REQUEST FOR EXPRESSIONS OF INTEREST

Country: Pakistan
Name of Project: Pakistan Raises Revenue
Assignment Title: Hiring of Consultancy Firm for Planning, Designing, Process Management and Compliance for FBR Tier-3 Data Center
Loan No./Credit No.:   6435-PK
Reference No.:   1(43)/P&CM/PO/2022 (PK-FBR-295297-CS-CQS)

1. The Federal Board of Revenue has received financing from the World Bank towards the cost of the Pakistan Raises Revenue Program (PRRP) and intends to apply part of the proceeds for procuring services of a credible consulting firm ("Consultant") for Planning, Designing, Process Management and Compliance for FBR Tier-3 Data Center based on ANSI TIA-942/ ISO-22237 or Uptime Institute.

2. The Federal Board of Revenue now invites eligible consulting firms ("Consultants") to indicate their interest in providing the said Services. Interested firms should provide the information demonstrating that they have/ meet required qualification and experience to perform this assignment. In this regard, there are prescribed standards, which have been mentioned in the Terms of Reference, which may be downloaded from the website https://fbr.gov.pk/tenders. Prospective firms are encouraged to provide materials/ information that would be specific to the proposed services. The parameters for evaluating EOI responses are given below:

   a. The firm should be a registered consulting company engaged in planning and design for Data Centers/ NOC/ Data Warehouse Centers/ Network Rooms/ DR Sites activities for a minimum of five years.

   b. The firm should have a minimum of five years of experience in the Data Center & IT consultancy & design business as a vendor-neutral firm.

   c. The firm must have documentarily verifiable experience of working at a minimum of two Tier-3 certified Data Centers facilities and assessment and design of network architecture in last five years.

   d. The firm should have an experienced team for the scope of work as described in the TOR. General areas are Certified Internal Auditor (CTIA), Certified Data Center Design Consultant, Certified Data Center Specialist (CDCS) and Certified Data Center Professional (CDCP), Certified Network Security Architecture (CCNA/ CCNP/ CCNE/ CNCDP) – equivalence acceptable, wherever applicable (CVs and specific nominations are not required at REOI stage).

3. The attention of interested Consulting Firms is drawn to Section III, paragraphs, 3.14, 3.16, and 3.17 of the World Bank's "Procurement Regulations for IPF Borrowers" July 2016 [revised November 2017 and August 2018] ("Procurement Regulations"), setting forth the World Bank's policy on conflict of interest.

4. The Consulting Firm will be selected in accordance with the Consultant's Qualifications Selection (CQS) method as set out in the World Bank's "Procurement Regulations for IPF Borrowers" July 2016, revised November 2017, and August 2018.

5. Firm(s) may associate with other firms to enhance their qualifications in the form of a joint venture (JV)/ Association. All the partners in the JV shall be jointly and severally liable for the entire Contract, if selected. In case of joint venture/ consortium, the details of such projects will be provided separately for each member as lead or associated consultant and payments shall be made only into the designated account of JV.

6. A **virtual Information Session** shall be held on **29th June, 2022** at **1130 Hours** to familiarize the potential applicants **on Terms of Reference** (available at https://fbr.gov.pk/tenders) **and ensuing procurement process.** Interested Consulting Firms may obtain the respective meeting link/ invite via writing an email addressed to the undersigned (procsp.prrp@fbr.gov.pk) between June 27, 2022 and June 28, 2022 (during regular business hours).

7. The Expression of Interest must be delivered to the address below (in person or by surface mail) not later than 1500 hours (Pakistan Standard Time) on **8th July, 2022.** For expressions sent electronically, Program Office will acknowledge receipt of the same via return email. In absence of such confirmation/ receipt, please contact on the address given below.

8. The address(es) referred to above is (are):

Procurement Specialist (Program Office)
Room No. 712, Seventh Floor
Federal Board of Revenue (FBR)
FBR House, Constitution Avenue
Sector G-5, Islamabad, Pakistan
051-9209659
procsp.prrp@fbr.gov.pk

Terms of Reference (TORs)

For
Hiring of Consulting Services (Firm)
For
Planning, Designing, Process Management and Compliance for FBR Tier-3 Data Center

1. *Background*

The Government of Pakistan is implementing a reforms program to mobilize domestic revenues to finance its development vision. The World Bank through Pakistan Raises Revenue Project (PRRP) is financially supporting this program. The overall objective of the Project is to "contribute to a sustainable increase in domestic revenue by broadening the tax base and facilitating compliance". The duration of the implementation of project is five-years (2019-2024).

