung, Sony or equivalent) Video Display Unit for physical and environment monitoring.		
1.1	Samsung, Sony or equivalent 55" FHD Flat Smart Display or higher	Nos	1
1.2	Office Furniture for the manager's room including office desk, comfort chairs with armrest, guest sitting should be Interwood or equivalent as per the given samples and will be preapproved by PTA.	Lot	1
	Supply, Installation & commissioning Services	Job	1
	Dy. Director's Room		
1	A separate D. D's room with 55" FHD Branded Screen (Samsung, Sony or similar) Video Display Unit for physical and environment monitoring.		
1.1	Samsung, Sony or equivalent 55" FHD Flat Smart Display or higher	Nos	1
1.2	Office Furniture for the D. D's room including office desk, comfort chairs with armrest, guest sitting should be Interwood or equivalent as per the given samples and will be preapproved by PTA.	Lot	1
1.3	Supply, Installation & commissioning Services	Job	1

NOC/SOC Room:

S.No.	Description	UOM	QTY
1	NOC/SOC Room		
1.1	A separate Internal NOC/SOC room for 08 people with video wall Display Units for physical and environment monitoring. Considerations for this room are:	Lot	1
1.2	A separate National Security Operation Center (NSOC) room for 08 people with video wall display for physical and environmental monitoring of the whole facility shall be provided.	Lot	1
1.3	All equipment, cabling and other infrastructure requirements for the NOC/SOC operations.	Lot	1
1.4	Seating Arrangements for 30-35 staff members and 1 team lead.	Lot	1
1.5	Comfort Cooling ACs as per Design. Note: All available comfort Cooling ACs will be reused.	Lot	12
1.6	All Furniture for NOC/SOC including comfort chairs with armrest should be Interwood or equivalent, as per the given samples and will be pre-approved by PTA. How many chairs etc.	Job	
2	Video Walls (Samsung, Sony, LG or equivalent)		
	The Scope also includes supply and installation NOC/SOC, National telecom SOC furniture especially design for command and control center for 30-35 persons including desk chairs etc. and 55" inch ultra-narrow bezel 1 X(3x4) and 1 X (3X2) video walls screens with video wall controllers and all necessary accessories		
2.1	Video Wall for Internal NOC/SOC Room	Nos	1
	Panel size: 55" diagonal		
	Video Wall structure: Wall mount		
	Screen array support: Rows x Columns (3 x 2)		
	Back light LED: Backlight (Direct type)		
	Resolution: FHD (1920 x 1080) or above		
	Bezel width: 0.8 mm or less		
	Luminance: 700 cd/m2/ nits or above		
	Color: 10Bit, 1.06 Billion Colors		
	Response time: 8 ms or below		
	Contrast ratio (typical): 1200:1 or Higher.		

	LCD backlight lifetime: 50,000hrs or more		
	Ports: 1xDVI, 1xDP, 1xHDMI, 1xUSB, 1xRS232C 2.5mm Phone Jack, 1 x Ethernet RJ45 for control,		
	Audio: 1 x RCA L/R, Audio: 1 x 3.5mm Phone Jack, Speaker output 10W + 10W		
2.2	Video wall Controller for NOC Room		
	Form factor: Rack mount		
	Design: Modular Chassis Based		
	Architecture: Server based Architecture		
	Memory: 16 GB		
	Hard Drive: 3 x 1 TB (RAID Level 5 and Redundant)		
	Window Division: Supports 1/4/9/16 window division modes and full-screen switch of the window		
	Window Roaming: Support cross-window video roaming, and support opening windows to display video signal, with the window location and size adjustable.		
	Remote control: Remote control via iOS client server, Android client server and IE browser		
	OS: Windows Server / Linux		
	Input support: Up to 8 kinds of signal sources are supported, including VGA, DVI, HDMI, BNC, SDI, YpbPr, HD BaseT and IP camera input		
	Inputs: Total 12 Ports		
	Output: Total 12 Ports		
	Network ports: Dual RJ45 Gigabit		
	Decoding Capabilities: 2-ch@8 MP, 2-ch@6 MP, 2-ch@5 MP, 8-ch@1080P, 16-ch@720P and 32-ch@D1		
	Power supply: 100-240 V A.C, Redundant (1+1), Hot Swappable, Power, etc. LED indicators		
	Operating temperature: 0 to 40 degree Celsius		

3	Video Walls (Samsung, Sony, LG or equivalent)		
3.1	Video Wall for National SOC Room	Nos	1
	Panel size: 55" diagonal		
	Video Wall structure: Wall mount		
	Screen array support: Rows x Columns (3 x 4)		
	Back light LED: Backlight (Direct type)		

	Resolution: FHD (1920 x 1080) or above		
	Bezel width: 0.8 mm or less		
	Luminance: 700 cd/m2/ nits		
	Color: 10Bit, 1.06 Billion Colors		
	Response time: 8 ms		
	Contrast ratio (typical): 1200:1 or Higher.		
	LCD backlight lifetime: 50,000hrs or more		
	Ports: 1xDVI, 1xDP, 1xHDMI, 1xUSB, 1xRS232C 2.5mm Phone Jack, 1 x Ethernet RJ45 for control,		
	Audio: 1 x RCA L/R, Audio: 1 x 3.5mm Phone Jack, Speaker output 10W + 10W		
3.2	Video wall Controller for NOC Room		
	Form factor: Rack mount		
	Design: Modular Chassis Based		
	Architecture: Server based Architecture		
	Memory: 16 GB		
	Hard Drive: 3 x 1 TB (RAID Level 5 and Redundant)		
	Window Division: Supports 1/4/9/16 window division modes and full-screen switch of the window		
	Window Roaming: Support cross-window video roaming, and support opening windows to display video signal, with the window location and size adjustable.		
	Remote control: Remote control via iOS client server, Android client server and IE browser		
	OS: Windows Server / Linux		
	Input support: Up to 8 kinds of signal sources are supported, including VGA, DVI, HDMI, BNC, SDI, YpbPr, HD BaseT and IP camera input		
	Inputs: Total 12 Ports		
	Output: Total 12 Ports		
	Network ports: Dual RJ45 Gigabit		
	Decoding Capabilities: 2-ch@8 MP, 2-ch@6 MP, 2-ch@5 MP, 8-ch@1080P, 16-ch@720P and 32-ch@D1		
	Power supply: 100-240 V A.C, Redundant (1+1), Hot Swappable, Power, etc. LED indicators		
	Operating temperature: 0 to 40 degree Celsius		

Low Voltage Cables:

S.No.	Description	UOM	QTY
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1	Supply & installation, testing and commissioning of following sizes of Main / Sub main Cables in cable tray, conduit etc. Including all accessories, lugs, glands etc. complete in all respect.		
1.1	Main Input Cable 1 x 4C x 150mm ² armored XLPE Cable + 70mm ² CPC On Cable Tray	RFT	
1.2	UPS input cable, 1 x 4C x 95mm ² PVC insulated Cable + 50mm ² CPC On Cable Tray/Duct	RFT	
1.3	Main input cable for In-Row cooling, 1 x 4C x 16mm ² PVC Cable + E on Cable Tray.	RFT	
1.4	Main Input cable for outer unit, 1 x 4C x 10mm ² PVC cable + E CPC on cable tray.	RFT	
1.5	2C x 25mm ² PVC/PVC cable on cable tray for UPS output to AC PDPM.	RFT	
1.6	Rack mountable STS / ATS for Single Power Network devices	Nos	
1.7	Bidders to ensure all the relevant items for complete functionality	Nos	

LV Switchgears and LV Distribution Panels / Boards:

S.No.	Description	UOM	QTY
1	LV SWITCHGEAR AND LV DB / PANELS		
1	Electrical Panel, Power Distribution Boxes, Power Cables complied with requirements. Must Support 5+2 Racks current 35 KW/KVA or above load and expected Future expansion up to 10+4 racks load Total load of 70KW. Make: ABB / Schneider or equivalent		
1.1	Main Distribution Board, Main Tap off (LT Panel),	Nos.	4
A	WAPDA Tap-Off DBs	Nos.	2
B	Generator Tap Off with Auto Changeover & MOR	Nos.	2
1.2	Phase Reversal Protection Panel	Nos.	2
1.3	ATS for full Data Center Load including MOR	Nos.	2
1.4	Data center main distribution	Nos.	2
1.5	UPS Input Panel	Nos.	2
1.6	Power distribution module (for UPS output)	Nos.	2
1.7	DB utility for AC's, lighting, fire panel & NOC/SOC etc.	Lot.	1
1.8	Any Other Requirement (Industrial Sockets)	Lot.	1
1.9	AVR (Automatic Voltage Regulator):	Nos	1

Supply, Installation, testing & commissioning of 175KVA AVR (imported) having following main features including all installation accessories. Complete in all respects:		
a. Servo Motor Controlled Technology		
b. Fast Response for Fluctuations		
c. Reliable Stabilization for Secure Energy		
d. High efficiency in each model		
e. Short circuit protection		
f. Ability to work with non-linear loads		
g. Manual Bypass Switch		
h. Wide input voltage range version		
i. Electro-mechanic (breaker module) high-low voltage protection		
j. Output Isolation Transformer (optional)		
k. Digital Display option available		
l. Higher IP applications are available		
m. Phase Independent Voltage Regulation for Three Phase Models		

Uninterrupted Power Supply:

S.No.	Description	UOM	QTY
1	Uninterrupted Power Supply		
	Supply & Installation of the following UPS unit three-phase online double conversion, including battery backup for approved autonomy time, uninterrupted power supply system (UPS) as per technical specification, layout drawings and as per site requirement complete in all respect and to the entire satisfaction of PTA's TEC.		
1.1	Total maximum power draw in the Data Center is expected to be 35KW (For 7racks). Bidder shall propose 40KW/KVA UPS (for two separate paths) with following features:	Nos	2
	Precision Modular / Conventional Integrated Un-Interruptible Power Backup System		
	UPS: Conventional Minimum 40 KW/KVA (N+1) parallel scalable to 80 KW/KVA with precision power distribution module for UPS distribution to racks and utility power distribution to precision cooling units. Power distribution module shall be with in UPS rack or it can be present close to IT load, within IT racks.		
	Basic Requirements		
A	The integrated UPS of a single cabinet should be integrated with the UPS, UPS input, UPS output, maintenance bypass route, IT power distribution, air conditioner power supply, and lighting power supply.		
B	The topology of UPS should be online double conversion (3 phase in and 3 phase out).		

