



NATIONAL TELECOMMUNICATION CORPORATION

HEADQUARTERS G-5/2 ISLAMABAD

e-Bidding documents

FOR

**Establishment of NTC Data Center Facility at Karachi on
Turnkey DDP Site Basis**

Through EPADS (www.eprocure.gov.pk)

EPADS e-Tender Notice #HQ/ADV-47/ 2025-26

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SECTION-I

INSTRUCTIONS TO THE BIDDERS

1 INVITATION TO e-BIDS

Tender Notice No. HQ/ADV-47/ 2025-26

National Telecommunication Corporation (NTC), invites electronic bids from the contractor's / service providers, registered with Income Tax and Sales Tax Department having relevant experience for supply of following services:

Tender No.	Description of Service	Last Date & Time of Bid Submission	Bid Opening Date & Time
47	Establishment of NTC Data Center Facility at Karachi on Turnkey DDP Site Basis	23-06-2026 @ 1100 Hrs.	23-06-2026 @ 1130 Hrs.

Bidding documents as per regulations, containing detailed terms and conditions, specifications and requirements etc. are available for the registered bidders on EPADS at (www.eprocure.gov.pk).

Electronic bids must be submitted through EPADS on or before the bid closing date and time, as specified in the table. Manual bids will not be accepted. Electronic bids will be opened on the same day, at least 30 minutes after the bid closing time, as indicated in the table.

Note: Notification of the GRC constituted in terms of Rule-48 of PPRA rules, 2004 is provided on EPADS at www.eprocure.gov.pk and on www.ntc.net.pk

Director (Procurement)

Room # 05, Ground Floor, NTC HQs, Sector G-5/2 Islamabad

Phone: 051-9245833, 9245975 **Fax:** 051-9245719

www.ntc.net.pk

2 GENERAL INTRODUCTION

- 2.1 National Telecommunication Corporation (NTC) is an autonomous corporation established on January 1, 1996, under the Pakistan Telecommunication Re-Organization Act 1996. NTC has the mandate to provide Information and Telecommunication services to the Federal Government, Provincial Governments, Armed Forces, defense projects, and institutions/organizations as determined by the Federal Government through SRO No. 1209(1)/95 dated December 31, 1995, as amended on June 11, 1997.
- 2.2 NTC has successfully established state-of-the-art Data Centers in Islamabad and Lahore. Building upon this foundation, NTC now intend to establish a new Data Center at its Regional Headquarters Building, Malir Halt, Karachi. This strategic expansion aims to enhance footprint of NTC's Data Center infrastructure by extending services to the government sector in the southern region, while introducing advanced cloud services and other value-added solutions as outlined in the project scope.

3 PROJECT OBJECTIVES

- 3.1 The primary objective of this project is to establish a state-of-the-Art Data Center at NTC Regional Office, Malir Halt, Karachi, on a turnkey DDP Site basis. The facility will be designed, constructed, and certified in conformance with TIA-942 Tier-III standards for both design and constructed facility certification.
- 3.2 Key objectives include:
- 3.2.1 Design and construction of a Data Center facility meeting the specified capacity requirements, with inherent scalability and expandability to accommodate current and future operational demands.
- 3.2.2 Establishment of a robust platform equipped with comprehensive, network, security infrastructure, along with facility power systems and associated civil works.
- 3.2.3 Delivery of tailored services aligned with NTC's customer requirements and expectations through a reliable, high-performance infrastructure.
- 3.2.4 Achievement of relevant certifications to ensure uptime, redundancy, and operational excellence in compliance with relevant standardization bodies.

4 SCOPE OF WORK

- 4.1 NTC has established one Cloud Data Center at Islamabad and one at DC at Lahore, which are compliant to TIA-942 standards that are serving Federal and Provincial Governments and their institutions. Through this tender NTC aims to build a new data center in the NTC South Region to support the growing demand for data center services and to introduce new services including AI, ML and GPU based services, that require a dedicated data center environment.
- 4.2 Through this project, NTC intends to establish a **TIA-942 Tier-III certified constructed facility** with all necessary components as detailed in the Bill of Quantities (BOQ) at [Annex-A \(Annex-A1 to Annex-A5\)](#) and Technical Specifications at [Annex-B \(B1 to B17\)](#). The scope encompasses the complete supply,

installation, testing, commissioning, and successful deployment of services. Following are noteworthy salient features of the project:

4.2.1 Network and Security Equipment

Enterprise-grade networking and security infrastructure to protect and optimize data flow.

4.2.2 Facility Components

- Server cabinets and POD infrastructure.
- Precision cooling systems.
- Fire detection and suppression systems.
- Closed-Circuit Television (CCTV) surveillance.
- Access control systems.
- Video wall displays.
- IT equipment racks and necessary tools.

4.2.3 Power and Electrical Systems

- Uninterruptible Power Supply (UPS) systems.
- Diesel generator sets (Gen-Sets).
- Automatic Voltage Regulators (AVR).
- Distribution boards (DBs).
- Complete electrical cabling infrastructure.

4.2.4 Civil and Structural Works

Building modifications, structural enhancements, flooring, and comprehensive cabling infrastructure.

4.2.5 Ancillary Activities

Any additional activities deemed necessary for the successful delivery of services and achievement of project objectives.

4.2.6 Service Level Agreement (SLA) Services as Per Annex-C

4.3 Following items (but not limited to) shall be required for the execution of the work.

- Hardware
- Software
- Power and Data cabling
- Installation materials
- Services (Engineering, Installation, Configuration, Integration, Support, etc.)
- The bidder shall be responsible to provide earthing as per Telecom Standard
- Documentation

4.4 **General Instructions:** The bidder shall undertake to:

- 4.4.1 Keep NTC informed of technological and other developments in the products offered and methods of incorporating such developments economically to NTC's network.
- 4.4.2 The proposed equipment (hardware and software) should be field proven. The Supplier has to provide list of installed base references in Pakistan, including the contact persons.
- 4.4.3 Equipment shall be flexible, efficient, rapid, accurate and reliable.
- 4.4.4 Equipment shall be fully compatible with the future services and environments of the NTC network.

- 4.4.5 Equipment shall have low power consumption and compact design. The bidder shall indicate the power consumption, size, weight and space requirement of the offered system.
- 4.4.6 Equipment shall be the latest state-of-the-art technology, currently available in the international market and shall have 5 Years EOL and EOS from acceptance.
- 4.5 **System Installations**
- 4.5.1 The bidder shall supply, install and configure the supplied equipment.
- 4.5.2 The bidder shall provide all cables, connectors, and installation materials required on turnkey basis.
- 4.5.3 Wiring / cabling shall be of flexible design that can be easily added, rearranged or removed.
- 4.5.4 Minor modifications in the building like making holes in the wall; roof or floors required for the execution of the works, shall be done by the bidder.
- 4.6 **Maintenance Support**
- 4.6.1 Installation, Testing, commissioning of all components of the project with provision of project charter, plan documents, diagrams, shop drawings, as-built, LLDs, HLDs, and other Assets/design documents. Commissioning and onboarding of production services.
- 4.6.2 The bidder shall provide routine / preventive & corrective maintenance for OEM support (ticket base support/subscription and hardware warranty NBD with year wise cost for three years (Including OEM support components already mentioned). Applicable w.e.f date of issuance of PAC.
- 4.6.3 Local partner support with SLA for three years along with onsite support as per SLA details. Applicable w.e.f date of issuance of PAC.
- 4.6.4 The bidder shall recommend the type of routine / preventive & corrective maintenance tests and their duration, giving the test set ups and their procedures in the PAT (Provisional Acceptance Testing) document.
- 4.6.5 The bidder will clearly indicate the point of presence in Pakistan for maintenance purpose.
- 4.6.6 The bidder will specify first, second and third line of maintenance support along with down time.
- 4.6.7 The bidder will maintain sufficient quantity of spares at the bidder's point of presence in Pakistan during warranty period. In case of failure of a component or whole system the equipment will be replaced within 24 hours with a new one.

5 QUALIFICATION CONDITIONS OF BIDDERS

Invitation to submission of sealed bids is open to all firms and Joint Venture in Pakistan who meet following conditions: -

- 5.1 The firm must be registered with Tax Authorities and active Tax payer for Income Tax and Sales Tax.
- 5.2 The firm must be authorized by Original Equipment Manufacturer (OEM) against major quoted items.
- 5.3 The firm must have relevant experience of at least three Data Centers installation in Pakistan. The participant bidder shall provide all the record of its previous installations along with contracts/purchase orders/completion certificate detail (i.e., amount, date & time of completion, description of items) & contact details of

concerned person for reference & verification. The relevant experience of the incumbent bidder will be evaluated on the basis of its supply record & will be considered for further evaluation. If any bidder is found in-experienced or its previous supply record is irrelevant than the said bidder will not be considered for further evaluation.

- 5.4 The firm must have average annual turnover of PKR.600 million in last three years.
- 5.5 The firm must be registered with Pakistan Engineering Council in Category C3 or higher with relevant Specialization Codes.
- 5.6 The firm must provide undertaking on at least PKR 200/- Judicial Paper that:
 - a. The firm is not black listed from any government organization.
 - b. The firm does not have any linkage with India and/or Israel regarding ownership, sponsoring, financing etc.
- 5.7 One Bid per Bidder- A bidder shall submit only one bid, in the same bidding process, either individually as a bidder or as a member in a joint venture or any similar arrangement. No bidder can be a sub-contractor while submitting a bid individually or as a member of a joint venture in the same bidding process.
- 5.8 The firm must fully comply to the tender clauses as per [Annex-D](#).

Note: Prospective Bidder Must Provide Valid Documentary Proof including CVs against serial # (5.1-5.8) along with the bid. Non-Submission of any of above document will lead to Consideration of a firm as NON-RESPONSIVE & Sub-sequent Non-CONSIDERATION for the evaluation.

6 COST OF TENDERING

The bidder shall bear all costs associated with the preparation and submission of its bid and the NTC will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

7 CLARIFICATIONS OF TENDER DOCUMENTS

- 7.1 A prospective bidder requiring any clarification(s) regarding technical and commercial aspects of the tender document may notify to NTC on EPADS platform only, however, in case of further clarification/understanding are required, the bidder may contact following NTC Officers:

Divisional Engineer (Procurement)-I	Director (Procurement)
Tel: 051-9245864, Fax: 051-9245977	Tel: 051-9245833, Fax: 051-9245977
Email: shaukat.ali@ntc.org.pk	Email: kashif.nawaz@ntc.org.pk

- 7.2 The concerned NTC officer will respond to any request for clarification on EPADS, which receives well before (approximate 05 working days or more) to the deadline for the submission of bids.

8 AMENDMENT OF TENDER DOCUMENTS

- 8.1 At any time prior to the deadline for submission of bids, the NTC may, for any reason, whether at its own initiative or in response to a clarification requested by a

prospective bidder, modify the tender documents by issuing addendum/ amendment on EPADS.

- 8.2 Any addendum/amendment thus issued shall be part of the tender documents. To afford bidders reasonable time in which to take an addendum into account in preparing their bids, the NTC may at its discretion extend the deadline for submission of bids.

9 PREPARATION OF BID

- 9.1 Bids should be prepared considering “**Single Stage - One Envelope**” procedure.
- Bid documents and all correspondence will be in English language.
 - The bid should have a covering letter on letter pad of the firm. All pages of the bid shall be initialed/signed and official seal be affixed by the person(s) authorized to sign. In addition, all the pages of the submitted bid must be numbered. Complete bid shall be scanned and uploaded on EPADS.
- 9.2 Following documents shall be submitted with the proposal:
- Duly filled Financial Proposal as per [Annex-A \(Annex-A1 to A5\)](#).
 - Duly filled Technical Compliance sheets as per [Annex-B \(Annex-B1 to B17\)](#).
 - Duly filled Commercial compliance statement as per [Annex-D](#).
 - Valid Bid Security.
 - Documentary evidence and certificates as per Qualification Criteria.
 - Company Profile.
 - Legal JV Agreement (If applicable).

NOTE: “Every participant bidder shall submit all above mentioned documents. Non-submission of any of above documents will lead to declaration of bidder as non-responsive & non-consideration for further evaluation.”

10 LANGUAGE OF BID DOCUMENTS

- 10.1 Bid documents and all correspondence will be in English language.
- 10.2 The bid should have a covering letter on printed and scanned letter pad of the firm. All pages of the bid shall be initialed/signed and official seal be affixed by the person(s) authorized to sign.

11 PRICE

- 11.1 Prices should be quoted in Pak Rupees as per [Annex-A \(Annex-A1 to A5\)](#).
- 11.2 The price quoted should be firm, final, and clearly typed without any ambiguity.
- 11.3 The quoted price should include all the applicable government taxes, custom duties, in-land transportation, & any other applicable charges
- 11.4 The rates / prices shall be entered against each item in the Bill of Quantity at [Annex-A](#). Any item against which no rate or price is entered and left blank by the bidder shall be deemed covered by the rates / prices for other items in the BOQ. However, for the purpose of financial comparison, price of highest bidder against that particular item will be taken as reference.
- 11.5 Price of any or all items quoted in a currency other than PKR shall be converted into PKR and for calculation purpose conversion rate (i.e. selling) prevailing on the date of tender opening shall be applied.

12 BID SECURITY / EARNEST MONEY

- 12.1 The bidder shall furnish tender security amounting to **PKR. 15,000,000/- (Pak Rupees Fifteen Million Only)** in the form of Pay Order or Deposit at Call or a Bank guarantee as per **Annex-E** issued by a scheduled bank of Pakistan in favor of NTC valid till 28 days beyond bid validity.
- 12.2 The Original Bid Security shall be delivered in person or sent by the registered mail which should reach the office of Director (Procurement) Room # 05, Ground Floor, NTC HQ, G-5/2 Islamabad on or before **1100 hours on June 23, 2026**. Any online bid for which original bid security does not reach before deadline of the bid shall be rejected by the NTC as non-responsive.
- 12.3 Scanned Copy of bid security shall be uploaded by the bidder on EPADS before deadline of bid submission. Any bid not accompanied by bid security shall be rejected by the NTC as non-responsive.
- 12.4 The bid securities / earnest money of the unsuccessful bidders will be returned upon award of contract to the successful bidder or on expiry of validity of tender security whichever is earlier. The bid securities of bidders, who are not in competition, can be returned earlier at NTC discretion upon receiving a request.
- 12.5 The tender security of the successful bidder will be returned when the bidder has furnished the required Performance Security and signed contract agreement.
- 12.6 All correspondence regarding release/extension of bid security shall be made with Director (Procurement) NTC HQ.
- 12.7 The bid security may be forfeited:
 - a. If a bidder withdraws their bid during the period of bid validity.
 - b. If the bidder does not accept the correction of their bid price.
 - c. In the case of successful bidder, if bidder fails to furnish the required performance security or sign the contract agreement.
 - d. If bidder does not respond to clarifications called by NTC.

13 VALIDITY OF BIDS

Bid shall remain valid for a period of **150 days** from the date of tender opening.

14 DEADLINE FOR SUBMISSION OF BID

- 14.1 The bid shall be uploaded in PDF format on PPRA EPADS website i.e. www.eprocure.gov.pk on or before **1100 hours on June 23, 2026**.
- 14.2 The bidders are required to follow procedure of EPADS and for any clarification/assistance regarding EPADS they may contact PPRA Helpline UAN: 051-111-137-237.
- 14.3 Bid received other than EPADS i.e. hard/Soft copy delivery in person or through e-mail or fax or registered mail will be not accepted by NTC.

15 MODIFICATION & WITHDRAWAL OF BID

- 15.1 Any bidder may modify or withdraw their bid after bid submission provided that written notice of the modification or withdrawal is received by the concerned officer prior to the deadline for submission of bids.

- 15.2 No bid may be modified or withdrawn by a bidder after the deadline for submission of bids.

16 OPENING OF BID

- 16.1 The NTC tender committee will open/download the bids at **1130 hours on dated June 23,2026** in the presence of bidders' representatives who choose to attend, at NTC HQ G-5/2 Islamabad.
- 16.2 In the first instance, the "Technical Bid" shall be opened for Qualification and Quality Evaluation and the "Financial Bid/Proposal" shall remain unopened in the PPRA EPADS system.
- 16.3 NTC shall evaluate the technical proposal in the prescribed manner without reference to the financial proposal. NTC shall reject any proposal which does not conform to Qualification and Quality Evaluation Criteria.
- 16.4 After Qualification and Quality Evaluation based on Technical Proposal, NTC shall open Financial Bids of the technically responsive bids, and shall communicate the date, time & venue through system in advance, within the bid validity period.
- 16.5 Evaluation of Technical and Financial Proposal shall be evaluated on Evaluation Criterion for Most Advantageous Bidder.
- 16.6 The bidder's name, bid prices, any discount, the presence or absence of tender security, and such other details as the committee at its discretion may consider appropriate, will be announced at the tender opening.
- 16.7 The tender committee will resolve any issue raised by the bidders, on the spot.
- 16.8 NTC reserves the right to reject any one or all bids prior acceptance of a bid / proposal.
- 16.9 NTC reserves the right to reject any one or all bids as per Public Procurement Rules, 2004 33(1).

17 RESPONSIVENESS OF BIDS

- 17.1 The bid is valid till required period.
- 17.2 The bid prices are firm during its validity and inclusive of all taxes, duties & freight charges etc.
- 17.3 The bidder has furnished valid tender security.
- 17.4 The bidder is eligible to tender and possesses the requisite qualification.
- 17.5 The bid does not deviate from basic tender requirements.
- 17.6 The bid is generally in order etc.
- 17.7 The bidder promptly responds to queries sought by NTC.
- 17.8 The bidder has complied to the tender clauses.

Note: "Any bidder found non-compliant in any of above-mentioned conditions will be declared as non-responsive and will not be considered for further Evaluation proceedings. A bidder once declared "non-responsive" shall not subsequently be made responsive by the NTC."

18 EVALUATION CRITERION FOR MOST ADVANTAGEOUS BIDDER

- 18.1 The tender evaluation committee will evaluate and compare only the bids previously determined to be substantially responsive.

- 18.2 Evaluation will be carried out on **qualification, quality and cost basis**.
- 18.3 The **Most advantageous bidder** shall be the one fully compliant to **qualification criteria, compliant to quality criteria** and **highest ranked** in cost evaluation criteria as defined below:

18.4 **Qualification Evaluation Criteria:**

In first step, the technical bids shall be evaluated on the basis of conditions for qualification set out in Clause 5 above. The bidders fully compliant to qualification criteria, shall be declared as qualified. **Any firm found non-compliant in any of these conditions will be declared as disqualified and will not be considered for further evaluation proceedings.**

18.5 **Quality Evaluation Criteria:**

After determining the qualification, the technical bids will be examined in detail whether the quoted bid complies to the technical specifications and evaluation criteria mentioned at **Annex-B (Annex-B1 to B17)**. For this purpose, the bidder's data submitted including statement of compliance, Datasheets and manuals with the bid will be compared with terms and conditions set forth in the tender documents; NTC at its discretion may ask supported documents & clarification in case compliance is not evident from the literature/ documents submitted. Bidders obtaining minimum 75% marks in each quality evaluation criteria besides fully complying to mandatory clause will be considered technically qualified. **Any bidder obtaining less than 75% marks against above Quality Evaluation Criteria or noncomplying any mandatory clauses in the criteria will be rejected by NTC.**

18.6 **Cost Evaluation Criteria:**

Cost evaluation of the financial bids shall be carried out by comparison of bids' evaluated prices as per bill of quantity at **Annex-A (Annex-A1 to A5)**. The bidder with **lowest financial price** will be declared as **highest ranked** and so on.

- 18.7 Any effort by a bidder to influence NTC in the tender evaluation, bid comparison or order award decision may result in the rejection of their bid.
- 18.8 Any minor informality or non-conformity or irregularity in the bid which does not constitute a material deviation may be waived by NTC, provided such waiver does not prejudice or affect the relative ranking of any other bidders.
- 18.9 Quoting of all BoQ items including Optional BoQ items is mandatory and non-quotation of any item will be disqualify the bid.

19 CLARIFICATIONS / CORRECTIONS OF BID

- 19.1 To assist in the examination, evaluation and comparison of the bids the committee, at its discretion, may ask the bidder for a clarification of its bid. The request for clarification and the response shall be in writing and no change in the price or substance of the bid shall be sought, offered or permitted.
- 19.2 Arithmetical errors will be rectified on the following basis:
If there is a discrepancy between unit price and total price that is obtained by the multiplying the unit price and quantity, the unit price shall prevail and total price shall be corrected. If there is a discrepancy between the words and figures the

amount in words shall prevail. If there is a mistake in addition / totaling that can be corrected.

- 19.3 If the bidder does not accept the corrected amount of bid, their bid will be rejected and its tender security forfeited.

20 COMMERCIAL COMPLIANCE STATEMENT

The bidder will furnish a compliance certificate with the bid as per enclosed format ([Annex-D](#)).

21 VARIATION ORDER

NTC reserves the right to place variation order (increase or decrease or delete in the quantities of BOQ). The bidder shall be bound to accept the variation order by NTC.

22 AWARD CRITERIA & NTC'S RIGHT

- 22.1 The bid of qualified/eligible, commercially compliant and technically qualified bidder with financially lowest evaluated cost shall be considered as **most advantageous bid**. Contract will be awarded to most advantageous bid on **as-a-whole basis**.
- 22.2 The NTC reserves the right to accept or reject any bid, and to annul the tendering process and reject all bids, at any time prior to award of order, without thereby incurring any liability to the affected bidders or any obligation to inform the affected bidders of the grounds for the NTC's action.

23 NOTIFICATION OF AWARD & SIGNING OF CONTRACT AGREEMENT

- 23.1 Prior to expiration of the period of tender validity prescribed by NTC, the NTC will notify the successful bidder Letter of Intent (LoI) through EPADS that their tender has been accepted.
- 23.2 Within 5 days from the date of furnishing of acceptable performance security under the condition of contract, the formal contract shall be executed with the successful bidder. If the successful bidder does not accept LOI of NTC within the bid validity period, NTC may confiscate the bid security.