Reforms for high performance and innovation in the Federal Board of Revenue (FBR) are essential for sustained growth in revenue collection to meet the country's budgetary demands and to finance development programs for public welfare. The main emphasis of the said reforms is promoting voluntary observance through robust compliance control mechanism, enhanced facilitation for the concerned/ stakeholders, improvement of Information and Communications Technology (ICT) based Data Systems for automation and improving the accountability and transparency.

In order to impart commitment to the said/ desired reforms, it is imperative for FBR to establish a Tier-3 / Rated-3 Data Center based on ANSI TIA-942/ ISO-22237/ Uptime Institute where all enterprise-based mission-critical business applications and access network would be running on a 24x7x365 basis.

2. *Objective(s) of the Assignment*

FBR existing Data Center was established back in early 20xxs, equipped with the state of art technologies available then for such Data Centers. Over two decades, the number of servers and other network communication equipment has increased manifold. FBR needs to re-model its Data Center to accommodate current and future planned growth requirements to meet the growing business challenges.

FBR seeks the services of a consulting firm (hereinafter termed as the "Consultant") which shall assess the current Data Center and its infrastructure including FBR network (LAN & WAN) and guide/provide recommendations to FBR for planning and designing, technical specifications, Data Center process management (as per agreed standard and guidelines of Data Center), and compliance assurance of the Data Center project, (hereinafter called the "Assignment").

The Assignment has the following components:

i. to review existing Data Center and its infrastructure in line with Data Center global standards
ii. to review the existing FBR network (LAN and WAN)
iii. to visit the physical site locations and assess the overall requirements to for compliance of Tier-3 Data Center
iv. to engage in a structured consultative process with the management of the FBR IT, to comprehend overall vision and objectives for this assignment, and to design a roadmap for achieving the desired objectives.
v. to structure and design the Data Center and network in line with industry best practices and to comply with global standards and
vi. to discuss and analyze the requirements and to provide the recommendations for the Data Center and network of the FBR
vii. to prepare and submit the draft current state assessment report to the FBR IT management for its review and approval

3. *Scope of Services, Tasks (Components) and Expected Deliverables*

Federal Board of Revenue (FBR) is looking to modernize its IT infrastructure to meet its existing and future requirements. This modernization is deemed critical to enable FBR deliver upon its commitment and to achieve its objectives, FBR is looking to hire consultancy services for the planning, design, and implementation of Tier/ Rated-3/ Data Center Infrastructure. Consulting firm will need to understand the FBR AS-IS and To-Be Requirements and provide recommendation and best practice which includes but not limited to the following:

i. With a Tier/ Rated-3/ Data Center, state-of-the-art facility which provides
   a. Concurrent maintainability
   b. Hi-Availability:
   c. Not more than 1.6 hours of interruption/year
   d. Redundancy N+1 (Component & Path)
ii. Data Center should be a highly redundant facility with no requirements for shutdown during maintenance and repair period.
iii. Data Center should address FBR existing and future scalability requirements with a modular approach.
iv. Data Center should be fully secure both from physical and cyber security perspective.
v. Data Center should incorporate the industry best practices and utilization of modern technologies for facility and ICT room with Tier/ Rated-3 perspective in terms of power, cooling, cabling, and other aspects.
vi. FBR Data Center should provide a secure, automated, controlled and fully virtualized infrastructure for FBR IT applications, services, and processes.
vii. FBR intends to achieve the benefits of:
   a. Full control over hardware and software choices: - FBR should be free to purchase the hardware and software they prefer vs getting vendor locked down for its compute, network, security, storage, and other resources

b. Freedom to customize hardware and software in any way: - FBR should be free to customize servers in any way they want and can customize software as needed with add-ons or through custom development.

c. Greater visibility into security and access control because all workloads will run behind the FBR's own firewall.

d. Fully enforced compliance with regulatory standards. forced to rely on the industry and regulatory compliance offered by the global compliance standards.