C	The UPS should be Conventional designed and supports manual and automatic built-in by pass maintenance system. The rated output power of the UPS should be 40KW/kVA. When there is a failure in the power module, the module should shut down automatically from the system in time without affecting other normal modules or causing output interruption.		
D	Display: 3 inch or above-inch LCD+LED		
E	The UPS system with a built-in maintenance bypass route should adopt centralized bypass route. It also supports the self-load function to carry out the self-test before connecting to load.		
F	The switching time is 0ms when the power supply mode is switched from mains to battery, battery to mains, mains to bypass, or the bypass to mains modes.		
G	The UPS system efficiency should reach to 90% at 50% and 70% load under the mains mode, and should be greater than or equal to 92% at 25% and 50% load. A third-party test report of IEC or equivalent standards is needed		
H	The UPS bypass route can support 10min running on 125% overload (ambient temperature $\leq 30^{\circ}\text{C}$)		
I	The case solidly coated with good spraying and no paint peeling, corrosion, or crack, flat host surface. All signs, tags, and text symbols should be clear, correct, and tidy. Switches are easy, flexible, and reliable to operate. Key switches such as bypass control switch and emergency shutdown switch should have protection devices and warning labels.		
J	An insulation protection is required for the power distribution unit of cabinet.		
K	Ventilation and heating dissipation: The power supply structure should be designed for good ventilation and heating dissipation		
L	The Integrated UPS should support man-machine interaction, provide an multi lingual with English preference user interface. Parameter setting and manual operation should meet the following requirements:		
M	Parameter setting: Support access to the monitoring module and parameter setting function. Hierarchical or simple authority protection is implemented by using passwords, and parameter settings are stored in the case of a power failure.		
N	Manual operation: Password protection and warning are provided for important operations. Manual intervention is supported under abnormal conditions.		
O	The integrated UPS system should provide RS232 or RS485/422, FE (SNMP communication interface), dry contact and ambient/internal monitoring sensor interface, and should provide communication cables to connect the communication interfaces and a variety of alarm signal terminals. The system should have following main functions:		
I	Real-time monitoring over the UPS working status: system normal operation / battery inverter/bypass power supply, overload, battery low discharge voltage, battery charging/discharging status, mains power failure, power module status (normal/abnormal quit), UPS system errors, and operation status		
li	Real-time monitoring over the ATS/main input switch status: UPS input switch status, UPS output switch status, UPS maintenance bypass switch status, IT power distribution switch status, and air conditioner power distribution switch status		

iii	Collecting and storing system operation data:		
iv	UPS main input voltage, UPS bypass input voltage, UPS output voltage, UPS output current, UPS output frequency, UPS module output current, battery voltage, charge/discharge current.		
v	Main input phase voltage, current, frequency, power factor, power energy, active power, reactive power, apparent power, load ratio, voltage-current harmonic wave ratio, bus bar temperature		
P	Current, power energy, contact point temperature, and load ratio of IT and air conditioner branch power distribution; monthly and yearly statistics on power energy		
Q	The UPS system should support battery number adjustment, have the function of regular automatic floating charge, charge/discharge conversion		
	The UPS must comply with following Operational conditions		
	a. Protection level: IP20		
	b. Operation Temperature: 0°C to +40°C (no de-rating)		
	c. Relative humidity: maximum 95% (20°C±5°C)		
	d. Altitude: 0–1000 m without de-rating. For each additional 100m above 1000m, the load will be reduced by 1%.		
	e. UPS cooling mode: forced air cooling (smart speed adjustment for fans)		
	f. Battery Units for 15 minutes backup by each UPS and 30 minutes collectively by both.		
	g. Further unforeseen requirements		
1.3	Labor services for UPS installation, testing and commissioning	Job	1
	All kind of Provisions with DCIM, based on communication protocol MODBUS TCP-IP BACKNET IP, including all required interfacing and interconnection work with high performance Ethernet network based on TCP/IP protocol. Completion of the system in all respects with manufacturer's instructions, devices and equipment to complete the system.		

Fire Detection & Suppression System:

S.No.	Description	UOM	QTY
1	Fire Detection & Suppression System		
	Supply, Installation, testing and commissioning of Addressable Fire Alarm System comprising of following equipment's including all accessories required for the completion of the system in all respects. (for data center and power rooms) Make: Schrack-Seconet Germany, VDS Approved or equivalent		
1.1	Addressable Fire Alarm Control Panel of 4-loops having maximum 64 devices per loop expandable up to 4 loops. The FACP shall be self-powered with built in 12V batteries for 24 Hrs. backup with charging unit. It can be programmed using Windows based software for peripheral devices like display unit, printers etc.	Nos	

1.2	Addressable Multi Detectors (at false ceiling/ceiling) incorporating a pulsing LED located in labyrinth with in the housing of the detector. Sensing of the detector shall be adjustable via software. The detector shall have built in short circuit isolators on both inputs.	Nos	
1.3	Addressable Break Glass Type Manual Call Point with cover having a built-in short circuit isolator and built in microprocessor to ensure a response time of max 1 second. It also incorporates an indication LED, flashed after pressing the button to acknowledge the activation and a key operation facility for testing purposes.	Nos	
1.4	Addressable Indoor Loop Powered electronic sounder with flasher, having minimum sound output 100 dB at 1 meter with frequencies for variety of sounds as required. Sounder shall be loop wired and loop signaled, built in short circuit isolator, configured via software.	Nos	
1.5	Stand Alone Multi Detectors incorporating a pulsing LED located in labyrinth with in the housing of the detector. The detector shall have built in short circuit isolators.	Nos	
1.6	Stand Alone Outdoor Powered electronic sounder with flasher, having minimum sound output 100 dB at 1 meter with frequencies for variety of sounds as required. Sounder shall be loop wired and loop signaled, built in short circuit isolator, with built-in battery.	Nos	
1.7	Supply and wiring of 2C, 1.5 Sq.mm Fire Resistant Shielded Cable (Fire rating for 2 hours at 950°C) in 25mm dia PVC conduit from fire alarm control panel to all sensors & devices including all installation accessories complete in all respect. Note: 1) G.I flexible conduit with PVC Coating shall be used for every point drop.	Lot	
1.8	Supply, installation & wiring for FACP Power from DB to FACP with 2C, 2.5 Sq.mm in 25mm dia PVC Conduit. Complete in all respect.	Lot	
1.9	Programming, testing and commissioning of the complete system as per client's requirements with training sessions of maintenance personnel.	Job	
1.10	All kind of Provisions with DCIM, Fire Alarm System based on communication protocol MODBUS TCP-IP BACKNET IP, including all required interfacing and interconnection work with high performance Ethernet network based on TCP/IP protocol. Completion of the system in all respects with manufacturer's instructions, devices and equipment to complete the system.	Job	
1.11	Allow for any other item required for completion of system not covered in BoQ or specifications/drawings in accordance with the standards and brands shown and approved by PTA. All such items shall be covered in this item but complete description, item rates, quantity required and brands shall be mentioned separately and to be attached with the BoQ.	Job	
1.12	Hand held CO'2 Type fire extinguishers 5kg Class - C	Nos	
2	VESDA System		
	Supply, Installation, testing Supply, Installation, testing and commissioning of VESDA System comprising of following equipment's including all accessories required for the completion of the system in all respects. (for DATA CENTER and power rooms)		
2.1	VESDA Control Panel Class B type comprising of 4-inlet pipes, Laser based smoke detection, high efficiency aspirator, airflow supervisor for each sampling pipe, clean air barrier optic protection, 7 programmable relays, easy to replaceable filters etc. etc. The VESDA shall be supplied with built in 12/24 VDC UL listed power supply with enclosure for 24 Hrs. backup with charging unit. Detector will be programmed using Windows based software for peripheral devices like display unit, printers etc. (for DATA CENTER and power rooms)	Nos	
2.2	Supply and Laying of 25mm OD DIA cPVC sampling pipe with sampling holes including all installation accessories, elbows, Sleeve (ABS) for 25MM Pipe PU, 90° Angle (ABS) for 25MM Pipe PU, End Cap (ABS) for 25MM Pipe PU, Mounting Clips, Union, complete in all respect.	Job	

2.3	Supply, installation & wiring for VESDA Power from DB to VESDA with 2C, 1.5 Sq.mm in 25mm dia PVC Conduit. Complete in all respect.	Job	
2.4	Programming, testing and commissioning of the complete system as per client's requirements permissible for the VESDA with training sessions of maintenance personnel.	Job	
2.5	Allow for any other item required for completion of system not covered in BOQ in accordance with the same standards and brands shown and approved by PTA. All such items shall be covered in this item but complete description, item rates, quantity required and brands shall be mentioned separately and to be attached with the BoQ.	Job	
Note	All kind of Provisions with DCIM, based on communication protocol MODBUS TCP-IP BACKNET IP, including all required interfacing and interconnection work with high performance Ethernet network based on TCP/IP protocol. Completion of the system in all respects with manufacturer's instructions, devices and equipment to complete the system.		

Access Control System:

S.No.	Description	UOM	QTY
1	Access Control System		
1.1	Bidder will be responsible to supply, install and commission Access Control System (ACS) with magnetic locks. The Biometric and RFID door readers and controllers should be mounted according to the design.		
	The detailed technical specifications of the products will be as follows.		
1.2	Access control system shall be installed on doors as per design. The Main Access controller units (Door processing units)		
1.3	The monitoring of the access control will be done in NOC/SOC.		
1.4	All doors of facility will have RFID + Biometric		
1.5	Entry Control - Integrated with CCTV for monitoring / permitting / denying facility access at critical entry points.		
1.6	Multilevel authentication i.e. Password, Biometric integrated with centralized command and control system for all rooms in datacenter facility.		
1.7	Door Interface Unit (DIU)	Nos	
1.8	Power Supply Units for push buttons complete in all respects.	Nos	
1.9	Drop Bolt/Magnetic Lock with holder and fixing accessories.	Nos	
2	Touch type Push Button (Exit Switch) suitable for installation on BS standard size back box connected to door controller for access.	Nos	
2.1	Supply and Wiring of CAT-6, UTP Cables from Door Controller to all devices as shown in the schematic diagram in 25mm dia PVC Conduit, including termination and tagging at both ends. Complete in all respects. (Selected Cable Must be UL Listed of LSZH) Note: 1) G.I flexible conduit with PVC Coating shall be used for every point drop.	Job	1
2.2	Installation, programming, testing and commissioning of the complete system as per PTA's requirement.		