SECTION-II

TERMS & CONDITIONS OF CONTRACT

1 PERFORMANCE SECURITY

Performance Security against Contract

- 1.1 The successful bidder shall furnish to the NTC a performance security equivalent to 10% of the contract value (Excluding SLA Services at BoQ S.No. 2.1 to 2.4 of Annex-A5) in the shape of Pay order or CDR or bank guarantee valid for a period of **15 x Months** as per [Annex-F](#) prior to the signing of contract.
- 1.2 The performance security furnished as per clause 1.1 above shall be further extended if the delivery or completion of work is delayed. Furthermore, the contractor shall extend the performance security to cover the warranty period i.e. One Year from Issuance of Provisional Acceptance Certificate (PAC).
- 1.3 Failure of the successful bidder to furnish performance security shall constitute sufficient grounds for the annulment of the award and forfeiture of the tender security.
- 1.4 All the correspondence regarding release of performance security shall be made with Director (Procurement) NTC HQ.

Performance Securities against SLA Services

- 1.5 The contractor shall furnish to the NTC a performance security equivalent to 10% of the contract value of the OEM and Local Partner SLA Services at Bill of Quantity S. No. 2.1 to 2.4 of [Annex-A5](#), in the shape of Pay order or CDR or bank guarantee valid for a period of **24 x Months** as per [Annex-F](#) before issuance of FAC.
- 1.6 The Performance security of SLA shall be released on successful completion of two (02) year SLA period upon issuance of SLA Acceptance Certificate by Project Director NTC subject to submission of performance security for the succeeding year or the eventual expiry of SLA period.
- 1.7 All the correspondence regarding release of performance securities against SLA shall be made with Director (Procurement) NTC HQ.

2 CONTRACTOR'S RESPONSIBILITIES

The Contractor shall be responsible for the following:

- 2.1 For the execution of this project for Supply, Installation, Testing and Commissioning of Tier-3 Data Center at NTC Karachi on DDP Site Turnkey Basis as per Bill of Quantity at **Annex-A**.
- 2.2 The contractor shall supply, install, test and commission the equipment in accordance with the contract.
- 2.3 All types of transportation for delivery of software / solution at final destination will be the responsibility of the contractor.
- 2.4 The contractor shall not subcontract the whole of the works. The contractor shall not subcontract any part of the works without the consent of the NTC.
- 2.5 The Contractor shall execute the basic and detailed design and the implementation activities necessary for successful installation & commissioning of the solution in compliance with the provisions of the Contract or, where not so specified, in accordance with good industry practice. The Contractor shall prepare and furnish the documents for the Project Director's approval or review. Any part of the System

- covered by or related to the documents to be approved by the Ultimate Consignee/Project Director shall be executed only after the approval of these documents.
- 2.6 The Contractor shall conduct an engineering survey of sites and shall submit the Project implementation schedule to Project Director NTC within 01 x week after signing the contract.
 - 2.7 The contractor shall provide the detailed literature for the installed solution in the form of hard copies and soft copies as mentioned in the BOQ, covering all the details of the solution and their operations, maintenance procedures.
 - 2.8 The contractor shall carryout installation and commissioning according to the implementation schedule, including all action/activities and inform/update Project Director of NTC.
 - 2.9 The contractor shall supply, install, test, commission, provide warranty and SLA support as described in Bill of Quantity at Annex-A (A1 to A5), Technical Specifications at Annex-B1 to B17 and SLA at Annex-C.
 - 2.10 The contractor shall complete the project in completion Time.

3 NTC's RESPONSIBILITIES

NTC shall be responsible for the following:

- 3.1 Project Director shall arrange to provide the requisite data and site access for implementation of the project.
- 3.2 Project Director shall assist in timely and satisfactory completion of the project in their areas of jurisdiction as per SOW.
- 3.3 Project Director shall be responsible to verify the delivery BOQ against contract, to issue Provisional Acceptance Certificate & Final Acceptance Certificate and to coordinate with any third party (if required). PD will also be responsible to verify the delivery challans of the delivered solution by the contractor.
- 3.4 Project Director shall get approval of the PAT documents from GM (Data & IT) NTC HQs.
- 3.5 Project Director NTC shall nominate committee for PAT.

4 TRANSPORTATION / PACKING

All types of transportation for delivery of equipment / solution at final destination will be the responsibility of the contractor. Contractor shall ensure proper / international packing of equipment to avoid deterioration of equipment etc.

5 TIME FOR COMPLETION

- 5.1 The contractor shall complete supply, installation, testing, and commissioning all equipment, civil works, and electrical/mechanical systems within Twenty (20) Weeks from the date of signing of contract.
- 5.2 The contractor shall also conduct all the local and foreign trainings within the abovementioned completion timelines subject to timely nomination of trainees from NTC.

6 STANDARD WARRANTY

- 6.1 The Contractor shall warrant that all goods, equipment, and works delivered and executed under the Contract are:
- Brand new, unused, and incorporate the latest improvements in design and materials;
 - Free from defects in material, workmanship, or construction;
 - Not refurbished, stolen, obsolete, or smuggled.
- (The Contractor shall furnish a written undertaking to this effect at the time of delivery or submission of completion documents.)
- 6.2 The warranty shall remain valid for a period of One (01) Year, commencing from the date of issuance of the **Provisional Acceptance Certificate (PAC)** by NTC.
- 6.3 NTC shall promptly notify the Contractor in writing of any claims arising under this warranty. Upon such notification, the Contractor shall, at its own cost and risk, repair or replace the defective item(s), equipment, or work(s) within a reasonable time, not exceeding seven (07) calendar days.
- 6.4 If the Contractor fails to remedy the defect(s) within the specified time after receipt of notice, NTC shall be entitled to take remedial actions as deemed necessary, at the risk and expense of the Contractor, without prejudice to any other contractual rights or remedies available to NTC.
- 6.5 Without prejudice to any other clause of this Contract, the Contractor shall promptly correct, at no additional cost to NTC, any defect in work previously corrected if it reoccurs or is found to have been improperly rectified, provided that such notice is issued within the warranty period.
- 6.6 If no defect or discrepancy is reported by the Ultimate Consignee(s) /Project Director during the warranty period, the performance security submitted by the Contractor shall be released by Director (Procurement), NTC HQs, after issuance of Final Acceptance Certificate.
- 6.7 During One (01) Year warranty period, the contractor shall arrange to provide licenses with validity covering the warranty period w.e.f date of issuance of PAC till Final Acceptance Certificate.
- 6.8 During One (01) Year warranty period, the contractor shall arrange to provide OEM support (Ticket base support/subscription and hardware warranty Next Business Day (NBD) on the same lines as per SLA at **Annex-C** w.e.f date of issuance of PAC till Final Acceptance Certificate.
- 6.9 During One (01) Year warranty period, the contractor shall arrange to provide Local partner support along with onsite support on the same lines as per SLA at **Annex-C** w.e.f date of issuance of PAC till Final Acceptance Certificate.

7 LIQUIDATED DAMAGES

- 7.1 Unless the failure to complete the work is caused by force majeure or delay is not on part of NTC, the contractor shall pay to NTC as liquidated damages of the delayed part of the contract, at rate of 0.5% of the delayed part, up to a maximum of 10% of the contract value (Except SLA Services) and the same will be recovered from the Contractor at the time of payment.

- 7.2 In case of force majeure the LD charges may be waived off by NTC on receipt of request from contractor with documentary evidences. If the delay is on the part of NTC, and agreed by NTC, then for that time no liquidated damages will be paid to NTC. NTC shall have discretion to impose/waive off LD Charges based on the performance of contractor.

8 LICENSES / SUBSCRIPTION SERVICES

- 8.1 The contractor shall be responsible for provision of licenses against all licensed components of the project covering standard warranty of One (01) Year and SLA period of Two (02) Years with option of further extension of Two (02) Years.
- 8.2 The contractor shall, if required, deploy demonstration licenses during the installation of equipment and software while the production licenses shall only be deployed on explicit intimation from Project Director vide Successful Conduct of PAT letter.
- 8.3 Project Director shall verify the deployment of all licenses along with their validity details through PAT committee.

9 PROVISIONAL ACCEPTANCE CERTIFICATE

- 9.1 The contractor shall provide Provisional Acceptance Testing (PAT) documents to the Project Director for vetting and approval of GM (Data & IT) NTC HQs within 08x Weeks from signing of the contract.
- 9.2 Upon completing the supply, installation and commissioning of all the equipment and allied components, the contractor shall notify the Project Director in writing to initiate the Provisional Acceptance Test (PAT). The Project Director shall nominate a committee to conduct the PAT for approval of GM (Data & IT). The approved PAT committee shall carry out PAT in accordance with the approved PAT protocols, verifying the installed equipment and allied components against the contract BoQ and specifications.
- 9.3 The contractor shall do all necessary arrangements for the PAT testing as per approved PAT protocols. Upon successful completion of the PAT, the nominated committee will sign the PAT report, confirming compliance.
- 9.4 Upon the successful conduct of the PAT and work inspection, the Project Director NTC shall issue Successful Conduct of PAT letter with instructions to the contractor for deployment of production licenses for all licensed components of the project. PAT committee will verify the deployment of licenses and their validity as per contract terms.
- 9.5 Subject to verification of license deployment, Project Director shall issue Provisional Acceptance Certificate (PAC). If the PAC is not issued within one (01) week of the PAT and work inspection as well as license deployment, the Project Director shall provide reasons of the delay within one week after receiving a formal request from the contractor.
- 9.6 Any discrepancies or deficiencies identified during the PAT or work inspection or license verification, will be communicated to the contractor, who shall address them promptly, but no later than fourteen (14) days from the date of notification. In such cases, the PAC will only be issued upon successful rectification of the

discrepancies and completion of the required tests to the satisfaction of the PAT committee.

- 9.7 Delays in issuing the Provisional Acceptance Certificate (PAC) will be attributed to the contractor only if discrepancies identified during the PAT remain unresolved by the contractor.
- 9.8 The Provisional Acceptance Certificate (PAC) will be valid for warranty period of 12 months. Effective date of PAC shall be license activation date.
- 9.9 Any Minor / Non-service affecting discrepancies shall be appended with PAC as Annexure.

10 NIL DISCREPANCY CERTIFICATE

- 10.1 Upon successful issuance of the Provisional Acceptance Certificate (PAC), and subsequent resolution of Any Minor / Non-service affecting discrepancies the Project Director shall issue a Nil Discrepancy Certificate (NDC) in favor of the contractor for that specific site, after being fully satisfied with the completeness of the work executed thereon.
- 10.2 Issuance of the NDC shall not absolve the contractor of their obligations during the warranty period.

11 SERVICE LEVEL AGREEMENT

- 11.1 The SLA covers OEM support and partners support for the period of Two (02) Year with option of further extension of Two (02) Years for all the equipment and licenses provided under the scope of project.
- 11.2 Warranty services at clause 6 above shall also be provided on same lines as per SLA terms and conditions defined in Annex-C.
- 11.3 Project Director shall monitor the performance of the contractor as per the terms and conditions of the SLA as defined in Annex-C and issue SLA Acceptance Certificate in each quarter subject to satisfactory performance.
- 11.4 Project Director shall impose penalties and deduct the same from the quarterly payments against the SLA.

12 TRAININGS

- 12.1 The contractor shall arrange following trainings as specified in Bill of Quantity at [Annex- A5](#):
 - a) 06 x Persons x CDCP OEM Certified Training with Certification vouchers.
 - b) 06 x Persons OEM certified local Training for 10 x working days for SDN and Other Network Components.
 - c) 05 x Persons Foreign Training for 10 x working days for Data Center operations and standardizations.
- 12.2 The Foreign training for NTC officers shall be arranged by the contractor for a period of 10 x working days in OEM training center. The training must be comprehensive and must be on equipment which shall be of such level that the NTC personal trained should be able to install, configure, commission manage, maintain and operate all the components of the system/network ordered. Boarding / lodging, breakfast, air-fare of round trip, pick & drop at Country of Origin and

- subsistence (in advance and as per Government of Pakistan Foreign office rates for sponsored trip) shall be arranged by the contractor at his own expenses.
- 12.3 Complete proposal of the training courses and their duration covering Operation, Maintenance, and Diagnostic Testing, Measurements, Repairs and Management Information Reporting procedures shall be submitted.
- 12.4 All the instructors shall possess high technical ability to impart training. They shall have as high command on English language.
- 12.5 Project Director NTC shall propose nominations to Director (Procurement) NTC for perusal and recommendation of CTO and approval of MD NTC.
- 12.6 The contractor shall be bound to conduct these trainings within the Project Completion Timeline i.e. Twenty (20) Weeks from signing of contract.
- 12.7 The efficiency of the training program conducted by the contractor/OEM will be under close scrutiny and it will have to be repeated by contractor without extra cost to NTC if the training given is found to be ineffective, deficient and un-satisfactory. However, NTC has to communicate its dissatisfaction (if any) during the training period for improvement and not afterwards.
- 12.8 Project Director shall issue Training Acceptance Certificate upon successful completion of required tasks carried out by the contractor.

13 CERTIFICATION

- 13.1 The contractor shall design, construct, test, commission, and obtain TIA-942 Tier III Constructed Facility Certification of the proposed data center facility from an accredited certification authority. The contractor shall first secure TIA-942 Design Certification prior to commencement of certification for the constructed facility.
- 13.2 Project Director will provide necessary coordination and support throughout the process regarding site access, timely approvals/reviews, access permission for inspection etc.

14 TERMS OF PAYMENT

- 14.1 **Equipment & Licenses:** All payments against shall be processed by Finance Wing NTC HQs through Director (Procurement) NTC HQs subject to invoice verification by Project Director in following manner:
- 60% payment** of delivered equipment value only shall be made upon successful delivery of equipment at destination which shall be proved by duly verified delivery challans by NTC Project Director.
 - 95% payment** of contract value (Excluding SLA, Trainings & Data Center Certifications) including adjustment of 60% payment against delivered equipment will be made upon issuance of Provisional Acceptance Certificate (PAC) by Project Director.
 - 05% payment** of contract value (Excluding SLA, Trainings & Data Center Certifications) will be made upon issuance of Nil Discrepancy Certificate (NDC) by Project Director.
- 14.2 **Service Level Agreement:** All payments shall be processed by Finance Wing NTC HQs through Project Director NTC HQs upon issuance of Quarterly SLA Acceptance Certificate by NTC Project Director subject to invoice verification.

- 14.3 **Trainings:** All payments shall be processed by Finance Wing NTC HQs through Project Director NTC HQs upon issuance of Trainings Acceptance Certificate by NTC Project Director subject to invoice verification.
- 14.4 **Data Center Certifications:** All payments shall be processed by Finance Wing NTC HQs through Project Director NTC HQs upon successful provision of certifications subject to invoice verification.
- 14.5 The Contractor will submit the commercial invoice & sales tax invoice in triplicate to NTC. The Contractor will clearly mention NTN & GST number of both supplier & purchaser on the invoice (NTC NTN # 1218153-6, NTC GST # 07-01-9802-013-64).
- 14.6 All the payments shall be made through cross cheque in the Pak Rupees.
- 14.7 Taxes will be deducted as per government rules at the time of payment.

15 CONTRACTOR'S NEGLIGENCE

- 15.1 The contractor will indemnify NTC against actual losses, subject to limitation of liability not exceeding 10% of the contract value as detailed hereinafter for loss and / or damage to property and / or persons of NTC arising from negligence errors or omissions or default and / or infidelity during period of this contract and arising out of and in the course of the performance by the contractor of its obligations under this contract. However, the said clause will be governed by prevailing laws of Islamic Republic of Pakistan.
- 15.2 The laws of Islamic Republic of Pakistan shall prevail in case of any inconsistency / anomaly.

16 FINAL ACCEPTANCE CERTIFICATE

- 16.1 The contractor must notify the NTC concerned officer at-least 15 days before the expiry of warranty period for the issuance of final acceptance certificate. Upon such notification from contractor, the Project Director will issue Final Acceptance Certificate, in favor of contractor subject to satisfactory completion of warranty period as per requirement of contract and submission of performance security against the first year of SLA. Alternatively, the NTC concerned officer will notify the contractor for the discrepancies that still remain un-resolved and contractor will rectify the discrepancies.
- 16.2 The FAC shall not absolve the contractor of its obligations under Service Level Agreement

17 DEFAULT BY CONTRACTOR

- 17.1 If the contractor fails to provide the services, refuses or fails to comply with a valid instruction of the NTC, the NTC may give notice and stating the default.
- 17.2 If the contractor has not taken all practicable steps to remedy the default within 14 days after receipt of NTC notice, the NTC may by a second notice cancel the contract and confiscate the performance security.

18 ARBITRATION AND APPLICABLE LAW

- 18.1 This Agreement shall be governed under Pakistani law and the Courts at Islamabad shall have exclusive jurisdiction over any matter that may be referred to a Court under this Agreement.
- 18.2 In the event that any dispute arises between the Parties under this Agreement, one Party shall issue notice to the other Party to mutually negotiate a resolution to the dispute. If the negotiations fail to resolve the dispute within seven (7) days of receipt of the notice, the dispute shall be referred to the Managing Director, National Telecommunication Corporation (“MD”) or his nominee who shall provide a personal hearing to Contractor and render a decision thereon within a period of thirty (30) days. In the personal hearing conducted pursuant to this clause, the Contractor shall not be represented by a legal practitioner within the meaning of the Legal Practitioners and Bar Councils Act, 1973.
- 18.3 If the Contractor is aggrieved of the decision of the MD or his nominee rendered under clause (18.2) hereof, the Contractor may refer the dispute to arbitration within thirty (30) days of the date of the decision of the MD or his nominee under the Arbitration Act, 1940 or any law that the Arbitration Act, 1940 is repealed, amended, or modified by at the time of referral of the dispute to arbitration. The arbitration shall be conducted before a Sole Arbitrator to be appointed by the consent of the Parties. The seat and venue of arbitration shall be at the National Telecommunication Corporation Headquarters, Sector G-5/2, Islamabad. The arbitration and the award thereof shall be conducted in the English language.
- 18.4 The costs and fees of the Sole Arbitrator shall be shared by the Parties equally. A Party shall bear the costs and fees of its legal practitioners and other personnel that a Party engages for the arbitration unless otherwise awarded by the Sole Arbitrator.

19 FORCE MAJEURE

- 19.1 The Contractor shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the contract is the result of an event of Force Majeure.
- 19.2 If either party is temporarily rendered unable, wholly or in part by Force Majeure to perform its duties or accept performance by the other party under the Contract it is agreed that on such party, giving notice with full particulars in writing of such Force majeure to the other party within 14 (fourteen) days after the occurrence of the cause relied on, then the duties, of such party as far as they are affected by such Force Majeure shall be suspended during the continuance of any inability so caused but for no longer period and such cause shall as far as possible be removed with all reasonable speed. Neither party shall be responsible for delay caused by Force Majeure.
- 19.3 The terms “Force Majeure” as used herein shall mean Acts of God, strikes, lockouts or other industrial disturbance, act of public enemy, war, blockages, insurrections, riots, epidemics, landslides, earthquakes, fires, storms, lightning, flood, washouts, civil disturbances, explosion, Governmental Export/Import Restrictions (to be supported by a letter from the relevant Authority and verified by the Diplomatic

- Mission in Pakistan), Government actions/restrictions due to economic and financial hardships, change of priorities and any other cause similar to the kind herein enumerated or of equivalent effect, not within the control of either party and which by the exercise of due care and diligence either party is unable to overcome.
- 19.4 The term of this Contract shall be extended for such period of time as may be necessary to complete the work which might have been accomplished but for such suspension. If either party is permanently prevented wholly or in part by Force Majeure for period exceeding 12 (twelve) months from performing or accepting performance, the party concerned shall have the right to terminate this contract immediately giving notice with full particulars for such Force Majeure in writing to the other party, and in such event, the other party shall be entitled to compensation for an amount to be fixed by negotiations and mutual agreement
- 19.5 If a Force Majeure situation arises, the Contractor shall promptly notify NTC in writing of such conditions and the cause thereof. Unless otherwise directed by NTC in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practicable, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

20 TERMINATION FOR INSOLVENCY

The NTC may at any time terminate the contract by giving written notice to the contractor, without any compensation to contractor. If the contractor becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to action to the NTC.

21 TERMINATION FOR CONVENIENCE

The NTC may send a written notice to the contractor and terminate the contract in whole or in part any time for its convenience. The notice of termination shall specify that the termination is for the NTC's convenience, the extent to which performance or work under the contract is terminated and the date upon which such termination becomes effective.

22 PROJECT DIRECTOR / ENGINEER IN CHARGE

Director (Data Center) NTC HQs Islamabad

23 DEBARMENT / BLACKLISTING OF FIRM

- 23.1 As per clause-19 of the PPRA rules 2004, NTC reserves the right of debarment 'or' blacklisting of a firm, association, corporation, joint venture, company, partnership or any other legal entity subject to any of the following acts: -
- Consistent failure to provide satisfactory performance.
 - Contractor becomes insolvent.
 - Existence of judicial decision against a contractor in respect of a corrupt or collusive practice.
 - Submission of false and spurious documents, making false statements and allegations to gain undue advantage.
 - Commission of fraud.