viii. FBR intends to certify its Data Center with the following relevant industry certification platforms including but not limited

    a. TIA942/ ISO-22237 Data Center Standard or Uptime Institute guidelines

    b. NIST

    c. GDPR

    d. ISO 27001

    e. ISO/IEC 27017:2015/ ITU-T X.1631

    f. CSA

4. *Consultant Expected Deliverables*

i. Current state Assessment report

ii. Requirement Analysis report which includes

    a. Gathering and Assessment of requirements

    b. Analysis of Requirements

iii. To-Be recommendation report for Tier-3 Data Center which includes

    a. Physical site selection

    b. Concept design, Technical Specification for Tier-3 Data Center

    c. HLD of FBR Data Center

iv. To be Recommendation report for FBR network LAN and WAN which includes HLD of FBR network LAN and WAN

v. Preparation and Evaluation of RFB Response

5. *Consultant Roles & Responsibilities to Deliver the Services*

i. Current Assessment Report

    a. Site survey and selection of area in compliance of Tier-3 Data Center

    b. As-IS assessment of current Data Center infrastructure which include but not limited to Power, cooling, access, security, management, people, and its processes

    c. As-Is assessment of current Network layout/ architecture of FBR Data Center, LAN, and WAN

ii. Requirement Analysis Report (which includes)

The Consultant is expected to evaluate FBR requirements and needs in term of but not limited to following:

    a) Assessment of FBR IT Infrastructure segregated into the following categories

i.   FBR Core IT infrastructure comprising of network (LAN & WAN),
         compute, storage, and security along with applied business processes
         and governing policies.
   ii.   FBR Business Productivity including business productivity applications
         incl but not limited to collaboration, unified communication, and
         content creation.
  iii.   FBR Custom Applications including LOB platforms, modern applications,
         BI and advanced analytics along with customized development.
b)   The above will require a comprehensive AS-IS assessment of FBR IT
     infrastructure, Network, and applications to provide a true picture and
     inputs for the future strategy
c)   Possible FBR Requirements including internal, service orchestration, cloud
     management, virtualization, and associated hardware/OS requirements etc.
d)   FBR Data Center possible capacity and security requirements including
     Governance Risk and Compliance, Service management and compliance to
     the other relevant security standards
e)   Data Center physical capacity requirements, power, cooling, NOC/SOC and
     other DC facility requirements
f)   Requirements related to the human resource skills available and required
     for Tier-3 Data Center
g)   Services models to be incorporated
h)   Data Center and Cloud security requirements
i)   Interconnection with other government departments
j)   Compliance and Certification roadmap requirement

iii.   **To-Be Recommendation Report for Tier-3 Data Center (which includes)**
   a)   Physical Site Selection
        The Consultant will help, guide and recommend FBR to select a suitable
        place/facility to build its Data Center, aligned TIA942 Tier/ Rated-3
        requirements. The provision of 3 or more choices of place/facilities shall
        be FBR's responsibility.

   b)   Concept design, Technical Specification for Tier-3 Data Center
        The Consultant will prepare the concept design/High Level Design (HLD)
        and Technical Specification for Tier/ Rated-3 Data Center for FBR
        incorporating the following aspects
           i.   Power designs including availability of power at site. Gray space for
                generators and fuel tank, dual switchgear with electromechanical
                interlocking, modular UPS's, Li-Ion batteries, intelligent monitoring
                for each PDU, MCB etc. Below considerations should be kept in mind
                but not limited to
                   a. Single or dual electrical service feeds and distribution from
                       different power grid or sub-stations
                   b. Independent transformer along with LV panel if needed at
                       site.
                   c. Switchgear with bus bar turnkey from transformer
                   d. Generator with fuel tanks (AHJ)

  e. Uninterruptible Power Supplies in modular form

  f. Power conditioning and Isolation of end point distribution

  g. Generator systems redundancy and capacity

  h. Alternate power planning for key systems (Uninterruptible Power Supplies)

  i. Scalability and growth for future needs

  j. Load distribution planning

  k. Secured access and management

ii. Cooling/HVAC: Below considerations should be kept in mind

  a. CFM and BTU analysis (CFD model)

  b. Containment alternate Option.