2.3	All kind of Provisions with DCIM, Access Control System based on communication protocol MODBUS TCP-IP BACKNET IP, including all required interfacing and interconnection work with high performance Ethernet network based on TCP/IP protocol. Completion of the system in all respects with manufacturer's instructions, devices and equipment to complete the system.	Job	1

Surveillance System:

S.No.	Description	UOM	QTY
1	SURVEILLANCE SYSTEM		
	Supply, Installation, testing and commissioning of IP Camera - 5MP minimum, POE, Wall / Ceiling Mounted, Water Proof, IP Camera support (1U) with upto 2 x Hard Disk connection, Storage of 4TB, 30 Days Storage, Commissioning of IP camera Monitoring system including all power and communication accessories, housings, mounting brackets, suspension rods etc. required for completion of the system.		
1.1	Surface/Recessed Ceiling mounted fixed type PoE Powered I.P Camera with day and night feature with 8MP (1920 x 1080) with live and recording quality of minimum 30 fps, along with all mounting accessories complete in all respect as per drawing and specification.		As per design
1.2	24 Port PoE 1-Gig Switch with SFP Port		
1.3	Supply and Wiring of CAT-6, UTP Cables from Camera to POE Switch and PoE switch from as shown in the schematic diagram in 25mm dia PVC Conduit, including termination and tagging at both ends. Complete in all respects. (Selected Cable Must be UL Listed of LSZH) Note: 1) G.I flexible conduit with PVC Coating shall be used for every point drop.		
1.4	Network Video Recorder (NVR). The NVR shall be equipped with LAN / WAN facility, Suitable to accommodate 20-channels or more video input, NVRs should have minimum 30 days storage capacity. Complete with all connecting cords and accessories using CMS Software.		
1.5	Desktop PC with optical combo drive for controlling of all Cameras via LAN.		
1.6	Integration of all security equipment with video screen in Manager's Room with all connecting cords and mounting accessories.		
1.7	Installation, programming, testing and commissioning of the complete system as per PTA's requirement.	Job	1
1.8	All kind of Provisions with DCIM, IP Based CCTV System based on communication protocol MODBUS TCP-IP BACKNET IP, including all required interfacing and interconnection work with high performance Ethernet network based on TCP/IP protocol. Completion of the system in all respects with manufacturer's instructions, devices and equipment to complete the system.	Job	1

1.9	Allow for any other item required for completion of system not covered in BOQ in accordance with the same standards and brands shown and approved by PTA. All such items shall be covered in this item but complete description, item rates, quantity required and brands shall be mentioned separately and to be attached with the BOQ.	Job	1
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Cooling and Aisle System for Data Center:

S.No.	Description	UOM	QTY
1	Cooling and Aisle System for Data Center		
1.1	In-Row Precision Temperature and Humidity Control System Units:	Job	
	Supply of In-Row Precision Air Conditioning Unit Capacity 30KW or above with internal or external Dual input power supply, Humidifier Electric Reheating and matching with ≥ 4-inch LED color Display and air-cooled condensers. The cooling unit must have following features		
1.1.1	EC type FANs		
1.1.2	Air flow ≥ 3200 m ³ /h		
1.1.3	Humidifier capacity ≥1.5kg/h		
1.1.4	Heating capacity 3KW-6kW		
1.1.5	The unit could achieve stable & fast dehumidification at min 10% low IT load and larger than 95% relative humidity conditions, to avoid the condensation risk on IT equipment at extremely conditions		
1.1.6	PAC unit should be equipped with PTC or stainless-steel tubular fin electrical heater, used for heating while low temperature conditions to improve reliability		
1.1.7	PAC evaporator should be equipped with high-performance inner grooved copper pipe and blue hydraulic aluminum fin to improve heat exchanging capability. The evaporator should adopt “V” type design to get better air distribution system and less air pressure drop. Vendors can also propose equivalent evaporator type while ensuring same or better performance.		
1.1.8	PAC unit should be configured with surge protection device to increase safety and reliability. No less than 6kV ability is recommended. Vendors can also propose as per their own electrical design while ensuring same or better performance.		
1.1.9	PAC indoor unit should use high efficiency energy saving variable speed EC fans to reduce fan power consumption		
1.1.10	The indoor unit should adopt swappable maintenance for power box and control and power modules, to make the maintenance work faster and easier. Vendors can also propose as per their own standard design while ensuring same or better performance.		
1.1.11	The PAC unit should be configured with 4-inch or above LCD true color touch screen to provide good human-computer interaction and a vivid interface, the controller should support to display max. 30 day's temperature & humidity color curves, and should also be able to graphically display the operation		

	status of the unit components. Display parameters as per standard interface design is also acceptable.		
1.1.12	PAC unit should have the one-key touch function for display and collection of faulty messages into a USB disk. PAC unit should have the fault alarm function and operating logs record function. The recorded history of alarms messages should not be less than 500, Operating logs should not be less than 200. Logging, alarm history and data extraction as per each brand's standard interface design is also acceptable.		
1.1.13	Installation, programming, testing and commissioning of the complete system as per PTA's requirement.	Job	1
Aisle System			
2	Single Row HOT/COLD AISLE with following mandatory feature:		
2.1	A aisle containment consists of the ceiling panels, end doors, and cabinets. The ceiling panels are flat or ribbed. Both ends of the aisle can be installed with the camera, temperature and humidity sensor, smoke detector, aisle lighting, infrared sensor (optional), and reserved hole for fire extinguishing nozzles. The ceiling panels can be fixed and rotated or drop type (automatically controlled by the magnetic locks). Opening ceiling panels can activate the fire extinguishing linkage alarm signal in the aisle. In case of fire, the magnetic locks open and ceiling panels open automatically due to gravity force. The design ensures that fire extinguishing gas enters the cold/hot aisle containment.		
2.2	The doors at both ends of the cold /hot aisle containment must be sliding doors. The sliding door adopts a push-and-pull design to ensure that the cold/hot aisle containment is properly sealed and separated.		
2.3	Single-row deployment:		
2.4	Adopts the modular design and features the cold or hot aisle containment. A single containment should integrate the cabinet system, power supply and distribution system, cooling system, management system, and cabling system. The dual-row deployment requires all cabinets in the module to be properly sealed. The rated power of a single cabinet is 5 kW		
2.5	The smart module should provide electric and extra-low voltage (ELV) cable troughs, and support engineering-free installation and expansion in the unit of cabinet. The cable troughs should support cross-column, cross-cabinet row, and cross-module installation or as per standard cable trough design		
2.6	Cable troughs can separate signal cables from power cables. The positions of the partition plates can be adjusted based on the number of cables. Material requirements: high-intensity class A carbon cold rolled steel plates with a thickness of no less than 1.5 mm or equivalent as per each brand's standard design is also acceptable while ensuring same or better standard.		
2.7	Optional horizontal and vertical cable management units should be configured inside the cabinets.		
	Installation, programming, testing and commissioning of the complete system as per PTA's requirement.	Job	1
Comfort Cooling System			

3	The comfort cooling units 2 ton reversible roof /wall mounted split / cassettes of DC inverter of VRF/VRV technology for Power, National SOC and NOC/SOC and Manager Room, D.D's Room, IT Operation sitting area and MMR of renowned brand like Daikin, Acson, Mitsubishi or equivalent with three (03) years of maintenance and support. Note: Current VRF/AC system shall be utilized for this work however routes and piping need to be reinstalled as per layout/diagram.	Nos.	11(wall mount) and 2 cassettes.
3.1	Installation, programming, testing and commissioning of the complete system as per PTA's requirement.	Job	1

Professional Services:

S.No.	Description	UOM	QTY
1	Professional Services		
1.1	Bidders to note that PTA expects a proposal based on turnkey solution and shall include complete design documentation, installation, commissioning, implementation, and configuration testing and integration services in the proposal as needed.		
1.2	Installation, commissioning and testing services for all the elements quoted in this RFP including but not limited to:		
1.2.1	Cooling and Aisle systems,		
1.2.2	Power systems including Genets, UPS, batteries and cabling etc.		
1.2.3	Fire detection and suppression system		
1.2.4	Water leakage detection system		
1.2.5	Rodent repellent system		
1.2.6	VESDA System		
	All consumables can be evaluated during the site surveys and shall be included in the proposal.		
1.3	Network cabling design, implementation and testing services shall be included in the proposal.		
1.4	Training and Knowledge Transfer: - Bidder is required to provide complementary professional training (i.e. Free of Cost).		
1.5	work management services shall be the responsibility of bidder.		
1.6	Development of Standard operating procedures (SOPs): Bidder shall provide / develop SOP for Datacenter and the solutions / services provided.		
1.7	Following documents should be delivered as part of the work.		
1.7.1	PTA IT Infrastructure Assessment document		
1.7.3	Data Center physical layout-as built documents		
1.7.4	SLD (Single Line Diagram) for power systems		

1.7.5	UPS System design and test documents		
1.7.6	DATA CENTER cooling design and test documents		
1.7.7	Network cabling design and test documents		
1.7.8	Monitoring system design and test documents		
1.7.9	Fire suppression system design and test documents		
1.7.10	CCTV system design and test documents		
1.7.11	Workflow document for remote monitoring services		
1.7.12	Preparation of drawings for ICT Facility in proposed area	Job	1
1.7.13	work management, work plane and strategy	Job	1
1.7.14	PTA expects at least one (1) resource available PTA NOC, capable to handle operational problems and incidences across the complete DATA CENTER infrastructure. The bidder is required to propose their staffing plan to support PTA objective. (availability 8 x 7)	Job	1
1.7.15	The Contractor will work with PTA Tier 3 Data Center certification.		
2	Support and Operations		
2.1	All equipment should have warranty and back to back support of OEM for minimum 3 years with SLA, Spares, Maintenance support & service etc.	Job	1

DCIM / EMS / NMS:

S.No.	Description	UOM	QTY
1	Monitoring System for Data Center - DCIM		
	PTA Intends to procure a monitoring, and reporting system which provides detailed physical and logical monitoring of its IT infrastructure and applications to be used by PTA NOC and business teams. DCIM Suite Software to integrate and monitor all appliances installed in Data Center with perpetual license for required no of racks and nodes.		
1.1	The DCIM suite shall be able to integrate with third party devices (SNMP v1/v3, Modbus IP enabled), and scalable to add more devices in future. The DCIM software shall show temperature of individual racks as well as data from cooling units, UPS, PDUs and all other connecting sensing devices and compute the data intelligently. The software shall be able to generate graphs, reports, alarms and warnings. The containment shall also humidity monitoring.		
1.2	The DCIM data can be viewed through web browser with customizable viewing panes as well a desktop client.		
a	Must generate alarms in colors, e-mail or SMS		
b	The Data Center centralized collector or centralized controller should adopt internal or external dual-power supply design to ensure the reliability of data center monitoring		

c	In order to improve the reliability of the monitoring system, all the intelligent node signal transmission and the sensor power supply are all adopted by POE ring circuit or manufacturer's standard methodology		
d	The monitoring system in the data center is of the same brand as the power, cooling and racks		
e	The infrastructure management system provides through reporting and management of Data Center infrastructure which also provide the 3D view of Data Center (Optional)		
f	The monitoring shall be done in NOC and it must have different user's authentication options. It should be able to attain detailed logs of power, cooling and environmental conditions of Data Center.		
1.3	DCIM Monitoring and Reporting Requirements		
1.3.1	The Scope of the monitoring system includes the complete, the proposed data center infrastructure by the bidder including PDUs, Power &UPS, Batteries and Cooling components etc.		
1.3.2	The system should support near/ real time monitoring of its SNMP supported devices, systems and applications.		
1.3.3	The system should have the ability to define various thresholds and alerts.		
1.3.4	Ability to configure polling intervals to minimize the monitoring overhead.		
1.3.5	The system must support real time and historical data with the retention period of twelve (12) months or as per standard parameters of quoted brands		
1.3.6	The monitoring tool should be able to present the data in form of customizable dashboards in real time or user defined duration.		
1.3.7	The dashboards should be customizable for various organizational levels of PTA ICT team and users.		
1.3.8	Roles based access control should be implemented for the various users of the monitoring system.		
1.3.9	The proposed system should be able highlight alerts and events information.		
1.3.10	The system should be able to propagate/notify any event in form of an Email or SMS generation.		
1.3.11	The system should provide a built-in reporting module which can generate customized reports using a scheduler, daily / weekly / monthly basis or on demand.		
1.4	Deployment Requirements		
1.4.1	The system should be deployed Hardware/Software based with redundant power supply external or internal and completely secured. The bidder should assess the deployment of this system as per PTA requirements.		
1.4.2	All software and hardware needed for this system to be deployed shall be bidder responsibility.		
1.4.3	The system should be highly scalable to support future growth of PTA requirements for up to 100 monitoring nodes.		
1.4.4	The Scope of the monitoring system includes the complete PTA IT infrastructure as explained in the clause #.2, the proposed data center infrastructure by the bidder including PDU, UPS and Cooling components etc.		

1.4.5	The Scope also includes supply and installation NOC/SOC, National SOC furniture especially design for command and control center for 30-35 persons including desk chairs etc. and 55" inch ultra-narrow bezel (3x4) 2 x video walls screens.		
1.5	Infrastructure and Environment Monitoring		
1.5.1	Environmental monitoring system to monitor all environmental sensors, access controls, IP cameras including 3rd Party Devices on following interfaces (SNMP, Modbus485, Dry contacts, Analog signals).		
1.5.2	Monitoring of UPS and cooling.		
1.5.3	Records Data and Logs of historical information of alarms and notifications.		
1.5.4	Integration of Fire suppression system and Power Switchgear (DBs) may be quoted in optional.		
1.5.5	If applicable, OEM support should also be available in case of any issue. OEM support is required 24x7. The support / license should be valid for 3 years with year wise breakup.		
	SPECIAL NOTE: In case any up-gradation software generated up to 6 years from the date of handling over, the vendor should upgrade free of cost without any commercial implication. The Scope including updating of integration and operational software for all sub-systems covered in the DCIM package. The supplied system shall be backward compatible for at least 05 years up gradation in future.		
2	Network Monitoring System		
2.1	NOC Software, Manage Engine, SolarWinds or equivalent, (Complete Solution- advance enterprise edition for 230 devices)	Job	
2.2	NMS should cover minimum Modules as follows:		
2.2.1	Network Performance		
2.2.2	Server & Virtualization		
2.2.3	Network Visualization		
2.2.4	Network Fault Management		
	a. Monitor network, servers, and applications for health and performance.		
	b. Analyze bandwidth and proactively identify bottlenecks.		
	c. Continuously monitor and analyze security threats and attacks.		
	d. Modify network configurations per the business need.		
	e. Pickup faults and troubleshoot quickly to reduce the mean time to repair		
	f. Monitor network performance in real time		
	g. Identify bandwidth hogs		

	h. Manage config changes		
	i. Analyze firewall security and logs		
	j. Monitor application performance		
	k. NOC dashboards and CCTV views etc.		
	l. Real-time performance graphs		
	m. Email, SMS, web UI notification of faults with troubleshooting tools ICMP, Switch port mapper, work flow automation, support for Flow.		

Racks / Network Passive Cabling:

<i>S.No.</i>	<i>Description</i>	<i>UOM</i>	<i>QTY</i>
1	RACKS AND COMPONENTS		
1.1	Racks 800 x 1200 Minor changes in rack size are allowed to accommodate multiple principles	Nos	10
1.2	Rack 600 x 800 Minor changes in rack size are allowed to accommodate multiple principles	Nos	4
1.3	Rack PDU, Metered, 32 Amp, 230V, (20) C13 & (4) C19 along with SNMP	Nos	28
1.4	Anti-Static Wrist Strap with Grounding Wire	Nos	20
1.5	Network Cabling Compliance with ANSI/TIA/EIA 568 Standard and Cable Labeling Compliance with ANSI/TIA 606 Standard	Job	1
2	Network Cabling Solution (LEGRAND, BELDEN, PANDUIT AND CORNING)		
	The Scope of cabling solution includes design, procurement, implementation, testing and commissioning for complete cabling solution for PTA data center.		
2.1	Cat-6A SFTP LSZH Cable	Mtr	
2.2	24 Port Patch Panel loaded	Nos	
2.3	Front Cable Manager	Nos	
2.4	Cat-6A Patch Cords 3 mtr long	Nos	
	Fiber Network Cabling		
2.5	24 Core SM Fiber Optic Cable 10G Supported	Mtr	
2.6	24 Port LC Duplex ODF Fully loaded	Nos	
2.7	Front Cable Manager	Nos	
2.8	LC-LC Fiber Optic Patch Cord (Single Mode)	Nos	

3	Local Area Network Cabling:		
3.1	Cat-6A UUTP Cable LSZH	Mtr	
3.2	Cat-6A I/O's UTP	Nos	
3.3	Single Port Face Plate	Nos	
3.4	24 Port Patch Panel loaded with Cat-6A UTP I/O's	Nos	
3.5	3 mtr long Patch Cord Cat-6A UUTP LSZH	Nos	
3.6	1 mtr long Patch Cord Cat-6A UUTP LSZH	Nos	
3.7	Front Cable Manager	Nos	
Note:	The network cabling solution shall be complete covering (2) Network Racks with-in DATA CENTER and MMRs Room. Please enclose a complete solution plan with HL diagram as per given guidelines.		
4	Networking Services		
4.1	Passive cabling for Access switches (Floors)	Job	1
4.2	Passive cabling for Access switches (Data Center)	Job	1
4.3	Installation, Patching and Testing (complete job)	Job	1
5	LOW VOLTAGE CABLE (for NOC)		
	Supply, Installation, testing and commissioning of following items for voice and data communication system including all material, labor, tools, accessories etc. Complete in all respects. Quantities for cables shown in BOQ are estimated and taken from drawings. Contractor is advised to take measurement at site before commencement of works. Different colors of voice and data cables shall be used. (for NOC)		
5.1	Duplex Face plate with 2 No. CAT-6 RJ-45 I/O for Data, white / off white finish, complete with shuttered click-ins, labels and all accessories including 16 SWG sheet steel back box. Complete in all respects. (for NOC)		
5.2	Imported 19U Communication Rack for Low Current Systems (Wall Mounted), suitable for installation of standard patch panels and etc. Rack shall be equipped with power distribution units (PDUs) with at least 5 imported power sockets & proper ventilation system including fan etc. Complete in all respects. (for NOC)		
6	DATA SWITCH (for NOC)		
	Installation of following Data Switches including all accessories for complete job.		
6.1	24-port Data Switch with SFP Ports. (For NOC)	Nos	

7	PATCH PANEL (for NOC)		
	Following CAT-6, Patch Panel equipped with RJ-45 I/Os for Data Communication System including all labeling and all mounting accessories. Complete in all respects. (for NOC)		
7.1	24-Port CAT-6 Patch Panel for Data	Nos	
7.2	Front Cable Organizer for Voice patch panels / wiring blocks with complete labeling and dressing for incoming cable management.	Nos	
7.3	3-meter-long. (Data Point to Work Station)	Nos	
7.4	1 meter long. (Patch panel to Switch).	Nos	
8	TESTING AND COMMISSIONING		
8.1	Testing and commissioning of all above items, termination and connectivity at both ends, including submission of detailed fluke test and other reports from the Principals.	Job	1

a. Network cabling design for Floors:

S.No.	Description	UOM	QTY
1	Networking		
1.1	The proposal for the upgraded data center should include the migration of the existing PTA data center to the consolidated center including LAN, network etc.		
1.3.5	Connectivity of the PTA LAN services at different floors of the PTA building from the consolidated data center location by the contractor. The connectivity between distribution and access switches must be 10 G fiber dual connectivity.		
1.3.7	Provided recommendations by the contractor based on site survey for any infrastructure requirements will be discussed with PTA for implementation		
1.3.8	Any new requirement i.e. (cables / connector, ODF/MDF etc.) which are required for physical migration will be the responsibility of the contractor.		
1.6	The bidder is expected to provide as-built drawings with new connectivity schema for the LAN services.		
1.7	PTA expects a professional cabling approach for extending the new LAN services, compliant to the TIA/EIA-568 standards.		

Training:

S.No.	Description	UOM	QTY

1	Training		
	Complete Operational and Maintenance Training for Four (04) designated persons of the PTA for all installed Systems and Facilities.		
	The Bidders have to mention complete description of the 'necessary training modules' for each of the following Systems. Detailed breakup of each System's Trainings to be provided separately.		
1.1	Power & Electrical System	Job	1
1.2	Cooling & Air-Conditioning System	Job	1
1.3	Smoke Extraction System	Job	1
1.4	Lighting System	Job	1
1.5	Surveillance System	Job	1
1.6	Access Control System	Job	1
1.7	Fire Alarm System	Job	1
1.8	Fire Suppression System & VESDA	Job	1
1.9	Networking System	Job	1
1.10	Others	Job	1
2	CDCP / CDCS Training and Certification		
2.1	Arranging CDCP and CDCS training and certification for officials. Note: Training and Knowledge Transfer: - Bidder is required to provide complementary professional training (i.e. Free of Cost).	Nos	5

Extra (Optional) Items:

S.No.		UOM	QTY
	Optional Items		

Note:

1. The quantities as stated in the BOQ are estimated quantities only. Therefore, Bidders before quoting shall satisfy himself for the exact quantities of material which should be as per requirement & specification, drawing and standards.
2. No claims shall be entertained on account of fall or rise in the market price, control price or labour wages or for any cause after the bid is accepted.
3. Solution with any inferior specifications will be rejected.
4. Multiple options are not allowed, bidders should quote only one option and shall quote for all of the above items.
5. All quoted items shall be verified as per their datasheets to cater the mentioned specifications.
6. Any additional requirement to complete the work will be responsibility of the contractor.