- f. Contractor abandons the contract and allied Service Level Agreement.
 - g. Contractor without reasonable excuse fails to commence the work 'or' suspends the progress of work for 14 days.
 - h. Contractor is not executing the work in accordance with the contract or is persistently or flagrantly neglecting to carry out their obligations under the contract.
 - i. Commission of embezzlement, criminal breach of trust, theft, cheating, forgery, bribery, falsification or destruction of records, receiving stolen property, false use of trademark, securing fraudulent registration with sales tax authorities, Pakistan Engineering council etc, giving false evidence, furnishing of false information of serious nature.
- 23.2 Managing Director NTC will constitute a committee comprising of three NTC officers and they will investigate the matter in connection with allegation of corrupt, fraudulent, coercive or collusive practices or illegally harassment or threat. Moreover, the committee shall also accord adequate opportunity of being heard to the contractor who is to be debarred / blacklisted. The said committee will forward its clear recommendations for the approval of Managing Director NTC.
- 23.3 The debarment shall be for a reasonable specified period of time, commensurate with the seriousness of the cause. However, the debarment period shall not exceed from three years. Moreover, NTC also reserves the right of permanent blacklisting of a contractor subject to severity of the corrupt or fraudulent practices.

24 REPEAT ORDER

NTC may place Repeat Order on the contractor as per PPRA Rules 2004.

25 INTEGRITY

- 25.1 The Contractor hereby declares that it has not obtained or induced the procurement of this Contract or a right, interest, privilege or other obligation or benefit under this Contract from Government of Pakistan or any administrative subdivision or agency thereof or any other owned or controlled by it (GoP) through any corrupt business practice.
- 25.2 Without limiting the generality of the foregoing the Contractor represents and warrants that it has fully declared the brokerage, commission, fees 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, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or including the procurement of this Contract or a right, interest, privilege or other obligation or benefit under this Contract in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.
- 25.3 The Contractor accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this Clause.

26 PROJECT MANAGEMENT TEAM

- a. **Dedicated Project Manager:** The contractor shall assign a dedicated Project Manager who will serve as the primary Point of Contact (POC) with NTC. The Project Manager will be responsible for coordinating all project activities to ensure smooth execution and successful completion of the Project.
- b. **Project Management Methodology and Reporting:** The contractor's Project Management team shall employ standard and recognized project management methodologies, practices, and tools to plan, monitor, and control all project phases. Regular progress reporting shall be provided to NTC to ensure timely, transparent, and effective communication throughout the Project lifecycle.
- c. **Project Documentation and Handover:** The contractor shall prepare comprehensive documentation covering all project components, including inventories of hardware and software with complete product details, part numbers, and serial numbers. All documentation will be formally handed over to NTC upon Project completion and issuance of the Provisional Acceptance Certificate (PAC)

27 DECLARATION OF BENEFICIAL OWNERS' INFORMATION

The "Declaration of Beneficial Owners' Information of Public Procurement Contract Awarded Regulations, 2022" require that the contractor shall be bound to provide beneficial ownership information as per Performa attached as [Annex-G](#).

ANNEX-A: BILL OF QUANTITY

Sr	Description	Total amount in PKR inclusive of Taxes
1	Annex-A1 Facility Components (Cabinets & POD, Cooling, Fire Suppression, CCTV, Access Control, Video Wall, DCIM, IT Equipment & Tools)	
2	Annex-A2 Network & Security Equipment	
3	Annex-A3 Power/Electrical Components (UPS, DG sets, AVR, DBs, Cabling etc.)	
4	Annex-A4 Civil, Building, Structured Cabling Works	
5	Annex-A5 Commissioning, SLA, Certification & Trainings etc.	
6	Grand Total Amount in Pak Rupees inclusive of Taxes	

ANNEX-A1: FACILITY COMPONENTS

Cabinets & POD, Cooling, Fire, CCTV, Access Control, Video Wall, DCIM, Monitoring, IT Eqpt &Tools

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
Facility Components (Cabinets & POD, Cooling, Fire Suppression, CCTV, Access Control, Videowall, DCIM, Monitoring, IT Equipment &Tools						
1	<p>Cabinet & Aisle containment Components:</p> <ul style="list-style-type: none"> • 10 x Racks 600mm(W) x1200 mm (D)x 2000 mm (H) 42U cabinets[POD] • 10x Racks 800mm (W)x1200 mm (D)x 2000 mm (H) 42U cabinets.[POD] • 2x Rack 800mm (W) x1200mm (D) x2000mm (H) 42U cabinets. [MMR] • 1x Rack 800mm (W) x1200mm (D) x2000mm (H) 42U cabinets. [Staging] <p>with all required cabinet components (side panels, guide rails, Blank Panels (wind management)).</p> <p>Equipment installation components, wind management components, cable management components, Earthing and Door components, Distribution line-cable-industrial assembly components etc including but not limited to Rack 2xPDUs/rack with C13 and C19 industrial connectors as per design/needs.</p> <p>POD Components including Aisle containments and related components as per design/needs.</p> <ul style="list-style-type: none"> •10x PDU Pairs With Socket Level Monitoring* 	23	No			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
	<ul style="list-style-type: none"> •10x PDU Pairs PDUs with Rack Level Monitoring •3x PDU Pairs with Rack Level Monitoring[MMR/Staging] •16x Racks having PDUs With Single Phase ≥32 Amps (7.4KVA), •4x Racks having PDUs With Three Phase ≥32 Amps (22 KVA) •3x Racks having PDUs With Single Phase ≥16 Amps(3.5KVA) *All 3 Phase Rack PDUs with Socket Level Monitoring 					
2	Air conditioner NOC and UPS rooms					
2.1	Provision of 2.0 ton comfort air conditioner Daikin / Midea wall split type including the cost of additional copper piping, stands / brackets for outdoor unit, cabling, insulation, installation testing and commissioning of AC units etc complete in all respect.	6	No			
2.2	Precision Air conditioners					
2.2.1	Supply, installation, testing and commissioning of in row horizontal cooling precision air condition CR AC units with each having cooling capacity 35 KW with power supply 3phase 380-415V, 50 Hz along with copper pipe installation, gas filling, condensate drain piping, water tanks for humidifiers, team work function and all necessary controls complete in all respect.	6	No			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.2.2	Supply, installation, testing and commissioning of in room/perimeter horizontal cooling precision air condition CRAC units with each having cooling capacity ≥15 KW with power supply 3phase 380-415V, 50 Hz along with copper pipe installation, gas filling, condensate drain piping, water tanks for humidifiers, team work function and all necessary controls complete in all respect. [UPS ROOM 1 & 2]	4	No			
2.2.3	Supply, installation, testing and commissioning of in room/perimeter cooling precision air condition CRAC units with each having cooling capacity ≥5 KW with power supply 3phase 380-415V, 50 Hz along with copper pipe installation, gas filling, condensate drain piping, water tanks for humidifiers, team work function and all necessary controls complete in all respect.	4	No			
Precision unit installation						
2.2.4	Copper piping (hard copper) 18 SWG between indoor and outdoor unit with Aero flex insulation 5/8 copper pipe size with all fittings and insulation	150	Rft			
2.2.5	Same as above but 7/8 copper pipe size with all fittings and insulation	150	Rft			
2.2.6	Supply of 100 gallon water tank for precision ACs humidifiers to provide required water for precision units.	2	No			
2.2.7	Supply and installation of (1-1/2)" and 1.0" UPVC drain pipe, including the cost of aero flex insulation and any necessary accessories or specials.	120	Rft			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3	Fire Suppression System NOVAC					
3.1	<p>Fire Suppression System NOVAC/FM200 Providing, installation, testing and commissioning of Automation Fire Suppression system based on NOVAC/FM200 in data hall, UPS rooms/MMR/Staging Rooms with Siren / Hooter Automatic Discharge Nozzles Complete with Fire Extinguisher Control Panel, high rated Discharge Valve, Auto / Manual Actuator with Pressure Gauge, Pressure Switch, Discharge Hose, Protection Cap, Wall Bracket etc. suitable for IT Server Room all complete including cost of accessories and as directed by the Engineer-in-Charge Note: Preference for better Fire suppression solution as per solution design NOVAC For Data Center NOVAC For UPS Room 1 & 2 FM200 For MMR Room 1 & 2</p>	1	Job			
	Fire system addressable panel					
3.2	<p>Supply installation testing and commissioning of addressable fire alarm panel with optical smoke detectors (30 No) ,addressable manual call points(03),strobe cum sounders(03) for data center hall and UPS rooms along with Aspiration smoke detection system VESDA for main Data hall /server room, UPS room 1 and Ups room 2, MMR/Staging Room, along with accessories complete in all respect.</p>	1	Job			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3.3	Smoke Detector Providing , fixing, testing and commissioning of Addressable smoke detector surface/ ceiling mounting type with full functionality as per specification laid by manufacturer / drawing with allied components, etc. complete in all respect approved make or as approved by the Engineer In charge.	6	Nos			
3.4	Fire Extinguisher Cylinder Providing, fixing, testing and commissioning of DCP 4kg fire Extinguisher cylinder having Body burst pressure Minimum 55 bar, Nozzle Hose Minimum 400 mm, Discharge throw (meter) 2-5 meter with allied components surface mounting type, complete in all respect approved make or as approved by the Engineer In charge.	6	Nos			
4	I.P Based Biometric Access Control System IP Based Bio metric access control with numeric keypad, (50 RFID Cards) for (Data Center, Power/UPS Room 1 & 2 , NOC Room, MMR Room 1 & 2 & Staging Room.) 15x Devices including LAN Based Access Control Management Software. VIRDI or equivalent.	1	Lot			
5	Video Wall The NOC will have 3 x 2 Grid 55" LED Screens Video wall, with 0.88mm Bezel-to-Bezel (0.44 even bezel), IPS Type, 1920 x 1080 Resolution, with 700 Nits Brightness and viewing angle of at least 178/178, for the Monitoring and Management.	1	Lot			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
6	Structured Cabling Under the scope include OFC,ODF, overhead trays, conduits, or ladder racks for MMR/Staging Room connectives	1	job			
	Itemized cost of each component w.r.t. spec document to be quoted					
7	DCIM & POD Monitoring solution with 3x years licenses and all related components as per technical Specification at Annex-B2 Solution need to include but not limited to access control system, Finger Print/Password/Card based access control systems on POD doors and Racks humidity, smoke, temperature, water leakage, alarm buzzer etc. as per solution design.	1	Job			
	Tools and Devices					
	i) Laptops for NOC team and Officers as per Technical Specification at Annex-B3	10	No			
	ii) Desktops for Help Desk teams	8	No			
	iii) Desktops with integrated Graphics as per Technical Specification at Annex-B4	2	No			
9	iv) Basic Tool kit with following Tools <ol style="list-style-type: none"> 1. Fiberglass Clawhammer ≥ 450g 2. Cordless Drill Machine Max torque: 55Nm 3. LV Insulated Cr-V (1000V) Screwdriver Set with Magnetic Tips VDE+GS compliant 4. LV insulated Cr-V(1000V) 03 x Pliers Set VDE+GS compliant 5. Crimping Tool RJ45/RJ-11) 6. Network Cable Tester 	1	No			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
	7. Aspirator blower \geq 800W 8. Vacuum Cleaner Heavy Duty 9. High pressure washer \geq 1600 W 10. Hacksaw with Frame 11. Steel Measuring Tape with Lock \geq 5 Meter 12. Digital Electric tester (0~600V) 13. AC/DC Digital Clamp on Meter 1000A 14. Cable Cutter 15. Emergency Torch Light IP Rated \geq 10W 16. Head Torch 17. Digital humidity & temperature meter 18. Infrared thermometer 19. Tile Sucker 50Kg Pull 20. 01 x Spanner and 01 x Wrench 21. Water-proof 600D polyester Bag \geq 16 Inch, 15 Kg load					
	v) Electrical Tool kit with following Tools 1. Clawhammer \geq 450g 2. Cordless Drill Machine Max torque: 55Nm 3. LV Insulated Cr-V (1000V) Screwdriver Set with Magnetic Tips VDE+GS compliant 4. LV insulated Cr-V(1000V) 03 x Pliers Set VDE+GS compliant 5. Hacksaw with Frame 6. Steel Measuring Tape with Lock \geq 5 Meter 7. Digital Electric tester (0~600V) 8. AC/DC Digital Clamp on Meter 1000A	1	No			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
	9. Cable Cutter 10. Non-Contact Digital Voltage Detector 11. Water-proof 600D polyester Bag ≥ 16 Inch, 15 Kg load 12. Emergency Torch Light IP Rated ≥ 10W 13. Cordless impact wrench Set with battery and Charger 14. Insulated Gloves					
	iv) Network Tool kit with following Tools 1. LV Insulated Cr-V (1000V) Screwdriver Set with Magnetic Tips VDE+GS compliant 2. LV insulated Cr-V(1000V) 03 x Pliers Set VDE+GS compliant 3. Crimping Tool RJ45/RJ-11) 4. Network Cable Stripper 5. Optical Power Meter 6. Network Cable Tester 7. Tone and Probe Set 8. VFL 10 KM 9. Steel Measuring Tape with Lock ≥ 5 Meter 10. Cable Cutter 11. Emergency Torch Light IP Rated ≥ 10W 12. Water-proof 600D polyester Bag ≥ 16 Inch, 15 Kg load	1	No			
	vii) Double Sided Aluminum Step Ladder 12 Ft for Data Center	2	No			
	viii) Shoe Cover Machine	2	No			
	ix) Equipment dolly (cart for equipment movement)	2	No			
	x) First aid kit	1	No			

S#	Description	QTY	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
	xi) Label Printer	1	No			
	xii) Tagging Printing Device	1	No			
	xiii) Tag Reader Device	1	No.			
	xiv) Ultrasonic Whole House Rat and Mouse Repellent	5	No			
Total amount in Pak Rupees inclusive of Taxes						

ANNEX-A2: NETWORK AND SECURITY COMPONENTS

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1	Network & Security Equipment					
1	External Firewall as per Technical Specification at Annex-B5 Network Firewalls >= 20Gbps throughput, new sessions/sec >=50,000, including IPS/IDS, AV, ATP, sandbox analysis, behavioral/predictive threat analysis, URL filtering, Application control, DoS & DDoS protection, with 8xInterfaces >=10GE, HA, LB, VPN (IPSec, SSL/TLS) support, IPV4/IPV6 support, integration with SIEM systems, REST API support, and all standard licenses/features as per latest security requirements with license renewal and updation services. (Itemized Cost to be Quoted against the components)	2	No			
2	Internal Firewall as per Technical Specification at Annex-B6 Network Firewalls >=10 Gbps throughput, new sessions/sec >=50,000, including IPS/IDS, AV, ATP, sandbox analysis, behavioral/predictive threat analysis, URL filtering, Application control, DoS & DDoS protection, with 8xInterfaces >=10GE, HA, LB, VPN (IPSec, SSL/TLS) support, IPV4/IPV6 support, integration iwth SIEM systems, REST API support, and all standard licenses/features as per latest security requirements with license renewal and updation services (Itemized Cost to be Quoted against the components)	2	No			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3	<p>Web Application Firewall as per Technical Specification at Annex-B7 with throughput ≥ 1Gbps, having concurrent connections $\geq 100,000$, New connections/sec $\geq 10,000$, Network interface ports GE ≥ 4, and 10GE ≥ 2 ports loaded with SFP+ ports for 10GE ports. Including Features of LB, Content Caching, Compression, SSL/TLS Offloading, HTTP/2 support, and management/monitoring through web-based management interfaces, CLI support, REST API support, integration support with SIEM, Real-time monitoring and alerting with license renewal and updation services. (Itemized Cost to be Quoted against the components)</p>	2	No			
4	<p>Type A TOR Switches as per Technical Specification at Annex-B8 Data Center TOR (Top of the Rack Type 1) switch, with switching capacity ≥ 1 Tbps, throughput ≥ 700 MPPs, and Latency ≤ 2 Microseconds, having 48x interfaces ≥ 10GE and 4x Interfaces ≥ 40GE. Management and Monitoring including Console port, Out-of Band and In-Band management, SNMP and Syslog, sFlow and NetFlow, API support, having AC power Supply, including 3x years OEM support with license renewal and updation services. (Itemized Cost to be Quoted against the components)</p>	8	No			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
5	<p>Type B TOR Switches as per Technical Specification at Annex-B9 Data Center TOR (Top of the Rack Mgmt/DCIC) switch, with switching capacity ≥ 150 Gbps, having Ethernet interfaces 10/100/1000 Base-T=48, 4xEthernet Interfaces $\geq 10GE$ Management and Monitoring including Console port, Out-of Band and In-Band management, SNMP and Syslog, sFlow and NetFlow, API support, having AC power Supply with license renewal and updation services (Itemized Cost to be Quoted against the components)</p>	4	No			
6	<p>Core Switch as per Technical Specification at Annex-B10 having Switching Capacity $\geq 5Tbps$, Forwarding Rate ≥ 1500 Mpps, Latency ≤ 2 microseconds. Having Layer 2 and Layer 3 Features, and Management, Monitoring features with license renewal and updation services. (Itemized Cost to be Quoted against the components)</p>	2	No			
7	<p>Core Router as per Technical Specification at Annex-B11 having Throughput ≥ 2 Tbps, packet Forwarding ≥ 7.5 Mpps, Latency ≤ 2 microseconds, having interface Type 10GbE, Layer2, Layer 3 Features, Security Features (ACLs Management & Monitoring features with license renewal and updation services. (Itemized Cost to be Quoted against the components)</p>	2	No			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
8	SDN Controller/Orchestrator as per Technical Specification at Annex-B12 Software Defined Network(SDN) solution in the Leaf-Spine mode with orchestrator to manage switching nodes centrally and via Out of Band Management. SDN-Controller should do the autonomous driving management system hosted on Physical Servers cluster for data center network. Solution with license renewal and updation services	1	Job			
AOC and SFP Items						
9	AOC Cable QSFP28, Capacity 100GE	20	No			
12	SFP28, Capacity (25GE), Mode (MM)	20	No			
14	SFP+, Capacity (10GE), Mode (MM)	40	No			
15	SFP+, Capacity (10GE), Mode (SM)	8	No			
16	SFP, Capacity (1GE), Mode (MM)	4	No			
Total amount in Pak Rupees inclusive of Taxes						

ANNEX-A3: POWER/ELECTRICAL COMPONENTS

UPS, DG sets, AVR, DBs, cabling etc

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1	Power cabling, UPS, panels, DGsets & DB Box Panel Boards, Distribution Boards, AVR (Automatic Voltage Regulator), PDF (Power Distribution Frame), ATS (Automatic Transfer Switch), Bus Coupler, MCS (manual changover Switch), Modular UPS with battery banks, LPDB, ACDB for prevision ACs, Power cables and Cable trays, GI cable trays, Earthing system, Transformer upgradation to 500 kva, 2x 360 kva Gensets, Fire Proof Doors etc including 3x years OEM support services as per attached details (S.No. 1.1 to 1.30 below)					
Power Panel, Cabling and Allied Works						
Panel Boards, Distribution Boards and Accessories						
1.1	Automatic voltage Regulator as per Technical Specification at Annex-B13 Supply and installation of 400 KVA static Automatic Voltage Regulator (AVR) with built in maintenance bypass make Dataturk ,EditElektronik or equivalent	1	No			
1.2	Power Distribution Frame as per Technical Specification at Annex-B14 Supply and installation of main LT panel for WAPDA 630 A with 4P ACB with all protections overvoltage, over current, surge protection and phase failure with all necessary connections.	2	No			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1.3	Automatic Transfer switches Supply and installation of ATS 630 A 4P panel with necessary controller, control wiring and Air Circuit breakers(ACB) make ABB and electrical MOR system with necessary controls/wiring for main panels in UPS room 1 &2.	2	No			
1.4	Bus Coupler Supply and installation of 630 A 4pole panel with ACB and ATS as a bus coupler for UPS room 1 &2 for transfer of power between two panels.	1	No			
1.5	Manual Changeover Switch Supply and installation of floor mounted 600 Amp 500 volts,3 phase 4 pole heavy duty change over switch Mechanical Manual change over switch Make Socomec or equivalent for switching between generator and WAPDA supply with nuts and bolts i/c incoming and outgoing connections as required. complete protection and interlocking.	2	No			
1.6	Modular UPS as per Technical Specification at Annex-B15 Supply and installation of >=160 KVA modular online double conversion high efficiency high power factor UPS make Huawei Liebert, APC or equivalent with installation cabinets for power modules. All server racks will get power from two independent feeds for redundancy, with battery banks for 30 mins backup.	2	No			
1.7	LPDB Supply and installation of AC DB for UPS rooms and NOC Room LP distribution.	1	No			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1.8	AC DB for Precision AC Supply and installation of precision In-row AC panel DB.	2	No			
1.9	MDB 1, MDB 2 Supply and installation of main distribution board MDB 1 and MDB 2 in Ups room1 & Ups room2 for supply of power room from main ATS panel to UPS.	2	No			
1.10	PFI Panel as per Technical Specification at Annex-B16 Supply, installation testing and commissioning of 250 KVAR rated PFI panel with capacitor banks and automatic switching controller with complete control wiring, bus bars, in and out connections etc complete in all respect.	1	No			
<p>Power Cables and Cable Trays Supply, installation, testing and commissioning of following sizes Cu/PVC/PVC/XLPE cables (Newage) for mains and sub mains distribution panels on cable trays/ladders including all accessories</p>						
1.11	4Cx185mm Cu/PVC/XLPE From AVR to ATS Panel, Generator to ATS Panel and ATS to MDB (1 & 2) in underground trench + overhead cable tray	1450	Rft			
1.12	4Cx120mm Cu/PVC/PVC From MDB to UPS and UPS to PDF 160 KVA UPS (A&B)	200	Rft			
1.13	1C x 150 sqmm from Transformer to AVR and AVR to LT Panel (1 & 2) over cable tray	800	Rft			
1.14	4C x 95mm From MDB to AC DB	25	Rft			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1.15	1Cx95 sqmm for earth cable	140	Rft			
1.16	4Cx25mm +1Cx16mm Earth Cable From AC DB to In row indoor Cooling Unit(A+B)	230	Rft			
1.17	4Cx16mm From MDB to LVDB	20	Rft			
1.18	4Cx6mm +1Cx2.5 Earth Cable From indoor unit to outdoor unit(A+B) Precision Cooling	110	Rft			
1.19	4Cx6mm From indoor unit to outdoor unit Comfort Cooling and Light DB's	120	Rft			
1.20	1Cx2.5mm shielded Cable Remote start from indoor to outdoor unit (A+B) Precision Cooling	110	Rft			
G.I cable trays and piping Tray						
2.21	Powder coated (perforated / box type) cable trays for electrical cables 16 Gauge 12" wide and 4 " in height etc.	360	Rft			
2.22	Powder coated (perforated / box type) cable trays for electrical cables 16 Gauge 18" wide and 4 " in height etc.	100	Rft			
2.23	Powder coated (perforated / box type) cable trays for electrical cables 16 Gauge 24" wide and 4 " in height etc.	130	Rft			
Earthing System						