  c. In Row Cooling

  d. Thermal Runaway management

  e. Leakage rate management

  f. Cooling Efficiency and Redundancy

iii. DC Cabinets: Below considerations should be kept in mind

  a. Load Requirement Per Cabinet – Assumed @ 3-5KW

  b. AC and DC Cabinets' Split, if required

  c. Standard or Smart intelligent PDU

  d. Standard and non-standard cabinets

  e. Cabinet Sizing, load bearing

  f. Containment Solution

  g. Leakage detection system

  h. Power, humidity, and temperature measurement

  i. Security of the cabinets and access control

  j. Horizontal and Vertical Cable management Solution

  k. Thermal Isolation mechanism

  l. Standards Compliant

iv. Cabling: Below considerations should be kept in mind

  a. Cabling solution must be structured yet flexible and scalable following TIA-606 Standard.

  b. Scalability to support different type of Fiber at different speeds with different type of connectivity.

  c. Modular to support multiple type of environment

  d. Compliant with international standards

  e. Scalability to support different type of Fiber at different speeds with different type of connectivity.

  f. Modular to support multiple type of environment

  g. Compliant with international standards

v. Fire detection, suppression, and control: Below considerations should be kept in mind

  a. Choice of Gas

  b. VESDA Vs Conventional Detection

  c. Coverage Area

  d. CCTV with 30FPS

vi. Physical facility design options/ choices including whitespace, meet-me-room (MMR), NOC/SOC, power rooms, managers rooms should be incorporated

vii. Other aspects for Data Center need to be incorporated into the design and technical specification

c) HLD for FBR Data Center
The HLD and technical specifications of FBR Data Center should include the following building blocks
   i. Most efficient traffic switching/ routing protocols
   ii. Network high availability
   iii. Appropriate network security zone segmentation (placement of access control via firewalls etc.)
   iv. Network traffic encryption mechanisms enforcement
   v. Quality of service management
   vi. Management Platform: a complete vendor/technology agnostic management platform providing high availability, ease of operations and scalability for FBR operations.
   vii. Virtualization/Hypervisor: a virtualization/hypervisor layer abstracting the underlying FBR IT resources for operations.
   viii. Compute, Storage and Network: - Robust, secure, and scalable infrastructure including compute, storage, and network for operations. Vendor interlock should be avoided.
   ix. Orchestration of services: a complete orchestration layer for FBR services for 24/7 fully automated operations.
   x. Self-Services Portal: A self-services portal to allow ease of operations
   xi. Security: FBR Information and Cyber security should provide a completely secure mechanism at user, network, systems, and application level to ensure zero trust security.
   xii. Compliance and Certification requirements
   xiii. The Consultant is expected to create a detailed roadmap and migration strategy for the modernization of FBR applications and integration as mentioned in # ix above while utilizing the assessment/audit reports

iv. **To be Recommendation Report for FBR Network LAN and WAN (which includes HLD of FBR Network LAN and WAN)**
   a. FBR Data Center network topology
   b. FBR nation-wide network topology from the perspectives of??
      i. Most efficient traffic switching/ routing protocols and up-time
      ii. Network high availability
      iii. Appropriate network security zone segmentation (placement of access control via firewalls etc.)
      iv. Network traffic encryption mechanisms enforcement
      v. Quality of service management

v. <u>**Preparation and Evaluation of RFB Response(s)**</u>

The Consultant shall be expected to develope complete RFB(s) for the scope of work given above for Data Center which should cover the following

    i.   Scope of Work
    ii.   HLD and Technical Specifications as mentioned above
    iii.   Operational Requirements
    iv.   BoQs and/or Dimensioning guidelines
    v.   Evaluation Criteria
    vi.   Qualification Criteria