7. Please use the same serial No. of items as mentioned in BoQ (Annex - D) and **quote prices for each module separately.**
8. The specifications and requirements elaborated above against the BoQ are the minimum requirements however the bidder may quote the higher and better specifications

Note: Any additional/unforeseen requirements should be the responsibility of the contractor.

Authorized Signature of bidder with seal stamp

Annex-E

Financial Proposal (Bid Format)

Supply, Installation and Commissioning of Fully redundant (N+1) Data Center as per International Standards with three (3) Years Hardware Warranty, three (3) years Maintenance & Support Services and with three (3) years Software updates for the Perpetual Software Licenses

The financial bid shall be fully inline with the BOQ .

Date _____

Company Name _____

a. Supply, Installation and Commissioning of Fully redundant (N+1) Data Center with three (3) years Software updates for the Perpetual Software Licenses

S#	Description of Item/Job Quoted with Specifications and brand name as per BoQ provided in the bidding documents	UoM	Quantity	Unit Rate (without Sales Tax)	Amount (without Sales Tax)	Sales Tax		Amount (with Sales Tax)
						Amount	Rate	
	For example							
	Provision, Installation and laying of 4 core cable Size _____ make Pakistan Cables, fast Cable or equivalent including all	Rft						

	accessories as per best engineering practice as per satisfaction of engineer							
	Provision & supply of chairs of make Interwood	No.						
	Plaster Work							

Note : Please use the same serial No. of items as mentioned in BoQ (Annex - D) and quote prices for each module separately

b. Three (3) Years Hardware Warranty, three (3) years Maintenance & Support Services

Sr. No.	Description	Per Year Cost	Total M&S Price Inclusive of Applicable Taxes for three (3) years
1	Maintenance & Support Cost		

Total Amount in words (a+b): (Rupees.....)

Any inferior specifications (as provided in the BOQ) will be rejected

FINANCIAL PROPOSAL not accompanied with Bid security will be rejected without any right of appeal.

Note: please improve upon any other requirement which is not listed and should be the responsibility of the contractor.

Authorized Signature of bidder with seal stamp

Annex-F

CONTRACT FOR SUPPLY OF GOODS AND PROVISION OF SERVICES FOR INSTALLATION,
COMMISSIONING AND MAINTAINANCE OF DATACENTER FACILITY FOR PTA

This Contract (the “Contract”) is made and entered into at Islamabad on this _____ day of

By and between

The Pakistan Telecommunication Authority, a statutory body established under Pakistan Telecommunication (Re-Organization) Act, 1996, having its Head Quarter at F-5/1, Islamabad through Director ICT (hereinafter called as the “CLIENT” which expression shall where the context admits, include successors-in-interest and assigns) of the One Part:

AND

The (insert name of company) a company incorporated under the laws of having its registered office at -----through its authorized representative Mr..... (herein after called as “CONTRACTOR”) which expression shall where the context so allows include his/its successors-in interest, executors, administrators, heirs and permitted assigns) of the Other Part;

(The Party of the One Part and Party of the Other Part shall hereinafter be collectively referred to as ‘Parties’ and individually as ‘Party’ as the context of this Agreement may require).

WHEREAS, the Client desires to acquire the services of Contractor for supply, installation, commissioning, implementing and migration of datacenter facility for PTA (“the Services”) including three (03) years’ warranty, maintenance and support services for the duration of this contract and as per terms and conditions of this Contract and documents attached herewith.

WHEREAS, the contractor represents that it being engaged in the business of providing the Services, has the requisite expertise and resources to provide top quality Services to the Client in accordance with highest industry standards and to the satisfaction of the Client. The contractor undertakes that the Services shall be provided only through the staff who have the requisite expertise and experience.

NOW THEREFORE, the Parties to this Contract agree as follows:

1. The Contractor hereby covenants with the Client to supply the Goods in the manner as provided in the RFP/Bidding Document (an integral part of this Contract) and provide the Services and to remedy defects / damage therein, at the time and in the manner, in conformity in all respects with the provisions of the Contract.
2. The Client hereby covenants with the Contractor to pay the Contractor, the Contract Price at the times and in the manner, in conformity in all respects with the provisions of the Contract, in consideration

of supply of the Goods and provision of the Services and remedying of defects / damage therein as and when required.

3. The following shall be deemed to form and be read and construct as integral part of this Contract:
- a. The Bidding Document
 - b. Bidder's Proposal
 - c. Affidavit(s)
 - d. Authorized Dealership / Agency Certificate
 - e. Manufacturer Authorization Letter (MLA)
 - f. Bid Security and Performance Guarantee
 - g. Agreement
 - h. Non-Disclosure Agreement

The terms and conditions of this Contract shall prevail over all other documents at the first instance, however, in the event of any conflict, discrepancy and/or inconsistency between the contract and other the documents, the above documents orderly shall prevail only to the extent of the matters not provided in the Contract.

IN WITNESS whereof the Parties hereto have caused this Contract to be executed in accordance with the laws of Pakistan as of the day, month and year first indicated above.

For [full legal name of the Client]:

For [full legal name of the Contractor]:

Signature _____

Signature _____

Name _____

Name _____

Witnessed By: _____

Witnessed By: _____

1. DEFINITIONS

1.1 In this Contract, except otherwise provided, the following words, expressions and/or phrases shall have the meanings as defined herein below. Words importing the singular only include the plural and vice versa where the context so requires.

- a. Effective date: means the date of Signing of the Contract.
- b. Modularity: is the degree to which a system's components may be separated and recombined. Modularity refers to the extent to which installed may be divided into smaller modules.
- c. Scalability: is the capability of infrastructure to handle and perform under an increased or expanding workload. A facility that scales well will be able to maintain or even increase its level of performance or efficiency when tested by larger operational demands. Furthermore, the facility should have capability for expansion without and disruption / dismantling.
- d. Security: The defense of against any kind of intrusion and unauthorized use of resources.
- e. Services: means the work, activities or described under the scope of work including deliverables attached as Annex-A to this Contract.
- f. Specifications: means the specifications for the Product as directed by Client including deliverables, together with any additional specifications or modifications to the specifications that may be agreed to in writing by the parties during the term of this Agreement/contract.
- g. Migration: Migrating all the existing infrastructure available in different server room(s) and network access/distribution.
- h. Time of Completion: means the time schedule within which Completion and Execution of the Services is desired by Client.
- i. Acceptance Testing: means the testing or checking of the delivered solution as per scope of the contract. This testing shall be conducted based on the given TOR, and shall results in the relevant milestone as mentioned in this document, if declared successful by PTA Authorized Representative.
- j. Contract Duration: means the term of the contract starting from the date of signing of the contract. The period of three (3) years warranty and support services shall be starting from the

date of issuance of Final Acceptance Certificate (FAC) and extendable with the same terms and conditions on mutual consent.

- k. Standards: means the good supplied and the service provided under this contract shall conform to the authoritative latest industry standards.

2. SCOPE OF WORK (SOW)

Contractor shall supply, commission, install, migrate data center facility according to the Client specifications and related information (the “deliverables”), support and maintenance, training of nominate PTA officers on deployment and operation of data center attached hereto as Annex- C (TOR).

3. COMMERCIAL AVAILABILITY

The Goods supplied under this Contract shall be commercially available at the time of signing of the contract. Commercial availability means that such Goods shall have been sold, installed and operationalized in more than two installations initiated under two separate contracts by manufacturer globally / locally.

5. PATENT RIGHT

The Contractor shall indemnify and hold the Client harmless against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods / the Service or any part thereof.

6. PACKING

The Contractor shall provide such packing of the Goods as is sufficient to prevent their damage or deterioration during storage / transit to their final destination as indicated in the Contract. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the final destination and withstand, without limitation, rough handling, exposure to extreme temperatures, salt and precipitation at all points in storage / transit. The Contractor shall arrange and pay for the packing of the Goods to the place of destination as specified in the Contract, and the cost thereof shall be included in the Contract Price.

7. INSURANCE

The Contractor shall provide such insurance of the Goods as is sufficient to protect against their damage or deterioration during storage / transit to their final destination as indicated in the Contract. The Contractor shall arrange and pay for the insurance of the Goods to the place of destination as specified in the Contract, and the cost thereof shall be included in the Contract Price.

8. LABELING

The Goods supplied under the Contract, shall be clearly labeled so as to correspond with the delivered documentation, with proper labeling scheme provided by the Client. All networking equipment, cables, connectors, ports, boxes shall be clearly labeled.

9. DELIVERY

9.1. The Contractor shall indicate methodology clearly specifying the requirements for packing, shipping and unpacking of deliverable hardware with any associated/relevant software and its documentation. The approach shall address shipment of deliverables to the various designated

(installation) sites. The approach shall also specify any special shipping constraints such as custom requirements, security requirements, access arrangement or loading dock requirements. The Contractor shall deliver the Goods as specified by the Client at the time of delivery.

9.2. The Goods shall remain the responsibility of the Contractor until delivery, testing and taking over of the Goods at the Clients premises is completed.

9.3. The Contractor shall ensure that the Goods shall be delivered complete to enable the testing and training to proceed without interruption. If it shall appear to the Client that the Goods have been or are likely to be delayed by reason of incomplete delivery or for any other reasons, the Client may require the Contractor at the expense of the Contractor to dispatch the missing items of the Goods or suitable replacements thereof to the site of delivery by the fastest available means including air freight.

9.4. The Contractor shall include in the Bid a detailed logistics plan which shall include support details for transportation, mobilization and personnel scheduling during this work implementation and the warranty period. The Contractor shall provide maintenance, supply and procurement support necessary for Client to maintain all system, at the contracted performance and reliability level. The Contractor shall arrange and pay for the transport of the Goods at PTA Headquarters Islamabad as specified by the client.

10. DELIVERABLES

10.1. Work will be completed in all respect within 225 days after signing of the contract. Thereafter, 3 years' warranty and support services shall be provided by the Contractor in the manner as set in this contract.

Number of days mentioned in the activities shall be considered as calendar days.