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.24	Supply, Installation & Testing of complete job of boring upto 100 ft or less if water comes out from the ground level, lowering excavation & back filling. 1" dia & 10 ft long copper Rod filled with chemical compound as earth electrode including standard bare copper conductor make (Newage, Fast Cables) from rod to ground surface in each Earth Pit, 1 No Copper thimble 70 mm, 12" Wide & 12" deep Chamber for maintenance purpose. Covered with galvanized heavy duty Metal Cover.	6	No			
2.25	ECC copper conductor cable with dia 1C x 70 sqmm for earthing yellow green cable from earth pit terminals to each earth connecting point.	300	Rft			
Transformer 500 KVA						
2.26	Providing, fixing and commissioning of pad mounted 500 KVA step down 11000/400 volt three phase 50 HZ, transformer along with transformer protection panel including VCB and other controls accessories as per electricity code K-electric rating transformer Dyn-11 vector group, HV-LV connection, oil immersed, ONAN standard IEC-60076 complete in all respect.	1	No			
Fire Proof Doors						

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.27	<p>Fire Rated Doors Providing and fixing fire rated doors (single / double leaf) Fire rating time >2 hours with UL certificate, designed and fabricated in compliance with SDI requirements, finished with powder coated paint etc, Option for fire-rated wire glass or louver for vision lites (as directed), panic bar, including the cost of filling material Fire Resistant Honey Core, Rock Mineral Wool / Ceramic Wool / Perlite/ PU, all hardware, and reinforcements adhere to ANSI standards, UL fire label, fire protection time, fire protection certification, number and QR code.</p> <ul style="list-style-type: none"> • Data Center POD 02x Doors [63x84] • UPS Rooms 02 x Doors [42x84] • MMR Rooms 02 x Doors [42x84] • Staging Room 01 x Door [42x84] 	197	Sft			
Rubber Pad						
2.28	Providing and Laying Rubber Pad of approved thickness for Electrical / power Panels (i.e. AVR, L.T, A.T.S, MDB's etc) complete in all respect.	400	Sft			
Diesel Generators						

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.29	as per Technical Specification at Annex-B17 Supply installation testing and commissioning of 400 KVA Cummins, MAN, Perkins diesel generator set with weather and sound proof canopy.	2	No			
2.30	Providing and installation of external 2000 liters fuel tank with level indicator	1	No			
2.31	Electrical works including wiring, switch sockets, power plugs, faceplates, lights & fixtures as per attached details (S.No 2.32 to 2.49 below)					
Switch Sockets, Power Plugs, Telephone and Data Face Plates						
Providing installation laying, testing and commissioning of Switch, Sockets flush type Clipsal make (Original), including the cost of G.I Back Box recessed in wall / buried in floor with screws, clamps, etc. complete in all respect.						
2.32	a. Same as above but 20 Amp power switch for A/C's	6	Nos			
2.33	b. Same as above but 5 Amp light Plug (Round/flat/universal, Pin)	30	Nos			
2.34	c. Switch Gang Plate 2S	18	Nos			
2.35	d. Switch Gang Plate 3S	11	Nos			
2.36	e. Switch Gang Plate 4S	7	Nos			
Same as above but Telephone Point Face Plate including jack. complete in all respect						
2.37	a. Single Jack with RJ - 11/45 Face Plates	2	Nos			
2.38	b. Double Jack with RJ - 11/45 Face Plates.	2	Nos			
Same as above but Point Jack Face Plate for Networking Point						

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.39	a. Single Jack with RJ - 45 Face Plates	10	Nos			
Same as above but Point Jack Face Plate for Networking Point						
2.40	a. Single Jack with RJ - 45 Face Plates	10	Nos			
Wiring Light , Fan Points, Power Points & A/C Points Providing and laying the following PVC insulated and PVC sheathed copper conductor wiring circuits with specified cables, working voltage of up to 600 V, make Fast/New Age. Cable runs from the DB Box to light points, switch sockets, power plugs of approved make, with necessary thimbles, screws, clamps, lugs, and PVC conduits (make: beta/gelco) recessed in walls, roofs, floors, including the cost of fan boxes, etc., complete in all respects.						
2.41	Same as above but wiring of A/C Power Points with 6 mm ² Cable and single core cable size 2.5mm ² as ECC.	6	Nos			
2.42	Same as above but main circuit wiring for light plugs and light / fan points circuit from DB to switch Box with 2.5 mm ² Cable + s/c 1.0 mm ² ECC.	20	Nos			
2.43	Same as above but loop circuit wiring of, light plugs, lights / Fan points from light plug-to-light plug, switch box-to-switch box, light / fan points -to- light / fan points with 1.5 mm ² cable + s/c 1.0 mm ² ECC.	40	Nos			
Telephone Points						

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.44	Providing and laying FR PVC-sheathed copper conductor polyethylene polyester-taped telephone pair cables for internal wiring of telephone points from the main DB to each telephone point at the call center, with 04 pairs Cat 6, including punching of RJ-11/45 connectors and the cost of PVC Pipe (Galco), recessed in walls, floors, roofs, and all necessary equipment, complete in all respects.	8	Nos			
Data Points						
2.45	Providing and laying circuit wiring for networking points from switch/router to data face plates with 3M Cat 6 cables, (Original), including the cost of punching RJ-45 connectors (jacks) and PVC Pipe (Galco) / Dura Duct (Adamjee) make recessed in walls, floors, roofs, and all necessary equipment, complete in all respects.	7	Nos			
Lights and Fixtures						
2.46	Providing, Installation, Testing & Commissioning of recessed / surface mounted 36-40 watt size 4'0 x 1'0, LED panel lights orient / Philips make, including driver, having cool white colour 80-100 lm/ watts efficiency, 0.9 or above power factor, 20,000-25,000 hours life cycle, including connections, complete in all respect as approved by the engineer In charge.	20	Nos			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.47	Providing, Installation, Testing & Commissioning of recessed / surface mounted 11-13-watt, LED/SMD ceiling lights / downlights Paklite / Philips / Fast make, including driver, having natural white / cool white colour 80-90 lm/watts efficiency, 0.9 or above power factor, 20,000-25,000 hours life cycle, including connections, complete in all respect as approved by the engineer In charge.	30	Nos			
2.48	Providing, Installation, Testing & Commissioning of Emergency twin-head light make Philips, having self-test function, 01 hours battery duration when full charged, complete in all respect as approved by the engineer In charge.	2	Nos			
Fans and Fixtures						
2.49	Providing and Installing of False ceiling fans 24" x 24" sized, remote control make Pak / GFC/ Royal, in copper, fitting with hanger, screw , connector including the cost of new fan box / open steel Hook where require, power connections complete in all respects as approved by the engineer In charge.	2	Nos			
Total amount in Pak Rupees inclusive of Taxes						

ANNEX-A4: CIVIL AND CABLES COMPONENTS

Civil, Building, Structured Cabling Works

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1	Public Health Works and renovations work as per attached details (S.No 1.1 to 1.17 below)					
	Providing and fixing un plasticized polyvinyl chloride pipe (u.P.V.C) "B" class with specials) and clamps etc., including cutting and fitting, complete with and including the cost of breaking through walls and roof, making trench and making good etc.; after cleaning the pipe (.working pressure 12 kg/cm2)					
1.1	Do Do. 2 inches (50mm) dia pipe.	26	Rft			
1.2	Do Do. 3 inches (80mm) dia pipe.	52	Rft			
1.3	Do Do. 4 inches (100mm) dia pipe.	65	Rft			
1.4	Do Do. 6 inches (150mm) dia pipe.	50	Rft			
	Providing and fixing PPRC pipe PN-20 with specials, and clamps etc, including cutting and fitting complete with and including the cost of breaking through walls and roof and making good etc; after cleaning the pipe and cartage etc complete					
1.5	25mm dia	100	Rft			
1.6	32mm dia	70	Rft			
1.7	40mm dia	70	Rft			
1.8	Providing and fixing Pakistani best quality European style white glazed earthenware single piece W.C pan (3-Star/Bright) complete with and including the cost of plastic seat cover and buffers, best quality low level glazed earthenware flushing cistern of standard size with internal fittings complete, with fittings and making requisite number of holes in walls, plinth and floor for pipe connections and making good in cement concrete 1:2:4..	2	Each			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1.9	Providing and fixing UPVC Multi /P-trap floor trape of required sizes with S.S gratings including cutting and making the requisite number of holes in walls plinth and floors and making good in 1:2:4, C.C.	4	Each			
1.10	Providing & fixing best quality earthen ware vanity basin (porta or equivalent) standard size (white/light color) and including the cost of 1-1/4" dia brass waste1-1/4" rubber plug and chrome plated brass chain pvc waste pipe 1-1/4" dia of approved pattern etc. complete	2	Each			
1.11	Providing & Fixing best quality (Sonex/Faisal) chromium plated consisting on Tee cock, double bib cock wall shower, Basin mixer, Muslim shower etc. of approved design for bath room complete with all accessories such as cp nozal etc including the cost of refixing old set.	2	Each			
1.12	Providing and fixing bath room accessories of (C.P) set made by China/Faisal of approved equivalent of 7 pieces consist of one cosmetic shelf, one towel rod with bracket, one soap dish, one tooth brush holder with glass and cover, one tissue paper holder one double hook one towel ring etc complete of approved quality and make as per direction of Engineer in-charge.	2	Each			
Providing and fixing best quality following dia ball valve /Gate valve made to B.S.S. 1212.....						
1.13	1 inch (25 mm) dia	4	Each			
1.14	1-1/4 inch (32mm) dia	2	Each			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1.15	1-1/2 inch / (40mm) dia	1	Each			
1.16	Providing manhole type 'A' size 2 feet x 1-1/2 feet or 610 mm x 457 mm (inside dimensions) x 2 feet (610 mm) deep as per approved design and specifications complete for 4 inches to 12 inches (100 mm to 305 mm) dia. Pipes up to 3 feet-11 inches (1.19 m) depth with 16 inches (406 mm dia.) (inside) cast iron cover and frame (weight = 1 Cwt. 1. Qtr.) (63.5 kg.) fixed in R.C.C.1:2:4 slab 4 inches (102 mm) thick, burnt brick masonry walls 9 inches (229 mm) thick set in 1:4 cement mortar, 6 inches (150 mm) 1:3:6 C.C. in foundation, 1:2:4 C.C. in benching and 1/2 inch (13 mm) thick cement plaster in 1:3 C.M., to all inside walls surfaces channels and benching etc., and to top including making requisite number of main and branches channels but excluding the cost of excavation, back filling and disposal of excavated stuff, manhole cover and frame.	3	Each			
1.17	Making connection with the existing G.I. pipe up to 2 inches (50 mm) dia including cutting the pipe and providing and fixing necessary fittings.	1	Each			
2	Furniture works including chairs, tables, workstations and other furniture as per attached details (S.No 2.1 to 2.7 below)					
Furniture/Meeting Room						
2.1	Supply of Revolving Chairs (lower back) of approved make, colour and shade as approved by the engineer in charge.	8.00	Each			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
2.2	Supply of Revolving Chairs (High back Executive Chairs) of approved make, colour and shade as approved by the engineer in charge.	3.00	Each			
2.3	Supply of Visitor Chairs of approved make, colour and shade as approved by the engineer in charge.	8.00	Each			
2.4	Providing and supplying of wooden table (size: 4' x 2'-6") of approved make etc complete as approved by the engineer in charge.	4.00	Each			
2.5	Providing and supplying of wooden table (size: 5' x 3") of approved make etc complete as approved by the engineer in charge.	3.00	Each			
Workstation/NOC						
2.6	Providing, making and fixing workstation (Size:3'-6" x 2'-00") made with 1" thick laminated sheets (MDF) for sides, top, back of approved design, color and texture, including the cost of PVC Edging, Keyboard tray, side unit having three drawers (Size: L=16" x W=24" x H=27") etc complete with all respect and as directed by the engineer in charge.	6.00	Each			
2.7	Providing and fixing file cabinet 16" deep consisting of 3/4" thick laminated sheet on bottom, top, sides, back, shelves and shutters etc all open edges covered with PVC edging/ molding, including the cost of full piano hinges, handles, lock, catchers and required hardware etc complete as per direction of engineer in charge	230.00	Sft			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3	Civil Works including dismantling works, masonry works etc as per attached details (S.No 3.1 to 3.27 below)					
3.1	Dismantling of PCC Floor and disposing of surplus / dismantled material from site	500	Cft			
3.2	Dismantling of Door shutters with frames and stacking at site etc complete.	10	Each			
3.3	Dismantling of dry block masonry walls set in cement mortar including stacking salvaged material (serviceable) and disposing of surplus material with all lead and lift as directed by engineer in charge.	330	Cft			
3.4	Excavation for trenches in all kinds of soil and back filling the excavated material in trench or under floor including breaking clods, watering, compacting/ consolidation by ramming in layers, dressing and disposal of surplus excavated stuff as directed by the engineer in charge.	2750	Cft			
3.5	Providing and laying 1:3:6 cement concrete solid block, masonry 4 to 6 inches (102 mm to 152 mm) thick using graded screened bajri 3/4 inch (19 mm) and down gauge set in Cement mortar 1:6 including scaffolding, raking out joints and curing etc. complete in ground floor superstructure.	408	Cft			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3.6	3/4" (19 mm) thick cement plaster 1:4 on internal/external walls and columns etc. in basement, plinth, mezzanine and ground floors including making edges, corners, groves as required and curing etc., complete in all respect at Second floor.	2171	Sft			
3.7	Providing and laying 1:4:8 cement concrete bed under floors/manhole using graded stone 3/4 inches (18 mm) and down gauge with levelling and ramming, watering and curing etc. complete..	849	Cft			
3.8	Providing and laying 1:2:4 cement concrete in trenches using graded stone 3/4 inches (18 mm) and down gauge with levelling and ramming, watering and curing etc. complete..	250	Cft			
3.9	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 Ibs. per sq inch at 28 days with a mix not leaner than 1:2:4 in Base for Engine Generator etc including steel form work and its removal compacting and curing etc. complete in any floor.	500	Cft			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3.10	Providing and laying mild steel plain reinforcement bars (having minimum yield strength of 40,000 psi) with and including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown over the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chair and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tank and underground tank and in projections for future extension.	700	Kg			
3.11	Providing and fixing fully glazed with 12mm Thick Tempered clear glass Champagne anodized aluminum Fixed windows Partition as per British standard manufactured by Prime, Chawla (fixing through their approved fabricators), Economy model box section 76.2mm x 38.1mm and 1.6mm thick including the cost of aluminum fittings, with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge.	700	Sft			
3.12	Providing and fixing 12mm thick tempered glass, (single / Double leaf) swing door, upak made as per approved manufacturers (fixing through their approved fabricators), D- Lock, Silicon floor hinges (machines) all accessories, cutting holes etc and making good damages etc. complete as required in any floor as per direction of engineer In charge.	123	Sft			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3.13	Providing and laying light colour, glazed/nonskid vitrified porcelain tiles (Polished) of 24" x 24" size, (Pak made) on walls and floors, in any floor, laid with dry bond (stile bond) over a base of 1" to 2" thick cement mortar (1:3) including jointing to tiles with tile joint filler of matching colour, including the cost of dismantling of existing floor upto required thickness and disposal of surplus material etc complete as per direction of the Engineer in charge.	1050	Sft			
3.14	Providing and laying floor of 6 mm (approx. 1/4" inch) thick coloured glazed tiles of 2'-00" x 1'-00" or approved size of master make or equivalent (Pakistani) first grade in ground, first and second floor laid over 1 inch (25 mm) thick cement mortar base 1:2 (one cement two sand)/dry bound including jointing and washing the tiles with matching tile filling including curing etc. complete.	500	Sft			
3.15	Providing and fixing of antistatic vinyl imported tiles of approved size and colour etc complete as directed by the engineering in charge.	2380	Sft			
3.16	Providing and laying floors of 2" to 3" thick 1:2:4 cement concrete using graded screened bajri 3/4 inch (19 mm) and down gauge in any floor laid in panels of marble patti 1/2" thick including, consolidation, finishing, curing etc, complete as per satisfaction of engineering in charge.	400	Sft			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3.17	Providing and Fixing 3/4" thick flower Marble Pre-polished for Counter top laid with cement mortar, including the cost of making gola, cutting for vanities etc complete with all respect.	12	Sft			
3.18	Providing and fixing Gypsum board 2' x 2' tiles ceiling, 7mm-10mm thick, including Aluminum T & L angle 1" x 1" i.c hanger clips jointing clips and G.I Wire etc complete as required in any floor.	650	Sft			
3.19	Providing and fixing fully glazed Champagne anodized aluminum Sliding windows as per British standard manufactured by Prime, Chawla (fixing through their approved fabricators), Deluxe model box section 101mm x 30mm and 1.6mm thick including the cost of aluminum netting ,fittings, beading with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge, including the cost of glass pans.	96	Sft			
3.20	Providing and fixing windows roll blinds sunscreen, dark out, or translucent fabric any colour/shade best quality (Imported) with manual roll up arrangement complete in all respect with all other required accessories and hardware from the approved suppliers and manufactures, as per direction of Engineer In charge.	250	Sft			
3.21	Providing and applying three coat of fire proof paint for wall / ceiling in data center approved colour and shade including the cost of filling as required and as per direction of engineering in charge.	5200	Sft			

S#	Description	Qty	A/U	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3.22	Distempering three renewal coats with (Paintx ICI Dulux or SPD Berger) of approved make and shade to walls and ceiling etc. including scraping old paint, cleaning the old surface and filling with wall putti as required in any floor.	2500	Sft			
3.23	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering wall putty etc. complete at any height in any floor.	2106	Sft			
3.24	Providing and fixing un plasticized polyvinyl chloride pipe (P.V.C) "B" class and specials etc laid in trench including cutting and fitting complete with and including the cost of cleaning the pipe and cartage of following dia.					
3.25	6" dia Pipe	700	Rft			
3.26	4" dia Pipe	150	Rft			
3.27	Providing manhole type size 2'-6" x 2'-6" and 3'-00" deep (inside dimensions) as per approved design and specifications complete 6 inches thick PCC 1:2:4 walls and bed opening for pipes, 3" thick RCC slab with RCC Cover with angle iron frame size 21" x 21", 1/2 inches (13 mm) thick cement plaster in 1:3 C.M. to all inside wall surface and 3/4" thick marble chips plaster on bed as benching and all inside walls and to top including making requisite umber of main and branch channels .	10	Each			
Total amount in Pak Rupees inclusive of Taxes						

ANNEX-A5: COMMISSIONING, SLA, CERTIFICATION & TRAININGS

S#	Description	A/U	Qty	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
1	Commissioning Documentation and Launch					
1.1	Installation, Testing, commissioning of all components of the project with provision of project charter, plan documents, diagrams, shop drawings, as-built, LLDs, HLDs, and other Assets/design documents. Commissioning and onboarding of production services.	Job	1			
1.2	One Session for 150 Participants at Project launching to be arranged (4-5 star) for NTC designated clients along with social media and marketing campaign for NTC Cloud/AI/DC Services from new established facility to be arranged.	Job	1			
2	Engineering & Commissioning					
2.1	TIA 942- Data Center Design Certification for Tier-III compliance objective	Job	1			
2.2	TIA 942-Constructed Facility certification for Tier-III compliance objective	Job	1			

S#	Description	A/U	Qty	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
3	Service Level Agreement (as per SLA terms detailed in Annex-C)					
2.1	OEM support (ticket base support/License subscription and hardware warranty NBD for all the supplied equipment under the project for Year 1 & Year 2	Job	2			
2.2	Local partner support (Remote & On-site) for Year 1 & Year 2	Job	2			
2.3	OEM support (ticket base support/License subscription and hardware warranty NBD for all the supplied equipment under the project for Year 3 & Year 4	Job	2			
2.4	Local partner support (Remote & On-site) for Year 3 & Year 4	Job	2			
4	Trainings					
4.1	OEM Certified Local Training spanning 5x Days for CDCP with Certification vouchers for 06x Persons	Job	1			

S#	Description	A/U	Qty	Unit Cost in PKR without Tax	Unit Cost in PKR with Tax	Total amount in PKR with Tax
4.2	OEM certified Local Training spanning 10x Days for SDN and Other Network Components for 06 x Persons	Job	1			
4.3	Foreign Training spanning 10x Days for Data Center operations and standardizations for 05 x Persons					
	a. Professional Training Services & Course Delivery Charges Training delivery charges including trainer professional fee, course delivery, training materials, lab/demo environment, certification/examination, online platform/LMS access, and all associated professional and administrative services required for conduct of the training program.	Job	1			
	b. Travel, Boarding, Lodging & Onsite Logistics Charges Boarding / lodging, breakfast, air-fare of round trip, pick & drop at Country of Origin and subsistence (in advance and as per Government of Pakistan Foreign office rates for sponsored trip)	Job	1			
Total amount in Pak Rupees inclusive of Taxes						