Envision Stage	1. Detailed workshops between the Consultant Teams and different stakeholders of FBR Team as well as external stakeholders. 2. Clear definition of project objectives. 3. Consultant should provide at his own cost, assessment tools to snapshot the existing performance, capacity, and security of FBR IT infrastructure at all levels.
Planning Stage	1. Assessment of the requirements as per the section 4.a 2. Architectural design of FBR Data Center 3. Preliminary assessment and capacity of the Data Center project requirements and the future planned roadmap. 4. To Prepare high-level capacity requirements for the Data Center facility after assessing projected business volume and considering the facilities already available at FBR. 5. Review AS-IS and recommend best practices suitable for FBR requirements including but not limited to following: 5.1 FBR Data Center network topology 5.2 FBR nation-wide network topology from the perspectives of 5.2.1 most efficient traffic switching/ routing protocols and up-time 5.2.2 network high availability 6. Recommend appropriate network security zone segmentation (placement of access control via firewalls etc.) 7. network traffic encryption mechanisms enforcement 8. quality of service management
Design Stage	1. The selected Consultant shall design the Data Center according to minimum requirements in TIA-942 specifications for Tier/ Rated-3 Data Center where possible 2. The following (non-exhaustive) documentation will be delivered throughout various stages of the project: 2.1 Full Design Documents as per TIA-942 standard

	2.2 A3/A1 CAD Drawings comprising of but not limited to the following.
	2.2.1 Electrical schematic detailing SLD, all cable types, sizes, and associated discrimination
	2.2.2 Floor layout details
	2.2.3 Ramp layout & details
	2.2.4 Steps & handrail details
	2.2.5 Detail of doors
	2.2.6 False ceiling plan & section
	2.2.7 Cable tray layout & detail
	2.2.8 Legend, notes, piping details
	2.2.9 Air conditioning plan
	2.2.10 Fire suppression system; legend, symbols & notes
	2.2.11 Fire suppression system; layout
	2.2.12 Fire suppression system; details
	2.2.13 Fire suppression system; isometric diagrams
	2.2.14 Legend, earthing, notes, & wiring/DB schedule
	2.2.15 Grounding distribution
	2.2.16 Lighting
	2.2.17 CCTV plan
	2.2.18 Signal reference grid - (srg) layout
	2.3 Project Initiation Document
	2.4 Project Plan to define the order, duration, and dependencies of each activity
Tender Stage	1. Preparation of tender document comprising of the following elements.
	1.1 Request for Bid (RFB)
	1.2 Bill of Quantities (BoQ)
	1.3 Vendor's Eligibility Criteria
	1.4 Technical Specifications of the Data Center Infrastructure for Tier/ Rated-3 Data Center
Project Assurance	**Objective:**
	1. The objective of this phase is to ensure that the project execution and implementation is in line with the finalized design plans and in compliance with the TIA-942 standard for Rated level 3 where possible.
	Scope:
	2. To support FBR team in their discussions internally and with the vendors and providing guidance & clarifications to Implementing Organization/ Technology Partners.
	3. Periodic review of the Project implementation status & progress.
	4. Advice FBR upon the corrective measures and mitigation plans.

	5. To provide assurance that the strategies adopted by the implementation partners are in alignment with the Data Center project objectives.
User(s) Awareness and Upskilling	Current Data Center resources of FBR are required to be upskilled in the following areas by a Certified Trainer in: 1. Certified Data Center Professional (CDCP) 2. Certified Data Center Specialist (CDCS) 3. Certified Data Center Facilities Operations Specialist (CDFOS) 4. Certified Data Center Facilities Operations Manager (CDFOM) Session((s) shall be conducted in FBR (HQ), Islamabad.

6. *Qualifications of the Firm*

The firm MUST meet the following qualifications to be considered;

i. The firm should be a registered consulting company engaged in planning and design for Data Centers/ NOC/ Data Warehouse Centers/ Network Rooms/ DR Sites activities for a minimum of five (05) years.

ii. The firm should be experienced in consulting for IT, Network and Systems Infrastructures having a team of experts including but not limited to Microsoft, Huawei, Cisco, and Juniper platforms. Documentary evidence(s) concerning Certifications and Consulting Projects shall be submitted.

iii. The firm should have a minimum of five (05) years of experience in the Data Center & IT consultancy & design business as a vendor-neutral firm.

iv. The firm must have documentary verifiable experience working at a minimum of two certified Data Centers facilities and assessment and design of network architecture in the last five (05) years.

v. Consultants allocated for this project, must have experience in designing and standard compliance of at least one Tier-3/ Rated-3 Compliant/ Certified Data Center in Pakistan. The Consultants must provide the documentary evidence.

vi. The firm should have an experienced team for the scope of work as described in the TOR. General areas are Certified Internal Auditor (CTIA), Certified Data Center Design Consultant, Certified Data Center Specialist (CDCS) and Certified Data Center Professional (CDCP), Certified Network Security Architecture (CCNA/ CCNP/ CCNE/ CNCDP) – equivalence acceptable, wherever applicable (CVs and specific nominations not required at REOI stage).