Activity	Payment Schedule	Delivery dead line
<p>Activity 1:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Site survey, design & drawings <input type="checkbox"/> Work Management Document/ Other documents <input type="checkbox"/> Training on Data Center Deployment <input type="checkbox"/> Completion of Civil Work including Cooling system, power and furniture. 	35 % of the quoted bid value (Annex-D)	T = T0 + 120 days
<p>Activity 2:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Delivery of DATA CENTER Equipment (DATA CENTER room, UPS rooms, MMR-1, MMR-2) <input type="checkbox"/> Installation and Implementation/Configuration Commissioning of DATA CENTER Equipment <input type="checkbox"/> Training on DATA CENTER Operations <input type="checkbox"/> Issuance of Provisional Acceptance Certificate. <input type="checkbox"/> Provision of Network Distribution <input type="checkbox"/> GO Live <input type="checkbox"/> Submission of required documents as per RFP 	45 % of the quoted bid value (Annex-D)	T + 45 days (165 - days)

Activity 3: <input type="checkbox"/> Stress testing/ Final performance testing <input type="checkbox"/> Issuance of FAC	20 % of the quoted bid value (Annex-D)	T + 105 days (225 - days)
Activity 4: Release of Performance guarantee	Performance Guarantee which is 10% of the contract price will be released after expiry of the contract warranty subject to NoC	

10.2. However, in case of any unavoidable/unforeseen delay (i.e. Force Majeure) incurred either by the Contractor or the Client, necessary timeline extension would be agreed mutually between both parties, however it has to be communicated to each other at least 7 days but not later than 15 days before expiry of the timeline above otherwise penalty clauses will be invoked.

10.3. Clause 12,13,14 and 15 of this document are obligations to carry out the activities as elaborated at clause 11.1 of this document

11. INSTALLATION AND IMPLEMENTATION

11.1. The Contractor shall ensure that the implementation design conforms to an open standard by which new services can be added without disruption to existing services.

11.2. The Contractor shall ensure that the implementation is fault tolerant. This is accomplished by supplying a set of programs and procedures that allow the system recovery or roll back when a fault is detected.

11.3. The Contractor shall provide a document stating step-by-step procedures for installation and disaster recovery to the client.

11.4. The Contractor shall provide all the recent patches and updates for Firmware/Hardware, on a reliable media, with proper labeling, during the installation to the Client.

11.5. The Contractor shall configure the system for high availability and reliability, of all hardware and software. The Contractor shall submit detailed and complete installation, transition and cutover plan for the upgraded system, installation procedures for the new components specifying equipment checkout, installation constraints, operational cutover, maintenance prior to Client acceptance and if special security and/or access arrangements are required.

12. SITE PREPARATION

12.1. The Contractor shall be responsible to survey the site, prepare the site, determine power, air conditioning and floor space requirements, identify and install, if necessary, any special / additional power and air conditioning requirements, for the proposed equipment, if any.

12.2. The Client shall provide to the Contractor access to the PTA HQs designated areas in discharge of the above responsibilities to ensure execution as per deliverable(s).

13. SAFETY

13.1. The Contractor shall be responsible for the embedding of safety features in the inherent design of the equipment, for elimination of identified hazards, including but not limited to high voltage, electromagnetic radiation, sharp points and edges, etc., and reduction of associated risk to personnel and equipment.

13.2. The Contractor shall be responsible for the addition of bilingual warnings and caution notices, where hazards cannot be eliminated or risks cannot be reduced.

13.3. The Contractor shall be responsible for the protection of the power sources, controls, and critical components of the redundant systems and subsystems by shielding or physical separation when possible.

14. TEST EQUIPMENT AND TOOLS

The Contractor shall evaluate the existing facilities and abilities of the Client to accomplish corrective and preventive maintenance and support and identify additional skills, test equipment and tools required to maintain and support the new equipment. Such test equipment and tools shall be state of the art in design aimed at providing an efficient, systematic and cost-effective repair operation for all replaceable components.

15. SPARE PARTS AND SUPPORT

15.1. The Contractor shall ensure that the Goods provided by the Contractor, under the Contract are standard and of exact nature, and incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

15.2. The Contractor shall further ensure that the Goods provided by the Contractor, under the Contract shall have no defect, arising from design, materials, installation, configuration, or from any act or omission of the Contractor that may develop under normal use of the provided Goods.

15.3. The Contractor shall maintain sufficient backup stock of spare parts and tools locally at sites, for the maintenance of the supplied Goods, during the warranty period.

15.4. The Contractor shall ensure availability of spare parts and technical assistance for all components for at least three years, without major changes, after the completion of final acceptance.

15.5. During the validity of the contract/warranty period the Contractor shall give three months' advance notice on any discontinued part(s) with a suggestion for appropriate alternatives failing which will cause forfeiture of Performance Guarantee.

15.6. The Contractor shall also identify and provide the following:

15.6.1. Items (repairable spares, parts and consumable supplies) that are needed to maintain design performance, reliability and availability standards prescribed in the Technical Specifications. The quantity of spare parts and consumable items provided and kept shall be equal to the requirements for one year of operating stock;

15.6.2. Critical items, whose failure would cause a system failure;

15.6.3. items of high cost and/or long lead time (over thirty working days);

15.6.4. items whose design reliability is such that normal stock replenishment would not justify maintaining a level of the item in stock.

16. INSPECTION AND TESTING

16.1. The Client shall inspect and test the Goods supplied, the Services provided or the Works carried out, under the Contract, to verify their conformity to the Technical Specifications.

16.2. The inspections and tests shall be conducted at the premises of the Contractor or at the final destination before delivery at client premises. Where conducted at the premises of the Contractor, the Contractor shall provide all-reasonable facilities and assistance, including access to drawings, production data and online verification from official web site of the Manufacturer, to the inspectors, at no charge to the Client.

16.3. The Client may reject the Goods, the Services or the Services if they fail to conform to the Technical Specifications, in any test(s) or inspection(s) and the Contractor shall either replace the rejected Goods, Services or Works or make all alterations necessary to meet the Technical Specifications, within two (02) weeks, free of cost to the Client.

16.4. The Client's post-delivery right to inspect, test and, where necessary, reject the Goods shall in no way be limited or waived by reason of pre-delivery inspection, testing or passing of the Goods.

16.5. Nothing contained in this Contract shall, in any way, absolve the Contractor from any Warranty or other obligations under the Contract.

17. TAKING-OVER CERTIFICATE

17.1. The Contractor shall, by written notice served on the Client, apply for a Taking-Over Certificate with the request of Final Acceptance Test.

17.2. The Client shall, within 10 days of receipt of Contractor's notice, either issue the Taking-Over Certificate to the Contractor, stating the date of successful inspection / testing of the Goods or any portion thereof, for their intended purposes; or reject the application giving the reasons and specifying the work required to be done by the Contractor to enable the Taking Over Certificate to be issued.

17.3. Nothing contained in this contract shall, in any way, absolve the Contractor from any Warranty or other obligations under the Contract.

17.4. Taking-Over Certificate will be issued by Client along the issuance of FAC.

18. WARRANTY

18.1. The Contractor shall warrant to the Client that the Goods supplied by the Contractor, under the Contract are genuine, brand new, non- refurbished, un-altered in any way, of the most recent or current model, imported through proper channel, and incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

18.2. The Contractor shall further warrant that the Goods/Services supplied by the Contractor, under the Contract shall have no defect, arising from design, materials, workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied Goods and Services.

18.3. The Contractor shall provide Manufacturer's warranty for minimum three (3) year (hereinafter referred as Warranty Period) after the issue of Taking-over Certificate in respect of Goods, the maintenance and support Services and the Works, or any portion i.e complete Job thereof, as the case

may be, which will include: Free, on site repair / replacement of defective / damaged parts and labor, as specified by contractor in Annex-B (Technical Evaluation);

18.4. The Contractor shall clearly mention Terms and Conditions of service contract for the Goods supplied after the expiry of initial warranty period. In case of International Warranties, the local authorized dealers shall mention their service and warranty setup, details of qualified engineers, etc.

18.5. The Client shall, by written notice served on the Contractor or any other mechanism mutually agreed, promptly indicate any claim(s) arising under the warranty.

18.6. The Contractor shall, within the prescribed time period, after receipt of such notice, repair or replace the defective / damaged Goods or parts thereof on site, without any cost to the Client.

18.7. The end user licenses, end user warranties and end user contracting support services shall be in the name of Client, for the Goods supplied, the Services provided and the Work done, under the Contract.

519. OWNERSHIP OF GOODS AND REPLACED COMPONENTS

Goods to be supplied, pursuant to the Contract, shall become the property of the Client when the Goods are taken over after proper process mentioned in clause (18) of the contract. Defective components to be replaced by the Contractor, pursuant to the Contract, shall become the property of the Contractor till its replacement.

20. DEFECTS LIABILITY EXPIRY CERTIFICATE

20.1. The Contractor shall, after expiry of the warranty period as per sub-clause 18.3 above by written notice served on the Client with a copy to the Client, apply for a Defects Liability Expiry Certificate.

20.2. The Client shall, within seven days of receipt of such notice, either issue the Defects Liability Expiry Certificate to the Contractor with a copy to the Client, stating the date of expiry of the Warranty Period for all the Goods supplied and fulfillment of all obligations by the Contractor, under the Contract; or reject the application giving the reasons and specifying the work required to be done by the Contractor to enable the Defects Liability Expiry Certificate to be issued.

21. PAYMENT

21.1. The Contractor shall provide all necessary supporting documents along with invoice.

21.2. The Contractor shall submit an application for Payment, to the Client. The request for Payment shall: be accompanied by such invoices, receipts or other documentary evidence as the Client may require; state the amount claimed; and set forth in detail, in the order of the Price Schedule, particulars of the Goods supplied, the Services provided with the corresponding deliverable and the Work done, up to the date of the Application for Payment and subsequent to the period covered by the last preceding Payment, if any.

21.3. The Client shall get verified the details of Goods/equipment delivered against the invoice from the concerned Technical Team of the client through its authorized representative and Payment shall be made on complete delivery of Goods/equipment and completion of relevant milestone as mentioned in 6(d) of the RFP and deliverable as provided in clause 10 of the Contract.

21.4. All payments shall be subject to any and all taxes, duties and levies applicable under the laws of Pakistan, for the whole period starting from issuance of work/supply order till termination of the signed contract in this regard which shall be borne by the Contractor.