ANNEX-B: TECHNICAL SPECIFICATION

ANNEX-B1: FACILITY

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1	Data Center Containment POD - Aisle Specifications			
1.1	Provide complete aisle containment for separating hot and cold air streams to enhance thermal efficiency. System shall be suitable for Tier-III DC operations and integrated with cooling setup.	40		
1.2	Aisle shall include sliding doors, roof skylights, fixed panels, and complete sealing materials to prevent air leakage. Construction must ensure effective hot/cold air separation.			
1.3	Containment POD -Aisle Fire-retardant, anti-static, low-smoke materials meeting data center safety codes (UL94 V-0 or equivalent). Aluminum or steel framing with polycarbonate roof panels.			
1.4	Sliding Doors: Smooth sliding operation with soft-close mechanism, gasket sealing. Compatible with hot/cold aisle containment. POD within the contained aisle shall be equipped with electronic access control systems, compatible with the overall data center security policy. Access shall be granted via multi-factor authentication (e.g., RFID card, PIN, or biometric verification).Display / UI Touch-screen controller (for management, alarms, O&M) inside the POD			

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1.5	Sky Light / Roof Panels: Transparent or translucent panels with airtight sealing. Must include mechanism/electromagnetic release for fire evacuation of heat/smoke.			
1.6	Brush strips, gaskets, side panels, floor gaps, rack top gaps shall be fully sealed to prevent bypass airflow.			
1.7	Skylight shall automatically open in case of fire alarm via electromagnetic mechanism. Manual override available for maintenance. System to integrate with fire alarm panel.			
1.8	Temperature sensors and smoke detectors installed inside the aisle . Sensors shall communicate with EMS/BMS.			
1.9	All alarms (smoke, temp, skylight release) shall be reported to the Fire Suppression System in the NOC Room .			
1.10	TIA-942 Rated-III, Uptime Tier-III Design Principles, NFPA 75/76, ASHRAE TC9.9 thermal guidelines.			
	Marks		40	

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
2	42U Racks as per International Standards (QTY: 20)			
2.1	Racks	30		
		Marks	30	
3	Power Distribution Units (QTY: As per solution design)			

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
3.1	Intelligent PDU <ul style="list-style-type: none"> • Rack-mountable Intelligent PDU's. PDU should be SNMP based. Smart PDU with Rack level and socket level monitoring: • The Smart Rack PDU shall be available in multiple input configurations to support: <ul style="list-style-type: none"> (a) Single-phase 230V ≥ 32A racks, higher capacity will be preferred (b) Three-phase 400V ≥ 40A racks, higher capacity will be preferred • Number of output: 20 IEC C13 outputs, 12 IEC C19 outputs, total 32 outputs, more outputs will be preferred • Must be Ethernet based interface, advanced interfaces will be preferred. • Logs retention is required and integration of logs with DCIM will be preferred • Support DCIM Integration with environmental Temperature/Humidity sensors 	20		
3.2	Metering <p>ANSI/ISO/IEC 62053-21 / EU2014/32 MID Accuracy Compliant (+/-1%) Certified with all load types, in real operating conditions, at all positions (CB, Inlet, Outlets) (kWh), Voltage (V), Current (A), Active Power (kW), Real Power (kVA), Energy (kWh), Power Factor</p>			
3.3	Environmental Sensors <p>Must have Temperature, Smoke/Fire, Humidity, Air Flow, Water Leak and Contact Closure, more sensors will be preferred.</p>			

S.No	Description		Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
		Marks	20		
4	In Row Precision Air Conditioning Units (No of units as per vendor solution)				
4.1	Precision Cooling Units (In Row)	Air cooled standard In Row precision air conditioners, the air conditioner must be sideways/ front air discharge in cold-aisle.	60		
4.2		The outdoor unit must be designed on 50C Degree temperature and fan speed regulator, the fan speed could be adjusted automatically according to actual condensing pressure.			
4.3		In Row unit must have low ambient temperature controller and have moisture detection sensors.			
4.4		In Row Unit must have provision for SNMP with Ethernet integration for monitoring, preference will be given to more advanced features.			
4.5		In Row Unit must have provision for remote alarm mechanism			
4.6		Vendor must propose cold/ hot aisle containment solution containment solution should be as per their In Row cooling design for all racks and cooling unit. Preference will be given to with sliding electrical doors (both sides).			
4.7		Must have GUI on the face of the In Row Unit, preference will be given to more advanced/ user friendly features.			

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
4.8	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.			
4.9	Precision Air Conditioning and mechanical ventilation in the Data Centre must be as per Tier 3 Data Centre Standards.			
4.10	Refrigeration equipment with N+1, redundancy must be dedicated to the Data Centre. Sufficient redundancy must be provided to enable isolation of any equipment as required for essential maintenance without affecting the services being provided with cooling.			
4.11	EC Fans, controller, thermal expansion valve, oil separator, sight glass, dryer filter, humidifier and electrical heater. The vendor should provide multiple precision air conditioning units for the cold aisle containment based on the available models not less than the cooling load requirement. The AC Units be sized as one unit as a stand by arrangement and rest of the cooling load is on the working units.			
4.12	The cooling and humidification system must maintain the optimal environmental requirements as recommended by ASHRAE T.C 9.9			
4.13	The cooling capacity must be adjustable according to the total heat load of the Data Centre.			

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
4.14	The unit should have monitoring and protection functions, Dirty Filter, Low Temperature, High Temperature, High Humidity, Low Humidity, Leak Detection, High Discharge Pressure, Low Suction Pressure, Sensor Failure, High Discharge Anti Condensation, Anti-Freeze and Low Discharge Pressure. AC unit should have low ambient temperature controller. The unit should have oil return logic design top assure the compressor runs safely. The Unit should support dual power supply for higher reliability. Preference will be given to more advanced/better features.			
4.15	The airflow must be enough to provide circulation required for the Data Centre racks.			
	Marks	60		
5	Structured Cabling			
5.1	Structured Cabling Complies with TIA-942, TIA/EIA-568.2-D, ISO/IEC 11801, BICSI 002. - Concurrent Maintainability and dual-path redundancy. Copper Cabling - Category 6A, 4-pair, shielded or unshielded. - Supports 10GBASE-T up to 100m. - LSZH jacket, factory-terminated patch cords. - Should have Cable Zoning	30		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
	<ul style="list-style-type: none"> -Colour Coordinated Cable Trays -Patch Panels with Monitoring GUI and Alarm Beacon will be preferred - Must have Rack to Rack Patch Panels -Solution with latest options will be preferred. Fiber Cabling - OM4/OM5 multimode, OS2 single-mode. - MPO/MTP or LC terminated trunks. - Low-loss connectors and modular enclosures. Cabling Topology - Dual Path A & B. - ER, MDA, HDA, ZDA (optional), EDA layout. - Rack-to-rack fiber and copper distribution. Racks & Pathways - Overhead cable trays. - Separate copper/fiber paths. - Bend radius compliance and fire stopping. -overhead trays, conduits, ladder racks with proper separation from power cabling Labeling - TIA-606-C compliant. Testing - Fiber OTDR + Tier-1. - Copper Cat6A Permanent Link + Alien Crosstalk. 			

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
	Grounding - TIA-607-C bonding of all racks and trays. Warranty - 25-year OEM warranty.			
	Marks	30		
6	Biometric System, Time Attendance and Access Control System (As per vendor's solution)			
6.1	Finger Print/Time Attendance and Access Control System	Finger Print System for access to the Data Centre, Staging Area, Security Area to positively identify individual's identity for authorized access to highly restricted areas (e.g. Data Centre Floor, Security Rooms) Restricted and monitored access to building using cameras and magnetic card readers in conjunction with pin codes. Centralized with GUI software for management of system. Preference will be given to more advanced features.	20	
	Marks	20		
7	Video Wall Specifications			
7.1	Video Wall	A 3x2 video wall constructed using six identical 55-inch LED panels designed for 24x7 operation, Samsung Displays with Controller Data Path VSN V3 or equivalent	30	
7.2		The video wall uses 55-inch IPS LED panels with a 1920x1080 resolution in landscape orientation.		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
7.3	The display panels feature a ≤ 0.88 mm bezel-to-bezel width and an even bezel of 0.44 mm.			
7.4	Brightness ≥ 700 nits.			
7.5	Viewing Angle 178° horizontal / 178° vertical.			
7.6	Contrast Ratio $\geq 1200:1$.			
7.7	The display operates within a temperature range of $0-40^\circ\text{C}$, offers an MTBF of $\geq 60,000$ hours, and supports an input voltage of $100-240\text{V AC}$.			
7.8	The display provides multiple connectivity options, including a minimum of two HDMI ports, DisplayPort IN/OUT, RS-232C, LAN, and IR.			
7.9	The display supports multiple video wall modes, including 2×1 , 3×2 , 1×6 , 6×1 , and various custom layouts			
7.10	The controller provides a minimum of six HDMI/DP outputs and four HDMI/DP inputs.			
7.11	The controller offers real-time switching, multi-window capabilities, picture-in-picture (PiP), customizable presets, scheduling functions, and system health monitoring.			

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
7.12	The mounting system features a pop-out service mount, is VESA compatible, and supports fine alignment.	30		
7.13	The system includes essential accessories such as cables, connectors, cable management components, and an IR remote.			
7.14	The system comes with a 3-year comprehensive warranty, including onsite support and panel replacement.			
	Marks			
8	Fire Detection & Suppression System NOVEC 1230 (QTY: As per solution design)			
8.1	<p>Fire Detection & Suppression System - NOVEC 1230</p> <p>Supply, Installation and Commissioning of Fire Detection Suppression System in Data Centre and UPS Rooms with below functions:</p> <p>a) The fire suppression systems shall include the following:</p> <ul style="list-style-type: none"> • Designed to extinguish fires • Leaves no residue • Electrically Non Conductive • Minimum Clean Up • Release on Early Detection of Smoke • Safety Margin >50% over design concentration • Valves, Gauges etc • Discharge Nozzles 	40		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
	<ul style="list-style-type: none"> • Routine Monthly Maintenance • Discharge valve. Safety disc • 20 Years Warranty • NFPA and ISO 14520 Compliant 			
8.1	<p>Fire Detection & Suppression System - NOVEC 1230</p> <p>b) Automatic Detectors and Alarm Bells The automatic detectors should be combination Ionization smoke and optical smoke type. The alarm bells should produce an alarm at least 90 dB noise level above the surrounding. The bells shall be installed beside the Control Panels. Manual Release switch of NOVEC 1230</p> <p>c) Piping and Fitting All piping less than 11/2" schedule 40 seamless pipe shall be used. Above 11/2" - 3" shall be Schedule 80. Discharge nozzles shall be manufactured in corrosion resistant material and shall be positioned in a manner to effect a uniform concentration at the shortest time after discharge. The status of fire smoke detectors alarms should be monitored in NOC or DCIM system. All the fire protection equipment and the extinguishers installed in the premises must meet NFPA standards and specifications. Providing and installation portable Fire extinguishers Halotron/CO2</p>			

S.No	Description		Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
		2 kg/6 kg each as per NFPA standards in the Data Centre, NOC, UPS Room and Staging Room Preference will be given to solution with better/advanced features.			
8.2	Early Detection System with sensors	VESDA smoke detection and dual risk ionization and photoelectric smoke detection systems to ensure early fire detection in Data Centre, UPS Room, NOC and Staging Room Preference will be given to solution with better/advanced features.			
		Marks	40		
9	Data Centre Loading Bay, Storage Area, Staging Room, NOC Room, DE Room and Civil Works (QTY: As per NTC's requirement) Preference will be given to better designed and advanced features solution.				
9.1	Loading Bay	Loading bay with ramp	30		
9.3	Staging Room	Size dependent on vendor design with provision for industrial power outlets and network points			
9.4	NOC Room	Size and design dependent on vendor design - must provide cooling, network points, power outlets, desks, chairs etc			

S.No	Description		Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
9.5	DE Office	Size and Design dependent on vendor - must provide cooling, network points, power outlets, desks, chairs.			
9.6	Civil Works	As required by NTC including Smart Lighting for Data Centre, NOC, Power Rooms (02) , Staging Room and DE Office, the design and site readiness/load bearing capacity should be as per approval and standards.			
		Marks	30		
		Total Marks	300		
Note	Bidder must clearly state which features are subject to software license and also quote their price in the bid document. Otherwise any complied feature shall be considered default BOQ requirement of NTC. All items mentioned above are part of BOQ, the scope includes supply, Testing/commissioning and NBD warranty services. Preference and more weightage will be given to solution with better/advanced features/solution.				
	All proposals including design, installation and implementation methods must adhere to Rated III/Tier 3 Standards				
	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.				

ANNEX-B2: DCIM & CERTIFICATION

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1	Data Centre Infrastructure Management System (DCIM), Data Centre Service Management (DCSM), Security Management and Monitoring System			
1.1	<p>Management and Monitoring System</p> <p>The Data Centre Security System should include the following:</p> <ul style="list-style-type: none"> • System must have Full HD NVR with advanced playback and recording features • Must have HD IP cameras with Night Vision and Activity Sensors for need basis recording • Must have Smart LED Lighting for Data Centre, UPS Room and Storage Area • 1080p Resolution • Must be able to Integrate with Data Centre Infrastructure Management System (DCIM) • Local based storage, preference will be given to cloud recording facility • Must Integrate the following systems: Remote Power Cabinets, UPS, HVAC and Precision CRAC Units, Fire Detection and Suppression Systems, Access Control and Intrusion Detection System, for the Data Center premises, power rooms only, preference will be given to better integratable solution. • Must have Audible Alarm for all faults and alerts, more alarms will be preferred. • Must have Reports Generation including historical analysis • License must be provided by vendor 	35		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
	Marks	35		
1.2	<p>Data Centre Infrastructure Management and Data Centre Service Management system which must provide the following:</p> <ul style="list-style-type: none"> • Integrated status monitoring, preference will be given to better monitoring features. • Control and Monitoring of infrastructure facilities including Power, Environment (Temperature, Airflow, Humidity, Moisture, Sound and Water) Video, Access Control and Fire and Smoke Detection. • Must have complete environment monitoring providing real time and history status displays, reports and alarms. • The monitoring system must include temperature/humidity/air flow/moisture/sensor/room entry/water/human activity installed in the data centre. • System must include all hardware, software, media, documentation and maintenance, advanced licenses/features will be preferred. • System applies browser/server (B/S) architecture /web based interface for user access • Must have Remote off-site monitoring • Must have Alarm and Alert Notification relay via email, sms and call • Must have spare Monitoring Nodes available for expansion 	35		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
	Marks	35		
1.3	Data Centre Service Management	30		

The proposed Data Centre Service Management (DCIM/NMS/ITSM) solution shall provide the following minimum capabilities:

- Must have Server and Network Hardware Complete Management and Monitoring
- Data Centre Design Visualization Tools(Rack layout, environmental zones, cooling topology)
- Asset Information, Discovery & Lifecycle Management
- Capacity Management & Planning(Power, cooling, rack space, network, virtualization capacity)
- Energy Management
- Granular Energy Monitoring(Per rack / per device / per PDU / per branch circuit)
- Detailed Reporting & Analytics(Custom dashboards, scheduled reports, audit logs)
- 2D and 3D Schematic Visualization(POD design, rack elevation, airflow, thermal maps)
- Structured Cabling Management(Fiber, copper, cross-connects, end-to-end mapping)
- Event Management
- Must have Software and OS Monitoring
- Vendor must provide Power Usage Effectiveness (PUE) ratio of the proposed design

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
	<ul style="list-style-type: none"> • Must have NMS based with alerts and alarm notifications for all devices • Preference will be given to more log retention and customizable monitoring solution • Preference will be given to ITIL ITSM complied solution • Preference will be given to cloud monitoring supported solutions. 			
	Marks	30		
2	Tier 3 Certification and TIA- 942 Compliance			
2.1	Rated-III/ Tier 3	Tier 3/Rated - III Tier certification. Data Centre Facility and Design Audit & Certification from accredited body. Site Certification and Compliance - Vendor must validate/evaluate Data Centre design from accredited body and provide Data Centre certification after installation from accredited body.	M	
	Total Marks	100		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
Note	<p>Bidder must clearly state which features are subject to software license and also quote their price in the bid document. Otherwise any complied feature shall be considered default BOQ requirement of NTC. All items mentioned above are part of BOQ, the scope includes supply, Testing/commissioning and NBD warranty services. Preference and more weightage will be given to solution with better/advanced features/solution.</p>			
	<p>All vendors proposals including design, installation and implementation methods must adhere to Rated III/Tier 3 Standards</p>			
	<p>Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.</p>			

ANNEX-B3: LAPTOP

S.No	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/Manual
1	Brand	HP (Probook),	M					
		Dell (Latitude)						
		Lenovo (Thinkpad),						
		Or Equivalent						
2	System Processor	Intel Core Ultra 7-165H 14th Generation (Equivalent or above)	M					
		With Built-in TPM 2.0						
		Security Chip						
3	Graphics	Integrated Graphics	M					
4.1	Ports/Interface	USB 3.1 above or latest	M					
4.2		Type-C (Latest Gen)	M					
4.3		HDMI (Latest Gen)	M					
4.4		Ethernet LAN 100/1000 Built in	M					
5	Wireless Communications	802.11a/b/g/n/ac /6 , Bluetooth 5 and Above	M					

S.No	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/Manual
6	Memory	16 GB DDR5 or with latest bus speed (expandable upto 32 GB)	M					
7	Hard Drive	512 GB SSD (NVMe) Latest Gen or above (expandable)	M					
8	Keypad	Standard keypad with Backlight	M					
9	Camera	HD Built-in	M					
10	Display	Anti-glare 15/15.6" FHD or Above	M					
11	Display Resolution	Full HD or Above	M					
12	Sound	Built in Stereo speakers, microphone	M					
13	Operating System	Windows 11 Pro or above	M					
14	Batteries	Internal Battery with minimum 6 hours backup (Min 3 Cell Li-ion battery)	M					
15	Power Adaptor	As per Product	M					
16	Carrying Bag	Standard	M					

S.No	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/Manual
17	Warranty	One Year warranty from Supplier	M					
Note	<p>Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder. The compliance of above specification must be supported by data sheet of product to certify the Compliance.</p>							

ANNEX-B4: DESKTOP

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
1	Brand	HP (Pro Desktop)	M					
		Lenovo (ThinkCentre)						
		Dell (OptiPlex)						
		Or Equivalent						
2	System	Intel Core Ultra 5 245K 13th Generation	M					
	Processor	(Equivalent or above) With Built-in TPM 2.0 Security Chip						
3.1	Ports/Interface	Front: USB 3.1 above or latest	M					
3.2		Rear: USB 3.1 above or latest	M					
3.3		Rear: Display Port/HDMI (Latest Gen) Supports resolutions up to 4K at 60 Hz	M					
3.4		Ethernet LAN 100/1000 Built in	M					
4	Processor Computing	64-bit Computing	M					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
5	Graphic Card	with HDMI ports (Nvidia, Rtx 3050, 6GB, GDDR6)	M					
6	Memory	16 GB DDR5 or with latest bus speed	M					
		(expandable upto 32 GB)						
7	Hard Drive	512 GB SSD NVMe latest Gen ;or Above (Expandable)	M					
8	Sound	Built in Stereo speakers	M					
9	Display	Anti-glare 20-22-inch Monitor (Same as CPU port DP/HDMI)	M					
10	Display Resolution	Full HD 1920 X 1080	M					
11	Operating System	Window 11 Pro or above	M					
12	Power Supply	Minimum 300W power supply	M					
13	Warranty	1 Year Warranty form Supplier	M					
14	Accessories	Display & Power Cables	M					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
		Mouse and keyboard (A4 Tech/Logitech)	M					
15	Casing Type	Tower	M					
Note	<p>Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder. The compliance of above specification must be supported by data sheet of product to certify the Compliance.</p>							

ANNEX-B5: EXTERNAL FIREWALL

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	Performance				
1.1	NG Firewall Throughput (Enterprise Mix)	20Gbps or Higher	M		
1.2	Threat Protection Throughput (Enterprise Mix)	16Gbps or higher	M		
1.3	SSL VPN throughout	7 Gbps or higher	M		
1.4	Concurrent SSL VPN Users	≥ 10,000	M		
1.5	Concuurent Sessions	≥ 5 Million	M		
1.6	New Sessions/Second	≥ 50,000	M		
1.7	IPSec VPN Throughput (AES-256+SHA256)	15 Gbps or better	M		
1.8	Firewall Policies	≥ 45,000	M		
1.9	Virtual Domains/VDOM/Vsys	≥ 40	M		
1.10	VLANs (Maximum)	1024	10		
1.11	VLANIF Interfaces (Maximum)	1024	10		
1.12	Storage	900 GB	20		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1.13	High Availability	Active/ Active and Active/Standby	M		
2	Interfaces				
2.1	10GE Interfaces	interface >= 10GE	M		
2.3	Console Port	RJ-45	10		
2.5	USB Ports	Bidder should Specify	10		
3	General				
3.1	OEM	OEM Brand should be in Gartner Magic quadrant	M		
3.2	Redundancy	Redundant power supplies (on Each Device)	M		
3.3	Interoperability	With all Major Vendor Equipment	M		
4	Features				
4.1	Firewall Features	Network Attack Detection	0		
4.2		DoS and DDoS Protection	30		
4.3		Brute Force Attack Mitigation	20		
4.4		SYN Cookie Protection	5		
4.5		Zone-Based IP spoofing	10		
4.6		Malformed Packet Protection	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
4.7	User Authentication and Access Control	Third Party User Authentication	5		
4.8		RADIUS Accounting	5		
4.9		WEB Based Authentication	5		
4.10		802.1x Authentication	10		
4.11	Routing Protocols	Static, BGP, ISIS,OSPF, RIP V-1/2	10		
4.12	Multicast Protocol Support	IGMP V-1/2/3	10		
4.13		PIM (DM/SM /SSM)	5		
4.14	IPv6	Dual Stack IPv4/v6 Firewall and VPN	5		
4.15		IPv4 to / from Ipv6 Translations and Encapsulation	5		
4.16	Encapsulation	PPP, MLPPP, Fram Relay, HDLC	5		
4.17	Network Address Translation (NAT)	Source NAT	M		
		Destination NAT	M		
4.18		Port Address Translation (PAT)	10		
4.19		Policy Based NAT /PAT	10		
4.20		Mapped IP	10		
4.21		Virtual IP	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
4.22		MIP / VIP Grouping	10		
4.23	IP Address Assignment	Static	10		
4.24		DHCP, PPPoE Client	10		
4.25		Internal DHCP Server	10		
4.26		DHCP Relay	10		
4.27		QoS	Guaranteed Bandwidth	10	
4.28	Maximum Bandwidth		10		
4.29	Ingress Traffic Policing		10		
4.30	Priority-Bandwidth Utilization		10		
4.31	Administration	External Administrator Database Support	10		
4.32		Restricted Administrative Networks	10		
4.33	Other Features	VPN clustering	5		
4.34		Intrusion Prevention System (IPS) support	M		
4.35		Antispyware	10		
4.36		URL Filtering	M		
4.37		Anti-spam	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
4.38		Anti-phishing	5		
4.39		Antivirus	M		
5	Management and Control				
5.1	SNMP	SNMP V1/v2/v3 with support for traps	10		
		SNMP MIB function Support	10		
5.2	Login through	SSHv2,Telnet, CLI	10		
5.3	Web interface	Web-Based HTTP/HTTPS	10		
5.4	Out of Band Management	Rs-232, DB-9 Console Port	10		
5.5	Firmware Upgrade	via HTTP and TFTP	10		
5.6	Port Mirroring	Traffic on one port can be mirrored to another	10		
6	Power				
6.1	Power Supply	50 HZ; 220 VAC	10		
6.2	Power Consumption in Watt	Bidder should specify at full load	20		
7	Environmental				
7.1	Operating Environment	(0 to 45) °C	10		
7.2	Humidity (non condensing)	10% to 90%	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
Grand Total			500		
Note	<p>Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.</p>				