7. _Team Composition & Qualification Requirements for the Key Experts_

Team Composition and Qualification Requirements for the Key Experts

Sr.	Designation	Positions	Input (By Weeks)
	KEY EXPERTS		
1	**Certified Data Center Experts -Team Lead – 01)** • At least 10 years of relevant experience and should understand the planning and designing life cycle Data Center and various stages at national and international levels. • Must be capable of following the redundancy levels for Data Centre design • Must be capable of measuring Data Centre energy efficiency and coming up with innovative solutions to improve it • should be able to analyze battery banks and confirm equipment configurations to ensure they meet requirements • Certified Data Center Expert must be able to evaluate the business case and perform a technical analysis • The Certified Data Center Expert should involve deciding on an optimum site for the Data Centre depending on client present and future needs • Must also have a proper understanding of all components necessary for high availability in a Data Centre • Identify the most common design mistakes related to electrical Single Line Diagram and other documents • Conduct a technical compliance audit to ensure the design is compliant to TIA standards • Address physical factors such as floor loading capacity, cooling capacity, room size and space, and power quality conditions while finalizing the design • Solid understanding of Data Center global standard for Tier-3 compliance.	1	15
2	**Certified Network Architect Expert -Team Lead** • At least ten years of relevant experience in Network assessment and designing • Network Architect must be a professional who evaluates FBR communication networks, such as local area networks (LANs), wide area networks (WANs), and intranets. • Should have in-depth knowledge about the network's topology and network technological requirements. • Design & build the networks by taking into consideration various factors like, bandwidth	2	15

| | | requirements, infrastructure requirements and security
• understand the data communication needs and come up with the best solutions to meet the requirements
• Must cater to the needs of network modelling. The professionals should use the information on existing network traffic and estimate the growth of the network.
• The Network Architects will also focus on the effects the new equipment mat has on the network performance. Provide recommendations to make accurate upgrading to the network
• Must take into consideration all the factors that might affect the network security. | | |
|---|---|---|---|
| | **TOTAL** | **3** | |

8. _Reporting Requirements and Time Schedule for Deliverables_

The following will be the deliverables and timelines of the assignment:

i. Component 1 (Primary Legislation)

S. No	Deliverable	Timeline
i.	Inception report laying out review of the assessment of Data Center and FBR Network, any related analytical work, and structure of the team composition and detailed timelines	Two weeks from the start of contract
ii.	Current state Assessment report of FBR Data Center and network (LAN and WAN)	Five weeks from the start of contract
iii.	Requirement gathering and Analysis Report	Seven weeks from the start of contract
iv.	To-Be recommendation report for Tier-3 Data Center which includes a) Physical site selection b) Concept design, Technical Specification for Tier-3 Data Center c) HLD of FBR Data Center	Eleven weeks from the start of contract
v.	To be Recommendation report for FBR network LAN and WAN which includes HLD of FBR network LAN and WAN	Twelve weeks from the start of contract
vi.	User(s) awareness and upskilling	Thirteen weeks from the start of contract
vii.	Preparation and Evaluation of RFB	Fifteen weeks from the start of contract

Additional expenses, if any, associated with the activities shall be added in the Contract price as Reimbursable Expenditures and shall be paid as per actual.

ii.   **Weekly updates shall be shared with IT Wing, FBR**
iii. **The assignment will be conducted in continuous consultation with IT Wing, FBR**
iv.   **Final reports shall be delivered in USB, and email in addition to the specified number of hard copies.**

9. *Client's Input and Counterpart Personnel*

i.   Services, facilities and property to be made available to the Consultant by the Client: Office space with necessary amenities. Key experts of the Firm to be available during the assignment in the Camp Office established at FBR HQ as required by FBR as well as for various training and consultation sessions.
ii. The Consultant will report to IT Wing, FBR

10.   *Selection Method*

The Consulting Firm will be selected in accordance with the Consultant's Qualification Selection (CQS) method as set out in the World Bank's "Procurement Regulations for IPF Borrowers" July 2016, revised November 2017 and August 2018.