22. PENALTY

- a. **If the contractor fails to complete the work or supply the equipment within the given timelines as per execution schedule at 6(d) of RFP, a penalty for each day @ of 0.1 % of contract value shall be charged maximum up to 10 % of the contract value . The penalty amount will be deducted from the Performance Guarantee or payment(s) owe to the Contractor which ever is applicable/available at the time of payment. .**
- b. **If the penalty amount reaches to 10% of the contract value and work is still not completed, contract will be either terminated and blacklisting procedure (if required) against the contractor will be initiated or a special extension in the work would be granted with the approval of the Authority @ 0.2% per day of the contract value shall be charged maximum up to 10% of the contract value and after that contract will be terminated and blacklisting procedure will be initiated as per Rule 19 of PP Rules, 2004. The penalty amount will be deducted from the Performance Guarantee or payment(s) owe to the contractor whichever is applicable/ available.0.2% penalty per day of the contract value**
- c. Delivery of hardware in case of events or such circumstances which are beyond the reasonable control of a party and prevents or cause to prevent a Party from complying with any of its obligations shall be deemed and considered as Force Majeure, this period will be exempted from any penalty and will be treated accordingly.
- d. **In case of any Force Majeure event, bidder will inform within 7 days in writing to PTA. PTA management will finally decide acceptance of reasons for force majeure or otherwise.**
- e. A penalty of 0.1% of the last payment per day will be charged if the faulty hardware or software replacement time exceeds the time mentioned in the certificate provided as per Annex-B during the warranty period.
- f. In case of failure to perform as per agreed terms during the Warranty and support services period, Client shall be authorized to impose penalty @ Rs. 2000/- per hour, which will be deducted from the Final payment (Activity 4). The contractor will be informed about imposition of such penalty on monthly basis.
- g. In case of failure to perform as per agreed terms of this agreement and during the maintenance and support services period, PTA reserves the right to cancel the contract and forfeit activity 4th payment in favor of PTA.

23. CONTRACT AMENDMENT

23.1. The Client may at any time, by written notice served to the Contractor, alter or amend the contract for any identified need/requirement in the light of prevailing rules and regulations.

23.2. The Contractor shall not execute any Change until and unless the Client has allowed the said Change, by written order served on the Contractor with a copy to the Client.

23.3. The Change, mutually agreed upon, shall constitute part of the obligations under this Contract, and the provisions of the Contract shall apply to the said Change.

23.4. No variation in or modification in the Contract shall be made, except by written amendment signed by both the Parties.

24. ASSIGNMENT / SUBCONTRACT

24.1. The Contractor shall not assign or sub-contract its obligations under the Contract, in whole or in part, except with the Client's prior written consent.

24.2. The Contractor shall guarantee that any and all assignees / subcontractors of the Contractor shall, for performance of any part / whole of the work under the contract, comply fully with the terms and conditions of the Contract applicable to such part / whole of the work under the contract.

26. BLACKLISTING

If the Contractor fails / delays in performance of any of the obligations, under the Contract / violates any of the provisions of the Contract / commits breach of any of the terms and conditions of the Contract or found to have engaged in corrupt or fraudulent practices in competing for the award of contract or during the execution of the contract, the Client may without prejudice to any other right of action / remedy it may have, blacklist the Contractor, either indefinitely or for a stated period, for future tenders in public sector, as per provision of Procurement Rules in vogue.

27. FORFEITURE OF PERFORMANCE GUARANTEE

27.1. The Performance Guarantee shall be forfeited by the Client, on occurrence of any / all of the following conditions:

27.1.1. If the Contractor commits a default under the Contract;

27.1.2. If the Contractor fails to fulfill any of the obligations under the Contract;

27.1.3. If the Contractor violates any of the terms and conditions of the Contract.

27.2. If the Contractor fails / delays in performance of any of the obligations, under the Contract / violates any of the provisions of the Contract / commits breach of any of the terms and conditions of the Contract the Client may, without prejudice to any other right of action / remedy it may have, forfeit Performance Guarantee of the Contractor.

27.3. Failure to supply required items/services within the specified time period will invoke penalty as specified in the Contract. In addition to that, Performance Guarantee may be forfeited.

28. TERMINATION

28.1. Termination for Default

28.1.1. If the Contractor fails or delays in performance of any of the obligations under this contract, or commits a breach any of the provisions of the Contract the Client may at any time, without prejudice to any other right of action by written notice served on the Contractor indicate the nature of the default(s) and terminate the Contract without any compensation to the Contractor.

29. FORCE MAJEURE

29.1 Neither Party shall be held responsible for any loss or damage or failure to perform all or any of its obligations hereunder resulting from a Force Majeure event.

29.2 For the purpose of this Agreement a “Force Majeure Event” shall mean any cause(s) which render(s) a Party wholly or partly unable to perform its obligations under this Agreement and which are neither reasonably within the control of such Party nor the result of the fault or negligence of such Party, and which occur despite all reasonable attempts to avoid, mitigate or remedy, and shall include acts of God, war, riots, civil insurrections, cyclones, hurricanes, floods, fires, explosions, earthquakes, lightning, storms, chemical contamination, epidemics or plagues, acts or campaigns of terrorism or sabotage, blockades or acts of Governmental Authority after the date of this Agreement.

29.3 The Party initially affected by a Force Majeure shall promptly but not later than seven (07) days following the Force Majeure event notify the other of the estimated extent and duration of its inability to perform or delay in performing its obligations (“Force Majeure Notification”). Failure to notify within the afore-said period shall disentitle the Party suffering the Force Majeure from being excused for non-performance for the period for which the delay in notification persists.

29.4 Upon cessation of the effects of the Force Majeure the Party initially affected by a Force Majeure shall promptly notify the other of such cessation.

30. DISPUTE RESOLUTION

30.1. All disputes arising under this Contract, whether during the term of this Contract or after the termination or expiry of this Contract shall be referred to (i) project supervisory committee of the Client for amicable settlement /resolution of the dispute at first stage. (ii) In case of failure in settlement, at the second stage the case will be referred to the Authority of the Client. The decision of the Authority to settle the issue amicably will be final and binding on both parties. iii) In the event of failure of amicable settlement of dispute as above, either party may refer the dispute to Arbitration under the provision of Arbitration Act, 1940 and the rules issued thereunder, at Islamabad, Pakistan.

31. GOVERNING LAW

31.1. The Contract shall be governed by and interpreted in accordance with the laws of Pakistan.

32. TRAINING

32.1. The Contractor shall arrange and undertake a free of cost comprehensive training program from authorized training institute for the (03) staff nominated by the Client who have actively participated in the DATA CENTER work to ensure that they shall acquire a good working knowledge of the operation, and general maintenance of the Goods to be supplied under the Contract.

32.2. The Contractor shall arrange one training related to Datacenter deployment and datacenter operation as mentioned in execution schedule and BOQ.

32.3 The desired trainings shall be arranged and concluded as required by the client before the issuance of FAC

33. DOCUMENTATION

The Contractor shall furnish the user documentation, the operation manuals, and service manuals for each appropriate unit of the supplied Goods and other information pertaining to the performance of the Goods, in hard copy format, in soft copy format and in the form of on-line help to the satisfaction of the Client, before the Goods are taken over by the Client.

34. MAINTENANCE & SUPPORT SERVICES

The Prospective Contractor will provide service and support during the complete life cycle of the Datacenter by providing one on-site resident engineer on 8 X 5 basis and on call after workhours and on weekends/holidays for routine Maintenance of individual equipment/component to ensure smooth operations of the entire Infrastructure solution i.e. design, product, and integration. Service includes equipment and system enhancements, replacements and upgrades, and migration of equipment and systems in line with customer growth, technology upgrades and other operational dynamics. Many enhancements are mandated by the Equipment Manufacturers themselves as part of their Quality programs, and Sustaining Engineering efforts. These must be incorporated on site by the contractor without any cost to the customer.

34.1. Fault Severity Levels Definitions: For the maintenance and support services including terms and conditions as specified under this agreement will be followed where faults are divided into following categories. The response as per mentioned categories is expected by the contractor 24X7 during M&S period of the contract.

34.1.1. High/Critical: High level fault occurs when: A critical element or arm of redundancy is affected or compromised, such that the critical equipment is still being supplied power and cooling, but there is only a single path/ source of power or cooling part is available. All of the System redundancy is not available. In such a situation, if another similar failure happens, the operation of the critical equipment could be affected.

A combination of faults, although such occurrence is highly unlikely, as a result of which critical equipment is not being powered or cooled. In such a case, the operation of the critical equipment could be affected. In this situation, urgent actions need to be undertaken to bring back the system back to normal operation as soon as possible.

34.1.2. Medium: Medium level fault occurs when: An element or component of the system is affected, but the system continues to operate, and redundant and parallel paths/ sources of power are still available. In this situation, actions need to be taken to bring the system back to its normal condition.

34.1.3. Low: Low level fault occurs when: An alarm or warning occurs in the system, and warrants attention, to review the situation and take corrective actions. It is important to take serious notice of a low-level alarm because it may be a precursor to a serious fault, if not taken care of.

34.1.4.

Faults target Response Times

Criticality Level	Response Time
High	1 Hour
Medium	4 Hours
Low	24 Hours

34.2. Operation Support Services Scope: The contractor will be required to provide following services in the referred scope

34.2.1. Routine preventive maintenance (Quarterly basis). The following activities are required to be provided by contractor in RPM on quarterly basis:

- Cleaning of equipment, and logging of all measurements taken.
- Checking the mechanical soundness of all components.
- Simulation of operation and, if necessary, making adjustments to the electronic control circuits etc.
- Checking and adjustment of all electronic supervisory and alarm.
- Control checks on all electrical, mechanical and filter elements.
- Advise of any parts found defective and replace.
- Checking, replacement and maintenance of internal filters.
- Compile comprehensive maintenance report and submit one copy to the customer.

34.2.2. Repairs to the equipment in the event of failure: In response to a call/issuance of ticket by the customer help desk to Firm Service Department, their technical personnel will reach at the site of fault for the resolution and further action.

34.2.3. Supply of replacement components with the exception of replacement of parts caused by accidents, short circuits from outside, maltreatment, mal-operation, neglect of outside equipment conditions, such as insufficient cooling air or abnormal pollution, malicious damage, fire, theft, water or other reasons which are not the responsibility of Firm and beyond the control of Firm.

34.2.4. Supply of Replacement Components Firm will keep a good stock of spare parts for the 70% of the predictable faults. These spare parts will be supplied to the customer on Delivery Duty paid (DDP) basis.

Note: The consumable items including UPS batteries (not under warranty), NOVAC 1230 Fire suppression Gas will be the responsibility of client. However, the replacement of Air Conditioners & VESDA Filters replacement once in a year would be part of this service contract. In case of second time replacement (if required), cost will be charged separately through proper verification and invoice from the client.