ANNEX-B6: INTERNAL FIREWALL

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	Performance				
1.1	NG Firewall Throughput (Enterprise Mix)	10 Gbps or Higher	M		
1.2	Threat Protection Throughput (Enterprise Mix)	08 Gbps or higher	M		
1.3	Concurrent Sessions	≥ 4 Million	M		
1.4	New Sessions/Second	≥ 50,000	M		
1.5	Firewall Policies	25k or higher	M		
1.6	Virtual Domains/VDOM/Vsys	≥ 40	M		
1.7	VLANs (Maximum)	1024	10		
1.8	VLANIF Interfaces (Maximum)	1024	10		
1.9	Storage	500 GB	20		
1.10	High Availability	Active/Active and Active/Standby	M		
2	Interfaces				
2.1	10GE Interfaces	08x10GE	M		
2.3	Console Port	RJ-45	10		
2.5	USB Ports	Bidder should Specify	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
3	General				
3.1	OEM	OEM Brand should be in Gartner Magic quadrant	M		
3.2	Redundancy	Redundant power supplies	M		
3.3	Interoperability	With all Major Vendor Equipment	M		
4	Features				
4.1	Firewall Features	Network Attack Detection	10		
4.2		DoS and DDoS Protection	30		
4.3		Brute Force Attack Mitigation	10		
4.4		SYN Cookie Protection	5		
4.5		Zone-Based IP spoofing	10		
4.6		Malformed Packet Protection	10		
4.7	User Authentication and Access Control	Third Party User Authentication	10		
4.8		RADIUS Accounting	10		
4.9		WEB Based Authentication	10		
4.10		802.1x Authentication	10		
4.11	Routing Protocols	Static, BGP, ISIS, OSPF, RIP V-1/2	10		
4.12	Multicast Protocol Support	IGMP V-1/2/3	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
4.13		PIM (DM/SM /SSM)	10		
4.14	IPv6	Dual Stack IPv4/v6 Firewall and VPN	10		
4.15		IPv4 to / from Ipv6 Translations and Encapsulation	10		
4.16	Encapsulation	PPP, MLPPP, Fram Relay, HDLC	5		
4.17	Network Address Translation (NAT)	Source NAT	M		
		Destination NAT	M		
4.18		Port Address Translation (PAT)	10		
4.19		Policy Based NAT /PAT	10		
4.20		Mapped IP	10		
4.21		Virtual IP	10		
4.22		MIP / VIP Grouping	10		
4.23	IP Address Assignment	Static	10		
4.24		DHCP, PPPoE Client	10		
4.25		Internal DHCP Server	10		
4.26		DHCP Relay	10		
4.27	QoS	Guaranted Bandwidth	5		
4.28		Maximum Bandwidth	5		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
4.29		Ingress Traffic Policing	5		
4.30		Priority-Bandwidth Utilization	5		
4.31	Administration	External Administrator Database Support	10		
4.32		Restricted Administrative Networks	10		
4.33	Other Features	VPN clustering	5		
4.34		Intrusion Prevention System (IPS) support	M		
4.35		Antispyware	10		
4.36		URL Filtering	M		
4.37		Anti-spam	10		
4.38		Anti-phishing	5		
4.39		Antivirus	M		
5	Management and Control				
5.1	SNMP	SNMP V1/v2/v3 with support for traps	10		
		SNMP MIB function Support	10		
5.2	Login through	SSHv2,Telnet, CLI	10		
5.3	Web interface	Web-Based HTTP/HTTPS	10		
5.4	Out of Band Management	Rs-232, DB-9 Console Port	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
5.5	Firmware Upgrade	via HTTP and TFTP	10		
5.6	Port Mirroring	Traffic on one port can be mirrored to another	10		
6	Power				
6.1	Power Supply	50 HZ; 220 VAC	10		
6.2	Power Consumption in Watt	Bidder should specify at full load	10		
7	Environmental				
7.1	Operating Environment	(0 to 45) °C	10		
7.2	Humidity (non condensing)	10% to 90%	10		
Grand Total			500		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.				

ANNEX-B7: WEB APPLICATION FIREWALL

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	Throughput >= 1Gbps	M		
2	Interfaces >= 2x10GE, 4xGE	M		
3	Hard Drive >= 400GB SSD	M		
4	Concurrent connections >=100,000	M		
5	New connections/sec >=10,000	M		
6	Administrative Domains (VDOM/Vsys) >=10	30		
7	Power Supply = Redundant	M		
8	Must cover the OWASP Top 10 web application security vulnerabilities	M		
9	Must support multiple deployment modes like reverse proxy, offline protection, transparent proxy	10		
10	Must inspect HTTP, HTTPs to prevent attacks	M		
11	Must support SSL/TLS offloading	M		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
12	Should support both a positive security model (whitelisting) and a negative security model (blacklisting)	10		
13	Should support both signatures based and rule-based security models.	20		
14	Should have preconfigured repository of rules and support custom security rules.	10		
15	Should have with pre-configured comprehensive and accurate list of known attack signatures and allow signatures to be modified or added by the administrator.	20		
16	Should support automatic updates to the signature database, ensuring complete protection against the latest application threats.	M		
17	Must inspect HTTP and HTTPS(SSL inspection) requests and responses.	M		
18	The proposed solution should natively support HTTP2 as well as HTTP1.x	10		
19	Should block or reject a request from IP addresses in a specific reputation category.	10		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
20	Should have Reputational Base Service which can provides a near- real time live feed of Malicious ips, botnets, phishing URLs, anonymous proxies, spams.	10		
21	Should be able to protect Web applications from Credential Stuffing	20		
22	Should provide In-Built Vulnerability Scanning & should also support Virtual Patching (by Integrating with 3rd Party Vulnerability Scanners) for the backend servers.	20		
23	The device should support Web-Anti-Defacement to monitor for defacement attack and if attack is deteced, automatically reverse the changes.	20		
24	Should block the brute force attack against access controls	10		
25	Must validate all types of input, including URLs, forms, cookies, query strings, hidden fields, and parameters, HTTP methods, XML elements and SOAP actions.	10		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
26	Must be equipped with DLP capabilities to prevent leakage of confidential information	20		
27	Should support protection from Network and Application Level DoS	M		
28	Should provide Content routing for HTTP, X-Forwarder.	20		
29	Should be able to provide Caching and hardware Compression on the box.	10		
30	Should have "anti-automation" protection, which can block the automated attacks using hacking tools, scripts, framework etc.	10		
31	Should support AntiVirus scanning for uploaded files	10		
32	Should support integration with SIEM solutions	10		
33	Must have onboard machine learning capabilities for advanced behavioral threat detection	M		
34	Should support URL Rewriting, Layer-4 and Layer-7 Server Load Balancing	M		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
35	Should support load balancing based on Round-Robin, Weighted Round-Robin, Least Connection, URI/ Full URI Hash, Host Hash, Host Domain Hash & Domain Hash.	10		
36	Should be capable of supporting persistency features like, Persistent IP, Persistent Cookies, Insert Cookies.	10		
37	Should support High Availability deployment i.e. Active/Passive, Active/ Active, clustering	M		
38	No restriction on application license ,	20		
39	Should provide Content Scanning (attachments) capabilities for MAPI and Active Sync	10		
40	Reports based on PCI Compliance, Attack Activities, Traffic Activities, Event Activities in multiple formats like, HTML, PDF, MS-Word, Text & MHT with the capability of sending these reports to Email/Group of Email Addresses and FTP Server.	10		
41	The solution should be able to locally store event, alert, traffic information must support transferring of all logs type to an external syslog server.	10		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
42	The logging information should include source - destination connection, extensive packet header, raw & hex body presentation, signature match and pattern match.	10		
43	The solution should be able to provide top attacks, top source and countries of attacks in GUI	20		
44	The proposed Should be able to provide PCI DSS compliance and reporting	20		
45	The proposed solution should have capability to group incidents with violation correlation, data-analytics, botnet analysis, blocked ip, client device management dashboards. Zoom-able world map with color coding of attacks	10		
46	Should provide a Vulnerability Assessment and provide a detailed Assessment Report for the monitored WEB Application(s)	10		
47	The solution should support role-based access control	10		
48	Support integration with external user authentication methods for management access: Active Directory, LDAP, RADIUS	20		

S.No	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
49	Must be able to control logging access based on user role	20		
50	Must be able to enforce complex password for local administrative users	10		
51	Must have the ability to allow only one session from one administrator account to be logged in at any given time	10		
Grand Total		500		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.			

ANNEX-B8: ToR SWITCH (TYPE A)

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	Performance				
1.1	Minimum Switching Fabric	≥ 1 Tbps	M		
1.2	Packet Forwarding Rate	≥ 700 Mpps	M		
1.3	RAM	≥ 8GB	50		
1.4	CPU	≥ 4/quad-core	M		
1.5	Routing Entries	1M or better (Bidder should specify)	M		
1.6	ARP Entries	≥ 50k	30		
1.7	MAC Address Entries	≥ 128k	30		
1.8	Must be SDN Enabled	Switch must be complaint	M		
1.9	Must Support VXLAN	Switch must be complaint	M		
1.10	Minimum VLAN ID support	≥ 4k	30		
1.11	Maximum Number of VRFs	≥ 1500	M		
1.12	MLAG/MC-LAG or equivalent	Switch must be complaint	M		
1.13	Maximum Number of Links in a LAG	≥ 50	50		
2	Interfaces				

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
2.1	10GE/25GE Interfaces	48x10GE/25GE	M		
2.2	40GE/100GE Interfaces	4x40GE/100GE	M		
3	General				
3.1	Interoperability	With all major Vendor Equipment	M		
3.2	Redundancy	Internal Redundant power supplies	M		
3.3	Up-gradation	Switch must be complaint	30		
4	Layer-2 Switching Standard Compliance				
4.1	L-2 Features	Link Layer Discovery Protocol (LLDP)	10		
4.2		MACSec with AES 256	5		
4.3		Port/MAC based VLAN	10		
4.4		STP/RSTP/MSTP	10		
4.5		Routed VLAN interface (RVI)	30		
5	Layer-3 Features				
5.1	Routing Protocols	Static Routing	M		
5.2		Dynamic Routing OSPF, ISIS and BGP	M		
5.3		VRRP	M		
5.4		DHCP	M		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
6	Multicast Protocol Support				
6.1	Multicast Support	IGMP V-1/ 2, 3 (RFC 1112/ 2236 / 3376)	20		
6.2		IGMP Proxy and Snooping	15		
6.3	IP Multicast Routing Protocol	PIM, PIM-SM , PIM-DM, SSM, DVMRP	25		
7	Quality of Service				
7.1	Classifying traffic based on	IP DSCP, IP Precedence	25		
7.2	Marking	802.1p, IP precedence/ToS/ DSCP , IP address, TCP/UDP Port, MAC address, VLAN, Interface	25		
7.3	Policing	(Policing on Per port, Per VLAN, Per Port+Per VLAN)	20		
7.4	Scheduling Methods	WRR, Strict Priority and combination of both (SP-WRR)	25		
7.5	Rate Limiting	Limits Data flows based on MAC, IP, TCP/UDP Ports	20		
7.6	Congestion avoidance capabilities	Trail Drop	20		
8	Security				

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
8.1	ACL based on	Source & Destination MAC & VLAN	20		
8.2		IP Protocol, TCP/UDP Port	20		
8.3		DSCP, IP Precedence, 802.1p Priority	20		
8.4		ICMP, IGMP Packets	20		
8.5	Allowed MAC Address	Configurable per port	20		
8.6	Other Features	Dynamic ARP Inspection (DAI)	20		
8.7		DHCP Snooping, DHCP Option 82	20		
8.8		Dynamic VLAN Assignment	20		
8.9		Radius and TACACS+ authentication	20		
9	Management and Control				
9.1	SNMP	SNMP V1/v2/v3 with support for traps	M		
		SNMP MIB function Support	10		
9.2	Login through	SSHv2, AUX, Telnet	15		
9.3	Web interface	Web-Based HTTP/HTTPS	10		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
	Firmware Upgrade	via HTTP and TFTP	10		
9.4	RMON	Embedded RMON software agent	15		
9.5	Port Mirroring	Traffic on one port can be mirrored to another	M		
9.6	Other Management	Traceroute, Radius, TFTP, DHCP, BOOTP, SNTP, SSL security for web user interface	30		
		IEEE 802.1ag/ITU-T Y.1731 OAM	15		
		IEEE 802.3ah	15		
		DDM (Optical Transceiver Digital Diagnostic Monitoring)	15		
10	Power				
10.1	Power Supply	AC	M		
10.2	Power consumption in Watts	Bidder should specify at full capacity	20		
11	Environmental				
11.1	Operating Environment	(0 to 45) °C	M		
11.2	Humidity (non condensing)	5% to 90%	10		
Grand Total			825		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
Note	<p>Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.</p>				

ANNEX-B9: ToR SWITCH (TYPE B)

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	Performance				
1.1	Minimum Switching Fabric	≥ 150 Gbps	M		
1.2	RAM	≥ 2GB	M		
1.3	CPU	≥ 2 Core	M		
1.4	ARP Entries	≥ 3k	M		
1.5	MAC Address Entries	≥ 16k	M		
1.6	Minimum VLAN ID support	≥ 4k	30		
1.7	MLAG/MC-LAG/Stack equivalent or	Switch must be complaint	50		
1.8	Maximum Number of Links in a LAG	≥ 4	50		
2	Interfaces				
2.1	10/100/1000 Interfaces	48x10/100/1000 Base-T	M		
2.2	10GE Interfaces	4x10GE	M		
3	General				
3.1	Interoperability	With all major Vendor Equipment	M		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
3.2	Redundancy	Internal Redundant power supplies	M		
3.3	Up-gradation	Switch must be complaint	30		
4	Layer-2 Switching Standard Compliance				
4.1	L-2 Features	Link Layer Discovery Protocol (LLDP)	10		
4.2		Port/MAC based VLAN	10		
4.3		STP/RSTP/MSTP	10		
4.4		Routed VLAN interface (RVI)	20		
5	Layer-3 Features				
5.1	Routing Protocols	Static Routing	M		
5.2		Dynamic Routing OSPF, ISIS and BGP	M		
5.3		VRRP	M		
5.4		DHCP			
6	Multicast Protocol Support				
6.1	Multicast Support	IGMP V-1/ 2, 3 (RFC 1112/ 2236 / 3376)	10		
6.2		IGMP Proxy and Snooping	15		
6.3	IP Multicast Routing Protocol	PIM, PIM-SM , PIM-DM, SSM, DVMRP	15		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
7	Quality of Service				
7.1	Classifying traffic based on	IP DSCP, IP Precedence	15		
7.2	Marking	802.1p, IP precedence/ToS/ DSCP , IP address, TCP/UDP Port,MAC address, VLAN, Interface	15		
7.3	Policing	(Policing on Per port, Per VLAN, Per Port+Per VLAN)	20		
7.4	Scheuling Methods	WRR, Strict Priority and combination of both (SP-WRR)	15		
7.5	Rate Limiting	Limits Data flows based on MAC, IP, TCP/UDP Ports	10		
7.6	Congestion avoidance capabilities	Trail Drop	20		
8	Security				
8.1	ACL based on	Source & Destination MAC & VLAN	20		
8.2		IP Protocol, TCP/UDP Port	20		
8.3		DSCP, IP Precedence, 802.1p Priority	20		
8.4		ICMP, IGMP Packets	20		
8.5	Allowed MAC Address	Configurable per port	20		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
8.6	Other Features	Dynamic ARP Inspection (DAI)	30		
8.7		DHCP Snooping, DHCP Option 82	20		
8.8		Dynamic VLAN Assignment	20		
8.9		Radius and TACACS+ authentication	20		
9	Management and Control				
9.1	SNMP	SNMP V1/v2/v3 with support for traps	M		
		SNMP MIB function Support	10		
9.2	Login through	SSHv2, AUX, Telnet	15		
9.3	Web interface	Web-Based HTTP/HTTPS	10		
	Firmware Upgrade	via HTTP and TFTP	10		
9.4	RMON	Embedded RMON software agent	15		
9.5	Port Mirroring	Traffic on one port can be mirrored to another	M		
9.6	Other Management	Traceroute, Radius, TFTP, DHCP, BOOTP, SNTP, SSL security for web user interface	30		
		IEEE 802.1ag/ITU-T Y.1731 OAM	15		
		IEEE 802.3ah	15		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
		DDM (Optical Transceiver Digital Diagnostic Monitoring)	15		
11	Power				
11.1	Power Supply	AC	M		
11.2	Power consumption in Watts	Bidder should specify at full capacity	20		
12	Environmental				
12.1	Operating Environment	(0 to 45) °C	M		
12.2	Humidity (non condensing)	5% to 90%	10		
Grand Total			700		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.				

ANNEX-B10: CORE SWITCH

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	Performance				
1.1	Minimum Switching Fabric	≥ 5 Tbps	M		
1.2	Forwarding Capacity	≥ 1500 Mpps	M		
1.3	Service Slot	≥ 2	M		
1.4	RAM	≥ 8GB	50		
1.5	CPU	≥ 4	M		
1.6	ARP Entries	≥ 28k	M		
1.7	MAC Address Entries	≥ 64k	M		
1.8	Must be SDN Enabled	Switch must be complaint	M		
1.9	Must Support VXLAN	Switch must be complaint	M		
1.10	Minimum VLAN ID support	≥ 4k	30		
1.11	Maximum Number of VRFs	≥ 500	M		
1.12	MLAG/MC-LAG or equivalent	Switch must be complaint	30		
1.13	Maximum Number of Links in a LAG	≥ 50	30		
2	Interfaces				
2.1	40GE/100GE Interfaces	32x40/100GE	M		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
3	General				
3.1	Interoperability	With all major Vendor Equipment	M		
3.2	Redundancy	Internal Redundant power supplies	M		
3.3	Up-gradation	Switch must be complaint	30		
4	Layer-2 Switching Standard Compliance				
4.1	L-2 Features	Link Layer Discovery Protocol (LLDP)	10		
4.2		MACSec with AES 256	30		
4.3		Port/MAC based VLAN	10		
4.4		STP/RSTP/MSTP	10		
4.5		Routed VLAN interface (RVI)	30		
5	Layer-3 Features				
5.1	Routing Protocols	Static Routing	M		
5.2		Dynamic Routing OSPF, ISIS and BGP	M		
5.3		VRRP	M		
5.4		DHCP			
6	Multicast Protocol Support				

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
6.1	Multicast Support	IGMP V-1/ 2, 3 (RFC 1112/ 2236 / 3376)	20		
6.2		IGMP Proxy and Snooping	15		
6.3	IP Multicast Routing Protocol	PIM, PIM-SM , PIM-DM, SSM, DVMRP	25		
7	Quality of Service				
7.1	Classifying traffic based on	IP DSCP, IP Precedence	25		
7.2	Marking	802.1p, IP precedence/ToS/ DSCP , IP address, TCP/UDP Port,MAC address, VLAN, Interface	25		
7.3	Policing	(Policing on Per port, Per VLAN, Per Port+Per VLAN)	20		
7.4	Scheuling Methods	WRR, Strict Priority and combination of both (SP-WRR)	25		
7.5	Rate Limiting	Limits Data flows based on MAC, IP, TCP/UDP Ports	20		
7.6	Congestion avoidance capabilities	Trail Drop	20		
8	Security				
8.1	ACL based on	Source & Destination MAC & VLAN	20		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
8.2		IP Protocol, TCP/UDP Port	20		
8.3		DSCP, IP Precedence, 802.1p Priority	20		
8.4		ICMP, IGMP Packets	20		
8.5	Allowed MAC Address	Configurable per port	20		
8.6	Other Features	Dynamic ARP Inspection (DAI)	10		
8.7		DHCP Snooping, DHCP Option 82	10		
8.8		Dynamic VLAN Assignment	10		
8.9		Radius and TACACS+ authentication	10		
9	Management and Control				
9.1	SNMP	SNMP V1/v2/v3 with support for traps	M		
		SNMP MIB function Support	10		
9.2	Login through	SSHv2, AUX, Telnet	15		
9.3	Web interface	Web-Based HTTP/HTTPS	10		
	Firmware Upgrade	via HTTP and TFTP	10		
9.4	RMON	Embedded RMON software agent	15		
9.5	Port Mirroring	Traffic on one port can be mirrored to another	M		