34.3. Reporting Structure: Comprehensive reports will be generated as a part of the routine service operation. Following Reports should be submitted to client by contractor at the given frequency.

Report Name	Description	Frequency
Incident Management Report	Number of tickets opened/closed.	Monthly/On demand

	Average resolution time. Number of	
Problem Management	Problem and requests tracking.	Monthly
Change Management	Priority of changes.	Monthly
	Initiator and approver of changes.	
	Planned vs. emergency identifier.	
Root-Cause Analysis Report	Details the results of each Root-Cause Analysis (RCA) performed by Supplier	on-demand
	Includes the nature of the incident and plans to prevent or avoid future incidents.	
Work Status Report	Report on the status of all open, including actual svcs. Planned for Schedule and change of scope.	Monthly

34.4. Client's Responsibility: Access to the Datacenter for the maintenance of equipment supplied by contractor will be the responsibility of Client. Specific Access by each engineer will be defined by ICT directorate.

34.5. Escalation Procedures

Service Engineer (Level 1): The Contractors' Service Engineers are the first person that comes across an issue on site. He will be the main point of contact for the end user regarding any anomaly. The service engineers must routinely involve in the maintenance of the entire datacenter Infrastructure, and have knowledge about the environment and application of the equipment.

Service Support Experts (Level 2): Contractor's' Service Support Experts is the next level of escalation. These individuals are active field engineers who have gained expertise with a particular product line and/ or are experienced in service for many years. Key objective is to solve the problem on an urgent basis and keep the end user informed of the progress being made.

Manufacturer's Technical Support (Level 3): This group typically reports and operates in the Service Organization of the respective manufacturers. The purpose of this group is to be the central clearinghouse for serious service related issues. The experts who have been identified by their management and have thorough knowledge about their products is available to provide phone and other needed support. In critical situations, they are required to travel to customer sites to resolve issues.

The Contractor'ss 'experts will gather all information on a given product line from the beginning, and conduct important interface with their respective Quality and R&D organizations. They collect vital field data that is later analyzed, and vital Statistics reported to Service Management of the company.

34.6. Handover/Transition Plan: The handover of equipment and systems would take place after the systems are in routine operation. Any faulty equipment at the time of handing over will not become liability of Client under agreement. The contractor shall be responsible to provide transition plan in consultation with the client and perform formal transition training session with the client.

34.7. Tools: Tools required for services will be provided by contractor

34.8. Availability of Spares: Contractor must carry Factory supplied spares parts in their stock to support installed base. The objective is to keep the Mean Time to Repair (MTTR) at a very low level, thereby minimizing the disruption to the critical equipment. The suggested critical equipment is listed below, however contractor can manage the availability as and when required

Electrical Power	Qty.
Circuit Breakers for Electrical Panels	1
UPS Power Modules	1
Static Modules	1
PDPM Critical Spares	1
Precision Air Conditioners	
Compressor	1
Variable Speed Drive	1
Controller Card	1
Indoor Fan	1
Display Card	1
Condenser Fan	1
Environmental Monitoring	
Sensors	1
Sensor Pods	1
Access Control	
Controller	1
RFID Reader	1
3 in 1 (Biometric + RFID + Key pad) Reader	1
Magnetic locks	1
Surveillance	
Camera	1
NVR Parts	1
Fire Detection & Suppression	
Controller	1
VESDA Sensors	1
Photo Electric Sensors	1

35. INTEGRITY PACT

35.1. The Contractor hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan or any

administrative subdivision or agency thereof or any other entity owned or controlled by it (GoP) through any corrupt business practice.

35.2. Without limiting the generality of the foregoing [Name of Supplier] represents and warrants that it has fully declared the brokerage, commission, fee etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultations fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.

35.3. The contractor certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representative or warranty.

35.4. The contractor accepts full responsibility and strict liability for making and false declaration, not making full disclosure, misrepresenting fact or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other right and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP.

35.5. Notwithstanding any rights and remedies exercised by GoP in this regard, [Name of Supplier] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [Name of Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

36. INDEMNIFICATION

36.1. The contractor shall be liable for and shall indemnify, defend and hold harmless its, members, officers, , employees from and against all claims, damages, liabilities, losses, and expenses, whether direct or indirect, or personal injury or death to persons or damage to property arising out of (i) any negligence or intentional act or omission by the Contractor or its employees, personnel, agents or other authorized representatives in connection with the Contract or any other agreement/contract with the Client, (ii) arising out of or in connection with the performance of its obligations under this Contract or any other agreement, if any, with the Client; or (iii) arising out of the breach by the Contractor of any Intellectual Property Rights of third Party.

36.2. The Contractor shall further indemnify and hold harmless the Client in respect of any loss or damage caused to it on account of any representation made by the Contractor proving incorrect, in particular on account of any requisite permission not having been obtained or for breach of any warranty or otherwise.

38. MISCELLANEOUS

38.1. Any failure and/or delay by a Party to exercise or enforce any rights conferred under the contract shall not be deemed to be a waiver of any such right nor operate so as to bar the exercise or enforcement thereof at any time or times thereafter.

38.2. Any waiver must be given in writing and signed by the Party waiving its rights. Any waiver of a Party's rights, powers or remedies under the Contract must be in writing and must be dated and signed by an authorized representative of the Party granting such waiver and must specify the right and the extent to which it is being waived.

38.3. All addition amendments and variations to this contract shall be binding only if in writing and signed by the Parties or their duly authorized representatives.

38.4. All Annexures and contract Documents forms an integral part of this contract and has to be read and construed as such.

38.5. This contract is intended by the parties as the final expression of their Agreement and is intended also as a complete and exclusives statement of the terms of their Agreement with respect to their relationship and all related matters.

NON-DISCLOSURE AGREEMENT

THIS NON-DISCLOSURE AGREEMENT (“NDA”) is made and entered into at Islamabad, Pakistan on the __ day of -----2021

BY AND BETWEEN

Pakistan Telecommunication Authority, a statutory regulatory authority established under Pakistan Telecommunication (Re-Organization) Act, 1996, having its Head Quarter at F-5/1, Islamabad through Director ICT (hereinafter called as the “CLIENT” which expression shall where the context admits, include successors-in-interest and assigns) of the One Part:

AND

(insert name of Contractor) a Company/firm incorporated under the laws of having its registered office at-----through its authorized representative Mr..... (herein after called as “Contractor”) which expression shall where the context so allows include his/its successors-in-interest, executors, administrators, heirs and permitted assigns) of the Other Part;

(The Party of the One Part and Party of the Other Part shall hereinafter be collectively referred to as ‘Parties’ and individually as ‘Party’ as the context of this NDA requires).

WHEREAS,

1. The parties have entered into Agreement dated, (the “Agreement”) whereby, the Client may have to disclose certain nonpublic and proprietary information in result of execution and subsequent operation of the Agreement to the Contractor, which may fairly be considered to be of confidential nature including, but not limited to, methods, practices and procedures with which the Parties conduct their respective businesses, Internal working, decisions or Standard operating Procedures (SOPs) which are not Public documents, strategies in dealing with the Operators, Licensees, licensee lists, contract terms, methods of operation, software specifications, software codes, functionality, know how, and financial information etc. the Know-How, information pertaining to its principles, pricing policy, commercial relationship, negotiations or parties’ work, affairs, finances or any information in respect of which the parties are bound by an obligation of confidentiality to any third party.
2. The Parties are desirous to set the terms and conditions hereunder and sign this NDA.

NOW, THEREFORE THIS AGREEMENT WITNESSETH, for good and valuable consideration, it is hereby agreed between the parties as under;

1. Under this Agreement the Contractor is under an obligation to keep all such information that is disclosed in the course of the contract with PTA, confidential and not to use it to the detriment of the Authority. In particular, the Contractor shall not use it for, or disclose it to, any of its new employer or client.
2. Any unauthorized disclosure or use of the Authority’s confidential information could lead to litigation against the Contractor and any new employer.

3. Definition of Confidentiality. In addition to the definition used in the Agreement, "Confidential Information" refers to any information which has commercial value and is either (i) technical information, including patent, copyright, trade secret and other proprietary information, techniques, sketches, drawings, models, inventions, know-how, processes, apparatus, equipment, algorithms, software programs, software source documents, and formulae related to the current, future and proposed products and functions of the Client, or (ii) non-technical information relating to Client's functions, responsibilities, operations including, without limitation, plans and strategies, finances, financial and accounting data and information, suppliers, stakeholders, purchasing data, strategical plans and any other information which is proprietary and confidential to Client.
4. Nondisclosure and Non-use Obligations. Subject to confidentiality clause under the Agreement, the Contractor will maintain in confidence and will not disclose, disseminate or use any Confidential Information belonging to Client, whether or not in written form. Contractor agrees that Contractor shall treat all Confidential Information of Client with at least the same degree of care as Contractor accords its own Confidential Information. Contractor further represents that Contractor exercises at least reasonable care to protect its own Confidential Information. the Contractor agrees that Contractor shall disclose Confidential Information only to those of its employees who need to know such information and certifies that such employees have previously signed a copy of this Agreement.
5. Survival. This Agreement shall govern all communications between the Parties. Contractor understands that its obligations under Paragraph 4 ("Nondisclosure and Non-use Obligations") shall survive for two years after the termination or expiry of the Agreement. Upon termination of any relationship between the Parties, Contractor will promptly deliver to Client, without retaining any copies, all documents and other materials furnished to Contractor by Client.
6. Governing Law. This NDA shall be governed in all respects in accordance with the laws of Pakistan.
7. The Contractor agrees and undertakes that upon termination of the Agreement by the Client.
 - a. shall return to Client all documents and property of Client, even if not marked "confidential" or "proprietary," including but not necessarily limited to drawings, reports, manuals, correspondence, customer lists, computer programs, and all other materials and all copies thereof relating in any way to Client, or in any way obtained by the Contractor during the course of the Agreement and shall not retain copies, notes or abstracts of the foregoing.
 - b. The Client y may notify any future or prospective employer or third party of the existence of this Agreement.
 - c. Injunctive Relief. A breach of any of the promises or agreements contained herein will result in irreparable and continuing damage to Client for which there will be no adequate remedy at law, and Client shall be entitled to injunctive relief and/or a decree for specific performance and such other relief as may be proper (including monetary damages if appropriate).

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the dates written below.

For and on Behalf of Client	For and on behalf of Contractor
Signed by _____ Seal----- Witness _____	Signed by _____ Seal _____ Witness _____