S#	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
9.6	Other Management	Traceroute, Radius, TFTP, DHCP, BOOTP, SNTP, SSL security for web user interface	20		
		IEEE 802.1ag/ITU-T Y.1731 OAM	15		
		IEEE 802.3ah	15		
		DDM (Optical Transceiver Digital Diagnostic Monitoring)	15		
11	Power				
11.1	Power Supply	AC	M		
11.2	Power consumption in Watts	Bidder should specify at full capacity	20		
12	Environmental				
12.1	Operating Environment	(0 to 45) °C	M		
12.2	Humidity (non condensing)	5% to 90%	10		
Grand Total			750		
Note	<p>Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.</p>				

ANNEX-B11: CORE ROUTER

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	Performance				
1.1	Minimum Switching Fabric	≥ 2 Tbps	M		
1.2	Forwarding Rate	≥ 7.5Mpps	M		
1.3	Redundant Control Board	<u>1+1</u>	M		
1.4	Minimum Service Slots	≥ 2	M		
1.5	Routing Entries	1M or better (Bidder should specify)	M		
2	Interfaces				
2.1	10GE Interfaces	12x10GE	M		
3	General	-			
3.1	Interoperability	With all major Vendor Equipment	M		
3.2	Redundancy	Internal Redundant power supplies	M		
3.3	Up-gradation	Switch must be complaint	30		
4	High Availability				
4.1	L-2 Features	LLDP	10		
4.3		QinQ	M		
4.4		STP/RSTP/MSTP	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
5	Layer-3 Features				
5.1	Routing Protocols	Static Routing	M		
5.2		Redundant power supplies (on Each Device)	M		
5.3		Policy based Routing	M		
		LDP,RSVP-TE, seamless MPLS, Segment Routing MPLS,MPLS-TP	M		
		MPLS L2VPN, L3VPN and VPLS	M		
5.4		SRv6 and EVPN	M		
6	Multicast Protocol Support				
6.1	Multicast Support	IGMP V-1/ 2, 3 (RFC 1112/ 2236 / 3376)	10		
6.2		IGMP Proxy and Snooping	10		
6.3	IP Multicast Routing Protocol	PIM, PIM-SM , PIM-DM, SSM, DVMRP	10		
7	Quality of Service				
7.1	Classifying traffic based on	IP DSCP, IP Precedence	10		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
7.2	Marking	802.1p, IP precedence/ToS/ DSCP , IP address, TCP/UDP Port,MAC address, VLAN, Interface	10		
7.3	Policing	(Policing on Per port, Per VLAN, Per Port+Per VLAN)	20		
7.4	Scheduling Methods	WRR, Strict Priority and combination of both (SP-WRR)	10		
7.5	Rate Limiting	Limits Data flows based on MAC, IP, TCP/UDP Ports	20		
7.6	Congestion avoidance capabilities	Trail Drop	20		
8	Security				
8.1	ACL based on	Source & Destination IP	20		
8.2		IP Protocol, TCP/UDP Port	20		
8.3		DSCP, IP Precedence, 802.1p Priority	20		
8.4		ICMP, IGMP Packets	20		
8.5	Allowed MAC Address	Configurable per port	20		
8.6	Other Features	Dynamic ARP Inspection (DAI)	20		
8.7		DHCP Snooping, DHCP Option 82	20		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
8.8		Dynamic VLAN Assignment	20		
8.9		Radius and TACACS+ authentication	20		
9	Management and Control				
9.1	SNMP	SNMP V1/v2/v3 with support for traps	M		
		SNMP MIB function Support	10		
9.2	Login through	SSHv2, AUX, Telnet	15		
	Firmware Upgrade	via HTTP and TFTP	10		
9.4	RMON	Embedded RMON software agent	15		
9.5	Port Mirroring	Traffic on one port can be mirrored to another	M		
9.6	Other Management	Traceroute, Radius, TFTP, DHCP, BOOTP, SNTP, SSL security for web user interface	30		
		IEEE 802.1ag/ITU-T Y.1731 OAM	15		
		IEEE 802.3ah	15		
		DDM (Optical Transceiver Digital Diagnostic Monitoring)	10		
11	Power				
11.1	Power Supply	AC	M		

S.No	Title	Description	Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
11.2	Power consumption in Watts	Bidder should specify at full capacity	20		
12	Environmental				
12.1	Operating Environment	(0 to 45) °C	M		
12.2	Humidity (non condensing)	5% to 90%	10		
Grand Total			500		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.				

ANNEX-B12: SDN CONTROLLER

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
1	SDN-Controller should do the autonomous driving management system hosted on Physical Servers cluster for data center network.	M		
2	Capable to display forwarding paths of VTEPs and VMs in VXLAN scenarios.	M		
3	Centralized controller provides an open data collection framework to collect device configurations and entries and collect data from domain controllers and third-party systems, and uses the collected data as the unified data foundation of the O&M system.	5		
4	Centralized controller should support three-level network topologies: multi-region multi-DC hierarchical topology, single-DC hierarchical topology, and single-region topology. Displays traffic forwarding paths in the topology, and allows you to query topology statistics and restore inter-device links through topology restoration to supplement the network topology.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
5	Centralized controller should support the search function for the unified data foundation, and allows you to search for devices (including switches, servers, and VMs) and locate them on the map	5		
6	Controller should support network path simulation and restoration.	5		
7	Controller should have the following rollback capabilities.	8		
	i Solution should have option to manual rollback.			
	ii Solution should support tenant-based rollback.			
	ii The solution should have service-level rollback capability.			
	i The solution should be capable of network-wise rollback.			
8	Controller should provide the Zero Touch Provisioning (ZTP) function. ZTP automatically delivers device programs and startup files to the access switches in batches, optimizing the deployment process and speeding up service provisioning.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
9	Centralized monitoring and analytics with real-time telemetry and network health diagnostics.	M		
10	Solution is capable of the following features.	M		
	i Display the Network issues and risks.			
	ii Display the resource statistics on devices, ports, optical modules, and hosts.			
	ii Display the Overall network performance quality in terms of packet loss, queue congestion, and bandwidth			
	i Solution should have the feature to customized the dashboard.			
11	Solution can automatically create multi-dimensional health evaluation report which can be downloaded/sent immediately or sent as scheduled.	5		
12	Solution should collect statistics and analyze queue congestion on devices and display accordingly.	M		
13	Solution should detect performance and capacity related faults and perform the analysis.	2		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
14	Solution should highlight the potential risks from dimensions such as reliability, consistency, capacity, performance, and reliability to support network health O&M.	5		
15	Solution should have the feature of Application view in which applications, IP subnets, and their metrics and access relationships on the network is displayed.	2		
16	Active/standby DR should be supported in the single-node system scenario.	5		
17	Certificate authentication should be supported during ZTP to ensure security and reliability.	5		
18	In proposed solution Sys logs of devices during ZTP should recorded, facilitating log query.	5		
19	Links can be compared after ZTP to check whether the connection status is normal.	5		
20	Links should be automatically discovered or manually created in proposed solution.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
21	Proposed solution supports intent-based fabric underlay planning simulation, and self-planning of new DC fabrics, including planning topology formation, topology configuration modification, simulation evaluation, and onboarding execution.	5		
22	Proposed solution supports automatic configuration of server capacity expansion intents and server leaf node capacity expansion intents.	5		
23	In proposed solution the PVLAN mode can be enabled for VMware, and micro segmentation can be used to isolate VMs on the same server and network.	5		
24	Proposed solution GUI allows users to change the NETCONF and SNMP user names and passwords used by interconnected devices in batches	5		
25	Proposed solution Supports batch import of static routes, VPCs, external gateways, and SFC rules, batch export of configurations based on VPCs and devices, and batch modification of logical port names/descriptions and device passwords.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
26	The proposed solution must ensure that all traffic originating from and destined to the data center is inspected and secured within the data center perimeter. The firewall or security solution must operate in an inline, on-premises deployment model, where traffic does not leave the data center for inspection, processing, or analysis.	5		
28	The SDN Controller must support a single, unified policy model where application intent, endpoint groups, contracts, and fabric underlay configuration are centrally defined and enforced without requiring separate policy engines or third-party intent translators.	5		
29	Controller must natively orchestrate L4-L7 services (firewalls, ADCs, IPS/IDS) via service graphs—including redirection, stitching, and lifecycle automation—without requiring external orchestrators. The validation guides with leading firewalls/ADC vendors must be available at both OEMs websites.	5		
30	The SDN controller must support an active/active clustered architecture where all nodes simultaneously participate in policy computation, database synchronization, and fabric management.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Ref in Datasheet/manual
31	Controller must support tight, native integration with VMware, Hyper-V, and Kubernetes networking via automated virtual switch configuration, dynamic port groups, micro segmentation, and synchronized policy enforcement.	10		
32	switchover upon Access-side link fault should support minimum packet loss and service continuity	3		
Grand Total		130		
Note	<p>Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.</p>			

ANNEX-B13: AVR

S#	Description		Bidder Name		
			Total Marks	FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1.1	Input Voltage Ranges	Three-Phase + N; 380 - 400 - 415 Vac \pm 20% (selectable from - 60% to + 30%)	5		
1.2	Frequency	45 - 65 Hz (Automatic frequency detection)	2		
1.3	Power factor	>0.99	M		
1.4	Output Current	600A	4		
1.5	Efficiency	>97 % (Under nominal conditions, full load)	5		
1.6	Output voltage	Three Phase + N; 380 - 400 - 415 Vac \pm 1-3~% (selectable \pm 1-2~%)	5		
1.7	Operating temperature	(-20 C to +50C)	2		
1.8	Number of phases	3+N	M		
1.9	Nominal voltage	380-400-415Vac-three phases +N	M		
1.1	Ripple current	Zero	2		
1.11	voltage distortion	<1% with linear/nonlinear load	5		

S#	Description		Bidder Name		
			Total Marks	FC/ PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1.12	Overload	110% for 60;124% for 10s	5		
1.13	Response time	20 millisecond	5		
1.14	Efficiency	>97%	5		
1.15	Harmonic distortion	No distortion	5		
1.16	Protections	Passive and electronic protection (overvoltage, under voltage, overcurrent, peak, surge, sag and spike protection)	M		
1.17	Display	Per Phase Graphic LCD Display Output Voltage, Output Voltage, Output Current, Load Percentage, Output Frequency, Regulator Status and Fault Information, Overload Warning, Over Temperature Warning, Input Fault Warning, Output Fault Warning, information can be monitored.	5		

S#	Description		Bidder Name		
			Total Marks	FC/ PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1.18	Communication	Dry Contact ,Ethernet / GPRS / USB / MODBUS TCP/IP)	1		
1.19	Filter	RFI-EMI filter	1		
1.2	By Pass	Manual By -Pass	M		
1.21	Relative humidity	<95% non-condensing	1		
1.22	Acoustic Noise	Less than 50 dB (A)	1		
1.23	Protection Class	IP 20	1		
1.24	Standards	Safety: EN 62040-1-1;EMC:EN 62040-2	M		
1.25	Marks		60		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.				

ANNEX-B14: POWER CONDITIONING AND DISTRIBUTION CABINETS

S#	Description	Total Marks	Bidder's Statement	
			FC/ PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1	GUI Panel on front of distribution cabinets	4		
2	Remote Monitoring via SNMP	4		
3	Fire Proof and Anti-Static cable trays for power cables	2		
4	Branch Circuit Monitoring	2		
5	Centralized Monitoring integration with DCIM	2		
6	Power Isolation	2		
7	Power Distribution	M		
8	Computer-Grade Grounding	2		

S#	Description	Total Marks	Bidder's Statement	
			FC/ PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
9	Main Incoming Power Monitoring	M		
10	More advanced features/better features will be preferred	2		
	Marks	20		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.			

ANNEX-B15: UPS

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet/ manual
	UPS (QTY: 2)			
1	Total capacity ≥ 160 KVA, better capacity will be preferred.	M		
2	Must be maintenance free VRLA (Valve Regulated Lead Acid Batteries) with 5 years life expectancy, more life/warranty will be preferred.	M		
3	The transfer time between the mains mode and the battery mode is 0-10 milliseconds preferably(uninterruptible)	8		
4	UPS shall have internal SNMP card for status monitoring and alarm reports that must be integrated with the DCIM. Ups should have multifunctional panel display for voltages status and also display power measurements, PF, alarms etc. The Ups should have interface such as RS-232/USB/RS-485 for interconnection with NOC.	5		
5	All accessories to make the solution workable should be integrated be included in solution, extra features will be preferred.	3		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
6	UPS must be modular & expandable, chassis with at least 250KVA capacity/as per design requirements in conformity with Tier III Compliance. Must support 3 Phase power requirements.	M		
7	Minimum Battery Back Up Time of 30 Minutes with full load including lighting, preference will be given to more backup time.	5		
8	UPS must have user friendly GUI Panel, preference will be given to more user friendly features.	5		
9	UPS must have Manual Isolator Switch for maintenance purpose	5		
10	The UPS must have parallel operation capability. UPSs can detect load automatically and detect parallel operation parameters dynamically. Power Stabilization in case of voltage fluctuation.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
11	The UPS must have protection against problems such as power surge, power failures and power fluctuation, input under voltage, over voltage frequency protection, battery low /high voltage, output short circuit, overload ,phase sequence, phase loss detection and must be able to revert automatically via ATS or enable reset of power (switching back to normal mode once power is restored)	10		
12	Multifunction measurement system with accessories	5		
13	AC Input Nominal Voltage: System voltage shall support 3-Phase + neutral + ground or 3-Phase ground in a dual configuration.	5		
14	AC Input Voltage Window: ± 10 percent for full performance (340 to 440 volts)	5		
15	Maximum Frequency Range: 45 to 60 Hz.	5		
16	AC Output Voltage Distortion: Less than 2 percent at 100 percent linear load.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet/manual
17	Overload capability:110% continuous for 1 hour;10 mins for 125%; 1 min for 150%	5		
18	voltage regulation online $\pm 1\%$	2		
19	Waveform Pure sine wave, THD<2% at linear load	2		
20	Efficiency 96-98%	2		
21	Input/output power factor 0.99-1.0	5		
22	Noise <75 dB	1		
23	Ambient temperature 0-40C	1		
24	Relative humidity 0-95% non condensing	1		
	Marks	90		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.			

ANNEX-B16: PFI

S#	Description		Total Marks	Bidder's Statement	
				FC/PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
1	Rated capacity	250 Kvar	M		
2	System configuration	3-phase,3 wire 3 phase 4 wire configurable	M		
3	Rated system voltage	400/440 V AC± 10%	5		
4	Rated Frequency	50-60 Hz	2		
5	Power factor control range	0.7-0.99 (adjustable)	5		
6	Controller cabinet	Floor standing cubicle	5		
7	Capacitor banks configuration	25 Kvar=02, 50 Kvar=04 with internal/external discharge module capacitor dry type cylindrical	5		
8	Capacitor bank rated voltage	≥ 440 Vac	2		
9	Tolerance	± 5%	2		

S#	Description		Total Marks	Bidder's Statement	
				FC/ PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
10	Capacitor dielectric Protection	Internal discharge resistors	2		
11	Expected life	≥50,000 operating hours	2		
12	Switching elements	Electromechanical contactors heavy duty for capacitive switching	M		
13	Protection	Fuse protection, Surge protection, Overcurrent protection, Inrush limiting	M		
14	Controller	Microprocessor based automatic controller with built in digital LCD display	M		
15	Inputs	CTs and voltage sensing	5		
16	Control cabinet	Sheet steel powder coated, IP42 floor standing lifting points and cable glands for top and bottom entry natural ventilation with louver, hinged door, dedicated earth bus bar	5		

S#	Description		Total Marks	Bidder's Statement	
				FC/ PC/NC	Bidders Quoted Feature Reference in Datasheet / manual
17	Incoming protection	MCCB rated voltage and interrupting capacity as per rated capacity	10		
Marks			50		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.				

S#	Description	Total Marks	Bidder's Statement	
			FC/ PC/ NC	Bidders Quoted Feature Reference in Datasheet / manual
	UPS (QTY: 2)			

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet/manual
1	Total capacity \geq 160 KVA, better capacity will be preferred.	M		
2	Must be maintenance free VRLA (Valve Regulated Lead Acid Batteries) with 5 years life expectancy, more life/warranty will be preferred.	M		
3	The transfer time between the mains mode and the battery mode is 0-10 milliseconds preferably(uninterruptible)	8		
4	UPS shall have internal SNMP card for status monitoring and alarm reports that must be integrated with the DCIM. Ups should have multifunctional panel display for voltages status and also display power measurements, PF, alarms etc. The Ups should have interface such as RS-232/USB/RS-485 for interconnection with NOC.	5		
5	All accessories to make the solution workable should be integrated be included in solution, extra features will be preferred.	3		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet/manual
6	UPS must be modular & expandable, chassis with at least 250KVA capacity/as per design requirements in conformity with Tier III Compliance. Must support 3 Phase power requirements.	M		
7	Minimum Battery Back Up Time of 30 Minutes with full load including lighting, preference will be given to more backup time.	5		
8	UPS must have user friendly GUI Panel, preference will be given to more user friendly features.	5		
9	UPS must have Manual Isolator Switch for maintenance purpose	5		
10	The UPS must have parallel operation capability. UPSs can detect load automatically and detect parallel operation parameters dynamically. Power Stabilization in case of voltage fluctuation.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet/manual
11	The UPS must have protection against problems such as power surge, power failures and power fluctuation, input under voltage, over voltage frequency protection, battery low /high voltage, output short circuit, overload ,phase sequence, phase loss detection and must be able to revert automatically via ATS or enable reset of power (switching back to normal mode once power is restored)	10		
12	Multifunction measurement system with accessories	5		
13	AC Input Nominal Voltage: System voltage shall support 3-Phase + neutral + ground or 3-Phase ground in a dual configuration.	5		
14	AC Input Voltage Window: ± 10 percent for full performance (340 to 440 volts)	5		
15	Maximum Frequency Range: 45 to 60 Hz.	5		
16	AC Output Voltage Distortion: Less than 2 percent at 100 percent linear load.	5		

S#	Description	Total Marks	Bidder's Statement	
			FC/PC/NC	Bidders Quoted Feature Reference in Datasheet/manual
17	Overload capability:110% continuous for 1 hour;10 mins for 125%; 1 min for 150%	5		
18	voltage regulation online $\pm 1\%$	2		
19	Waveform Pure sine wave, THD<2% at linear load	2		
20	Efficiency 96-98%	2		
21	Input/output power factor 0.99-1.0	5		
22	Noise <75 dB	1		
23	Ambient temperature 0-40C	1		
24	Relative humidity 0-95% non condensing	1		
	Marks	90		
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance.			

ANNEX-B17: DIESEL GENERATOR SET AND ATS

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
General Design Requirement								
Diesel Generating System: Qty (02)								
1	Mounting and Canopy							
1.1	Mounting	Direct coupled , In- Skid Mounted having ant vibration pads (preferably Steel Springs)	M					
1.2	Canopy Type	Sound Proof Canopy ,Weather Proof	M					
		Residential/Industrial Type Silencer properly insulated						
1.3	Noise level	(75dB) on 1 Meter @ 75% load & (80dB) on 1 Meter @ 100% load	2					
2	Output Power of DG Set							
2.1	Power rating of DG Set(Prime) preferably or higher as per power load.	350-360 KVA	M					
2.2	Output Power	280-288 KW						
2.3	Overload Capacity	10 % overload on Prime Power for one hour within 12 Hours operation or specify	2					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
3	Compliance to standards							
3.1	Compliant Standards	ISO 3046-4 (2009) , BS ISO 3046-1 , ISO 8528-1:2005/DIN 6271/AS2789 , IP55 , ISO 14001:2004 ,BS EN 55014-1:2001, C€ certified	2					
4	DG Set Starting							
4.1	Starter Type	Electric Starter	M					
4.2	Battery	(24 Volt or 12 Volts Lead Acid Battery) as per DG Set requirement	M					
4.3	Battery Capacity	Bidder should specify	4					
4.4	Battery Charger	Static (For Trickle and boost charging)	4					
5	Cooling & Exhaust System							
5.1	Exhaust System	Heavy Duty preferably residential silencer	M					
5.2	Cooling Type	Water cooled	M					
5.3	Radiator	Coolant circulation and Engine heat dissipation	2					
5.4	Alternator Cooling	Direct Drive centrifugal Fan	2					
6	Diesel Engine							
6.1	Make	Cummins, MAN, Perkins or equivalent	M					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
6.2	Country manufacturing/origin of	UK, USA or European origin	M					
6.3	Fuel Type	Diesel	M					
6.4	Engine Starting	Auto and Manual Ignition Start	M					
6.5	Engine Cycle	4-Stroke	3					
6.6	Cylinders Block	Cast Iron , 6/8 Cylinders , in line or Bidder should specify	3					
6.7	Fuel Consumption per hour at Full load	Bidder should specify	3					
6.8	Compression Ratio	16.5:1 or better (Bidder should specify)	3					
6.9	BHP	bidder should specify	3					
6.10	Air Intake (Aspiration)	Turbocharged	3					
6.11	Filters	Standard Dry & replaceable Air Filter, Lube Oil filter and Fuel Filter	3					
6.12	Engine Speed	1500 RPM	3					
6.13	Lube Oil consumption	Bidder should specify Ltrs/Hour at 100 % Load	3					
6.14	Engine maintenance schedule	Bidder Should specify Lube oil, Air Filter, Fuel Filter and Oil filter change schedule	3					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
6.15	Humidity	(0 to 95) %	2					
6.16	Temperature	(-10 to 60) °C	2					
7	Alternator							
7.1	Make	STAMFORD, Mecc Alte or equivalent	M					
7.2	Design	Brushless, Self-Excited and Self-Regulated	M					
7.3	Power Factor	≥ 0.8 lagging	M					
7.4	Rated Prime Output	360 KVA , 50 Hz , 380/400/415 VAC, 3 Phase -4 Wires Star connected	M					
7.5	Country of Manufacturing	UK,USA or European origin	M					
7.6	Efficiency at Rated Load and 0.8 Power Factor	85 % or better (Specify)	2					
7.7	Regulation	Electronic Automatic Voltage Regulation (AVR)	2					
7.8	Rotor and Stator Winding Insulation Grade	Class H, as defined in NEMA MG 1-32.6 & 1.66	2					
7.9	Over Excitation Protection	IP23	2					
7.10	Winding Material	100 % Copper wire	2					
7.11	THD	≤ 5%	2					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
7.12	Telephone Interference factor	<2%	2					
7.13	Full Load current in Amperes	Bidder should specify	2					
8	Governor							
8.1	Type	Electronic	M					
8.2	Voltage Regulation (No load to Full load)	±1%	2					
8.3	Random voltage variation	±1%	2					
9	Fuel Tank							
9.1	Each Built in Fuel Tank	Built-in for 8 Hours or more operation at Full Load	4					
9.2	Capacity of Built Tank	Bidder should specify	4					
9.3	External Fuel Tank	2000 Liters with Fuel level indicators at specific fuel quantity	M					
10	Control Panel							
10.1	DG Set Operation Modes	Automatic (AMF Detection) ,Manual(ON,OFF)	M					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
10.2		DG Set can be started/stopped remotely, Moreover, Alarm indication on LCD /LEDs on the control panel, some of which can be extended to NMS for audible and visual Display. Bidder must specify the details of extension of such alarms	4					
10.3	DG Set Safety Shutdowns	Over Current / Short Circuit shutdown, Low oil pressure shutdown	2					
10.4		High engine temperature, High coolant temperature, Low coolant , Engine over speed / under speed	2					
10.5		Fail to Start , Low Fuel Level, Emergency Shutdown	1					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
10.6	DG Set Alarms/warnings	Frequency Mismatch warning, Low Oil pressure warning, High Engine / Coolant Temperature, Low Coolant level warning, Over / Under Alternator Current / Voltage	6					
10.7		Storage Tank low oil indication, Storage Tank Empty Alarm, Battery Low, Low coolant Temperature warning, Phase abnormality Alarm	4					
10.8	Display Meters / Indicators	LCD Display panel for navigation and configuration	6					
10.9		Power Meter (KW,KVA), Ammeter (Phase currents), Line to Line and Line to neutral Voltage Display, Frequency Meter, Oil Pressure, Water Temperature, Power factor Meter, Lube Oil Pressure, Coolant Temperature, Battery / DC Voltage						

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
11	Automatic Transfer Switch Panel (QTY:2)							
11.1	Auto Transfer Switch Panel	<ul style="list-style-type: none"> •Dual Communications Built-in RS-485 serial and 10/100 base-T Ethernet Open protocols - Modbus RTU and Modbus TCP • Available to support Open, Closed and Delayed Transition • Small footprint • Graphical control panel • Multiple communication protocols • ¼ inch VGA color graphical display with embedded HELP menus • Status LED's indicating: ALARM - indicating a problem with the ATS or a user configured alarm condition is active TD DELAY - indicating the controller is timing before taking the next control action XFER INHIBIT - indicating the controller will not transfer to the other source without operator intervention. 	45					

		<p>User-Configurable set points for inputs and Outputs● Field modification of control features● Plant exerciser clock for 1 day, 1 week, 14 days, 28 days or 365 days. The time base of 365 days permits up to 24 events to be scheduled and the other time bases permit up to 24 events.● SYSTEM TESTS Fast Test - test with load, no time delays Transfer Load - test with load with time delays No Transfer - test without load, generator start only● Controller Power Supply utilizing the Universal Transformer Assembly (UTA) - provides power to the controller and 24Vdc ungrounded to the power relays. The UTA also provides line voltages from 120Vac to 600Vac via an internal six position jumper array, 120Vac UPS input and 24Vdc input battery options.● Dual processor based with dedicated processor for high speed Serial or Ethernet connections● All signal in / out relays are isolated via DIN Mounted relay / terminal blocks● Elevator pre-signal contacts● Power quality metering● Elevator pre-signal ● Automatic Reset for Power Surge or loss between UPS and Generator</p>						
Total			150					

S#	Title	Description	Marks	Bidder's Statement				
				FC	PC	NC	Bidder's Quoted Feature	Reference in Datasheets/ Manual
Note	Bidder's Statement column must be properly filled to clearly state the available feature/compliance as fully complied (FC), partially complied (PC) or not complied (NC) or better feature is available, Tick the relevant box. The bidder must Fully comply to all Mandatory clauses (Denoted as "M" in Marks column) failing to do so will Technically disqualify the bidder, Moreover, the bidder should score 75 % or more of the total marks given in "Marks" column. The compliance of above specification must be supported by data sheet of product to certify the Compliance. The Genset supplied should be from OEM and OEM warranty will be provided for the quoted DG set.							
	Bidder must provide documents related to country of Manufacturing and product user Manuals at the time of delivery							
	Bidder will provide best quality coolant, Engine Lube Oil and Fuel during PAT (10 Hours). Moreover, bidder will also arrange 250 KW dummy load for PAT							
	Best feature will be awarded full marks and relative marks will be awarded to others. Better feature will be considered as fully compliant							
	Any other item not specified in the technical specs will be provided as per BOQ							
	ATS panel / MCB will be provided as per BOQ							

ANNEX-C: SERVICE LEVEL AGREEMENT

1 SCOPE OF WORK

This SLA covers OEM support and partners support for the period of Two (02) Years Two (02) Year SLA with option of further extension of Two (02) Years for all the equipment and licenses provided under the scope of project.

2 DETAILS OF SUPPORT MECHANISMS UNDER SLA

- a. Advanced maintenance support and hardware replacement for faulty components including on site visit in case of critical issues resolution, physical onsite support, and seeking online support if required.
- b. Provide 24x7 Help Desk (NBD (Next Business Day) for logging of support incidents, and OEM.s Portal to NTC for each product for support mechanism
- c. The details of the support document should be provided for the evaluation of the project and for the agreement of the SLA/maintenance agreement.
- d. Detailed mechanisms for provision of support need to be provided with the bid.
- e. Contractor will provide Responsibility for smooth SLA operations.

3 SEVERITY LEVELS

3.1 **Severity One (Urgent)**

A severity one (1) issue is a catastrophic production problem which may severely impact the Required Service\Solution Availability, in such case, part or all Required Service\Solution production components are down or not functioning; loss of production data and no procedural work around exists.

Examples of Severity one cases: DB becoming corrupted or inaccessible, or service effecting component of Firewall is faulty.

3.2 **Severity Two (High)**

A severity two (2) issue is a problem where the Required Service\Solution is functioning but in a severely reduced capacity. The situation is causing significant impact to portions of business operations and productivity of Required Service\Solution. The system is exposed to potential loss or interruption of service. Example of Severity two cases: one node of cluster becomes down or unavailable, inability to update DB by entities representatives or solution administrators, or inability to synchronize data between DB nodes, or fault in hardware component resulting in reduced capacity/performance functionality.

3.3 **Severity Three (Medium)**

A severity three (3) issue is a medium-to-low impact problem which involves partial non-critical functionality loss one which impairs some operations but allows the Required Service\Solution users/administrators to continue to function. This may be a minor issue with limited loss or no loss of functionality or impact to the client's operation and issues in which there is an easy circumvention or avoidance by the end user.

3.4 **Severity Four (Low)**

Important problem but it can wait no loss of functionality or impact to the client's operation and issues in which there is an easy circumvention or avoidance by the end user.

Table 1: Response, Resolution, times for different severity levels

S.No	Severity	Response Time	Resolution Time
a	1	1 hour	8 hours
b	2	3 hour	24 hours
c	3	5 hour	48 hours
d	4	12 hour	72 hours

* Support required on 24 x 7 basis

Note: The Severity will be decided and informed by NTC, and vendor/support team will be informed through the support/Log and also via call to the KAM (Key account Manager) who will be the POC for replies/updates as and when required by NTC.

Where:

4 RESPONSE AND RESOLUTION

4.1 **Response Time**

Time taken to acknowledge receiving of reported incident calculated from the time sending an email explaining the incident, opening a ticket on Contractor ticketing system, or conducting a phone call with the assigned support engineer by the Contractor or Contractor's first line of support.

4.2 **Resolution Time**

Time taken to solve the reported incident completely. Resolution Time is calculated from the end of the defined response time for each severity level as shown in the above table.

5 ESCALATION PROCEDURE AND PENALTIES

For incidents classified as Severity Level 1, 2, 3 & 4, if Contractor:

5.1 **Passed the Response Time:** First level of escalation will be applied by notifying Contractor's Technical Support Manager or the assigned contact person.

5.2 **Passed the Resolution Time:** NTC is entitled to fix the problem and to apply penalty on the M/S Bidder Pakistan in accordance with the following criteria in the below table and all costs incurred by NTC for fixing will be charged to the M/S Bidder Pakistan.

Table 2: Penalties

Severity	Definition	Penalty
1	Must be done, essential to business survival. Business can't continue	A penalty of 10 % of the monthly SLA invoice shall be applied for each hour pass the resolution time. If delay continues, for more than three days; then 3rd party will be called to fix the problem and cost of the same will be borne by the contractor for respective site.

Severity	Definition	Penalty
2	Should be done, near essential to business survival.	A penalty of 6% of the monthly SLA invoice shall be applied for each day pass the resolution time for respective site. This penalty will be applied for the maximum duration of 4 days; after that, 3rd party will be called to fix the problem.
3	Could be done, high benefit to business if time and resources are available.	A penalty of 4% of the monthly SLA invoice shall be applied for each day pass the resolution time for respective site. This penalty will be applied for the maximum duration of 5 days; after that, 3rd party will be called to fix the problem.
4	Important problem but can wait	A penalty of 2% of the monthly SLA invoice shall be applied for each day pass the resolution time for respective site. This penalty will be applied for the maximum duration of 5 days; after that, 3rd party will be called to fix the problem.
Maximum penalty of 10% of the monthly SLA invoice shall be imposed.		

6 REPORTING, HEALTH CHECKS OF THE PROVIDED SOLUTION

The provided equipment will be checked periodically by M/S Bidder Pakistan, and a quarterly report will be submitted to NTC that will mention the following:

- a. Health Check and summary of the product issues.
- b. Utilization/consumption details of the Hardware/Software.
- c. Performance analysis of the hardware/software and possible measures to minimize the faults in the next quarter.
- d. Summary of the resolved complaints and recommendations to minimize the faults, with timelines of fault starting and fault resolution.
- e. Updates of the provided software versions and health checks of the tools, through reports.
- f. The compliance status of the applicable controls standards to help NTC meet the standards and audit requirements.

6.1 Remote Troubleshooting

After receiving a service request for rectifying a network or system fault, M/S Bidder Pakistan engineers will first analyze and handle the fault remotely and then

rectify it in the shortest possible time. There are two methods of remote troubleshooting: telephone support and remote access.

6.2 Telephone Support

After receiving a service request from NTC, M/S Bidder Pakistan engineers will respond to NTC through phone calls within the time period defined in the Service Level Agreement (AGREEMENT) and help to analyze and locate the problem. Then the engineers will provide a solution and guide NTC in implementing the solution

6.3 Remote Access

If the fault or problem cannot be handled through telephone support, with necessary permissions, M/S Bidder engineers will log in to the faulty equipment through a remote terminal to investigate the problem and collect data. After analyzing the causes, the engineers will rectify the issue. If necessary; the engineers will operate the equipment remotely.

6.4 Software Updates

To ensure that the equipment purchased by NTC, M/S Bidder will provide software correction patches. All software patches have been verified and improved in the practical application environment or a simulated trial network and can remove or correct hidden problems in the original licensed software. Software updates installation for 3 years will be provided and a quarterly check report will be provided from M/S Bidder that would include product stability in the past quarter duration, updates of the installed versions, and satisfaction of the provided features.

Note: OEM Support department will arrange the kickoff meeting and explain all complete procedure from ticket registering to closure of the ticket.

7 OPERATION AND MAINTENANCE OF CIVIL & ELECTRICAL EQUIPMENT

The contractor shall provide services for the operation and maintenance required for NTC Data Centre equipment installed in the facility detailed as below.

7.1 Air Conditioning Equipment

- The contractor shall be responsible for routine monthly maintenance of In-row precision air conditioners along with other allied components including a water leakage detection system. Maintenance monthly Reports to be submitted to NTC.
- Regular service includes cleaning/washing/replacement of air filters, indoor/outdoor units of the air conditioners and any breakdown maintenance of the air conditioners including the cost of re-filling of refrigerant gas/replacement of compressor if required, and any other accessories, consumable items such as filter and gas will be provided by the Contractor.

7.2 UPS and Allied Electrical Equipment

- The contractor will be responsible for routine monthly maintenance for the all UPS installed in the Data Center. Maintenance monthly Reports to be submitted to NTC.

- The contractor will be responsible for the replacement of any faulty parts installed with both UPS of rated capacity; the contractor will check the health status of the equipment including batteries & submit the reports for rectification resolution of issues accordingly. Similarly, any fault in the internal wiring and in the interconnected batteries will be rectified by the contractor.
- The contractor is responsible for routine cleaning of the electrical panels including Air circuit breakers (GE), control equipment, battery chargers, batteries, ATS, synchronization modules, surge protectors, power transfer switches, and allied electrical accessories/equipment installed which belong OEM.
- Contractor will be responsible for maintenance and fault rectification of battery monitoring units PDU's, PDF's, power monitoring equipment and energy monitoring meters.
- Maintenance and Up-gradation of software, Data Center management system for monitoring of Data Center equipment as required by NTC, will be the responsibility of the contractor.

7.3 Installation and Commissioning of New Customers

Contractor shall be responsible for any change in the racks arrangement for accommodating new customer requirement including the network power cabling, industrial sockets, circuit breakers replacement, racks adjustments and interconnectivity etc.

7.4 Technical Reports

Contractor will provide the monthly maintenance reports (to be submitted after each monthly maintenance activity) performed and faulty reports as required by the NTC and shared between NTC technical team and contractor service teams as necessary. Similarly reports required by NTC higher management regarding the Data Center system status and issues will be provided by the contractor as and when required.

7.5 Escalation Matrix from Bottom to Top [OEM]

Name	Position	Contact Number	Email ID [OEM]
	Head of Organization		
	ASM		
	Technical Director		
	KAM/ PM		
	24x7 Help Desk/		

ANNEX-D: COMMERCIAL COMPLIANCE STATEMENT

Clause.#	Description	Fully Complied	Not Complied	Partially complied
1	INVITATION TO e-BIDS			
2	GENERAL INTRODUCTION			
3	PROJECT OBJECTIVES			
4	SCOPE OF WORK			
5	QUALIFICATION CONDITIONS OF BIDDERS			
6	COST OF TENDERING			
7	CLARIFICATIONS OF TENDER DOCUMENTS			
8	AMENDMENT OF TENDER DOCUMENTS			
9	PREPARATION OF BID			
10	LANGUAGE OF BID DOCUMENTS			
11	PRICE			
12	TENDER SECURITY / EARNEST MONEY			
13	VALIDITY OF BIDS			
14	DEADLINE FOR SUBMISSION OF BID			
15	MODIFICATION & WITHDRAWAL OF BID			
16	OPENING OF BID			
17	RESPONSIVENESS OF BIDS			
18	EVALUATION CRITERION FOR MOST ADVANTAGEOUS BIDDER			
19	CLARIFICATIONS / CORRECTIONS OF BID			
20	COMMERCIAL COMPLIANCE STATEMENT			
21	VARIATION ORDER			
22	AWARD CRITERIA & NTC'S RIGHT			
23	NOTIFICATION OF AWARD & SIGNING OF CONTRACT AGREEMENT			
	CONTRACT CONDITIONS			
1	PERFORMANCE SECURITY			
2	CONTRACTOR'S RESPONSIBILITIES			
3	NTC'S RESPONSIBILITIES			
4	TRANSPORTATION / PACKING			
5	TIME FOR COMPLETION			
6	WARRANTY			
7	LIQUIDATED DAMAGES			
8	PROVISIONAL ACCEPTANCE CERTIFICATE			
9	NIL DISCREPANCY CERTIFICATE			
10	TERMS OF PAYMENT			
11	CONTRACTOR'S NEGLIGENCE			
12	FINAL ACCEPTANCE CERTIFICATE			
13	SERVICE LEVEL AGREEMENT			
14	TRAININGS			
15	CERTIFICATIONS			

Clause.#	Description	Fully Complied	Not Complied	Partially complied
16	DEFAULT BY CONTRACTOR			
17	ARBITRATION AND APPLICABLE LAW			
18	FORCE MAJEURE			
19	TERMINATION FOR INSOLVENCY			
20	TERMINATION FOR CONVENIENCE			
21	PROJECT DIRECTOR / ENGINEER IN CHARGE			
22	DEBARMENT / BLACKLISTING OF FIRM			
23	REPEAT ORDER			
24	INTEGRITY			
25	PROJECT MANAGEMENT STRUCTURE			
25	DECLARATION OF BENEFICIAL OWNERS' INFORMATION			

ANNEX-E: BID SECURITY FORMAT

Bank Guarantee No.-----
Dated at Islamabad, the -----
Amount _____
Validity _____

To,

THE MANAGING DIRECTOR,
NATIONAL TELECOMMUNICATION CORPORATION
HEAD QUARTERS G-5/2
ISLAMABAD.

Dear Sir,

WHEREAS M/S _____ (hereinafter called the Tenderer) have requested us through _____ Bank Ltd., to furnish Bid Security by way of Bank Guarantee in your favour in the sum of _____ (IN FIGURE) _____ (IN WORDS) against your Tender Notice No. _____ dated _____ for supply / installation of _____.

WE HEREBY AGREE AND UNDERTAKE:

- i. To make unconditional payment _____ to you on demand without further question or reference to the Tenderer in case of withdrawal or modification of bid or any default or non-execution of the Contract or refusal to accept order by the Tenderer from the date of opening of bids until the expiry of the validity of their offer,
- iii. To keep this guarantee in full force from (date) _____ upto _____ (date) _____ the date until which the Tenderer's offer is valid.
- iii. To extend the period of guarantee if such extension be necessary beyond the date stated in para (ii) and as so desired by the tenderer.

Any claim arising out of this guarantee must be lodged with this Bank within the period the guarantee is valid and before the date of its expiry. After this date the guarantee will be considered null and void and should be returned to us.

Yours faithfully,

Name of the Bank: _____
Authorized officer's Signature & Seal: _____

ANNEX-F: PERFORMANCE BOND FORMAT

Bank Guarantee No.-----
Date of Issue -----
Valid upto -----
Value (Rs.) -----

FROM: _____
TO,

THE MANAGING DIRECTOR,
NATIONAL TELECOMMUNICATION CORPORATION
HEAD QUARTERS G-5/2
ISLAMABAD.

SUBJECT: B/G AND DATE FOR _____ ON BEHALF OF _____ FOR
DUE AND FAITHFUL PERFORMANCE ORDER NO. _____
DATED _____.

Whereas M/s _____ (hereinafter called the Supplier)
have requested us to furnish a Bank Guarantee in your favour in the
sum _____ (IN WORDS) _____ as performance security
against order No. _____ dated _____ to be concluded between the
Supplier and National Telecommunication Corporation HQs G-5/2 Islamabad.

WE HEREBY AGREE:

- 1). To make an un-conditional payment of _____ to you on demand without any further question or reference to the Supplier upon failure of the Supplier to perform the Order for which you will be the sole judge.
- 2). To keep this guarantee valid in full force from this date upto the time of the due and faithful completion of the Order under reference (the schedule of implementation shall be as described in the Purchase order and its subsequent amendments) or till _____ whichever date is later. The faithful completion of the order by the Supplier will be intimated by the NTC.
- 3). To extend the period of the enforceability of this guarantee if such extension be necessary or desired by you of us. All claims thereunder must be submitted to the Bank of _____ on or before the expiry date mentioned in this guarantee are the date mentioned in its extensions issued from time to time, after which this guarantee will become null and void and should be returned to us. Irrespective of its return, we shall consider ourselves fully discharged from any obligation there under after the said expiry date.

Dated This Day of

Authorized Signature:

& Seal of bank

Witness: _____

Sworn & Sign before me

this day of.... ..
by. _____

ANNEX-G: DECLARATION OF BENEFICIAL OWNER INFORMATION

Declaration of Ultimate Beneficial Owners Information for Public Procurement Contracts

1. Name
2. Father's Name/Spouse's Name
3. CNIC/NICOP/Passport no.
4. Nationality
5. Residential address
6. Email address
7. Date on which shareholding, control or interest acquired in the business.
8. In case of indirect shareholding, control or interest being exercised through intermediary companies, entities or other legal persons or legal arrangements in the chain of ownership or control, following additional particulars to be provided:

1	2	3	4	5	6	7	8	9	10
Name	Legal form (Company/Limited Liability Partnership/ Association of Persons/Single Member Company/ Partnership Firm/ Trust/ Any other individual, body corporate (to be specified))	Date of incorporation/ registration	Name of registering authority	Business Address	Country	Email address	Percentage of shareholding, control or interest of BO in the legal person or legal arrangement	Percentage of shareholding, control or interest of legal person or legal arrangement in the Company	Identity of Natural Person who ultimately owns or controls the legal person or arrangement

9. Information about the Board of Directors (details shall be provided regarding number of shares in the capital of the company as set opposite respective names).

1	2	3	4	5	6	7	8
Name and surname (In Block Letters)	CNIC No. (in case of foreigner,	Father's/ Husband's Name in full	Current Nationality	Any other Nationality (ies)	Occupation	Residential address in full or the registered/ principal office address	Number of shares taken by each subscriber (in figures and words)

	Passport No)					for a subscriber other than natural person	
			Total number of shares taken (in figures and words)				

10. Any other information incidental to or relevant to Beneficial Owner(s).

Name & signature

(Person authorized to issue notice on behalf of the company)