**SECTION VII: SCHEDULE OF REQUIREMENTS**

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# Introduction

## Background Information

OMO Microfinance is one of the country's pioneer and leading microfinance institutions. The organization, which was founded 25 years ago, is now active in the SNNPR, Sidama, and South- West National Regional States. For the past 25 years, the organization has been fulfilling its important national and social duty as a source of financing for individuals who are motivated but lack funds; it has done so through its 19 Districts and 233 Branches nowadays.

OMO Microfinance, as a financial institution, requires a well-developed and strong IT infrastructure, as well as management and knowledgeable people, in order to be technologically competitive and successful. With this in mind, the institute has recently been undertaking a number of technological and IT capacity-building initiatives. In this regard, Core Banking Technology and Data Center Construction projects constitute major portion of the initiative.

In recent years, the institute has begun to adopt a variety of digital technology initiatives in order to streamline, modernize, and improve service efficiency, as well as to make the institution more competitive in terms of today's digital banking technologies and growth.

The Institution’s strategic focus includes the use of technology to improve customer service while providing relevant information to guide decision-making that stimulates growth through the fulfilment of the Institution’s development mandate while facilitating improved financial performance. Hence, it will continue to assist in the advancement of the Country’s development through the provision of quality loans and the provision of saving facilities.

**Vision and Mission**

Its vision is “To see a well-developed contemporary foremost financial institution in the country

by 2035 that provides financial service for equitable number of people sustainably’’. And,

Its mission is “To contribute its part to bring about a sustainable economic development in the

country by providing digitalized efficient & effective financial services to all citizens.”

## Objective of the Request for Proposal (RFP)

OMFI is soliciting proposals from experienced and highly qualified firms to inspect, assess, finish/complete and commission a Data Center (PR & DR).

The objective of the RFP is to obtain technical and financial proposals from Vendors for the inspection, assessment, finishing/completing and Commissioning of a Primary and Recovery Data Centers that supports both the functional and technical requirements of the OMFI with respect to OMFI’s design requirements document like LLD and alike. The requirements included within this document are critical factors in evaluating the adequacy of a bidder’s proposal. All requirements must be addressed by the bidder. Further, the bidder must provide a detailed implementation plan that addresses requirements, dependencies, assumptions, costs, and timelines.

The Request for Proposal (RFP) document is not a recommendation, offer or invitation to enter into a contract, agreement or other arrangement in respect of the services. The provision of the services is subject to observance of selection process and appropriate documentation being agreed between OMO Microfinance Institution (S.C) and any successful bidder as identified after completion of the selection process as detailed under Section III - Evaluation Methodology and Criteria.

The successful Bidder shall be single point of Contact for all products and services offered as described in the Scope of Work, and will be fully responsible for overall deliveries, Project management and coordination as specified in sections below.

## Project Objective

OMFI is planning to finish/complete a started Data Center (PR and DR) project which is located at Hawassa and Wolayta Sodo respectively. The Data Center houses the Core Banking Servers, Network equipment, Surveillance systems, Storages, UPS, Power management system, Internet core equipment and Network Operation Center (NOC). The Main Data Center has started production though the project work is not completed; and the DR site is not yet active since significant portion of project work is remaining.

Considering that Data Centre infrastructure is the heartbeat of any organization, OMFI intends to setup a and complete the Data Centre infrastructure that will have a modern facility, and that measure up to best practices in the financial industry to the extent and scope of work mentioned in this RFP. It is envisioned that at the end of the investment period, the infrastructure would be projected into a state-of-the-art facility that is not only faster, but also highly available, disaster tolerant, and safe place to store and run all the critical business applications of OMFI.

The purpose of this project is, therefore, to get undertakings in inspection, finishing, commissioning and setting up a Modular Data Centre that protects financial resources, optimizes core banking productivity and resource utilization. Hence, Bidders are required to present scalable and industry-grade materials, technologies, and systems so as to help OMFI to centralize control, consolidate and simplify financial management, increase financial security, gain financial operational efficiencies, reduce both total cost of ownership (TCO) and operational costs, and speed application rollout.

## Project Scope

As stated in the above, the data center project is not completed as specified in the project contract document. Besides, the main data center entered into production with minimal load and functionality. However, the Disaster Recovery center is not active yet due to the incompleteness of some project works. Generally, in both centers, significant portion of project works are remaining.

Hence, OMFI for this purpose, invites proposals from experienced and qualified Vendors for primarily undertaking the mentioned below in respect of completing started data center project works and commissioning the project with its related service applications and materials.

The project is expected to cover remaining datacenter physical environment construction (Some modification and partial construction), supply of hardware and hardware parts for computing and network infrastructures as well as delivery of services for configuration, installation and maintaining; and commissioning. The data center project work stated in this RFP are meant for the main datacenter and the disaster recovery sites.

1. Making complete Inspection, Assessment and first-phase Commissioning:

This phase or category of activities aims to perform first-phase commission activities like assessment, testing and producing reports. This task is required mainly to identify and verify completed project works since the start of the project till the termination of the former project Vendor. The main objective is to facilitate the safe and orderly handover of the Unit, i.e., the data center turnkey project, guaranteeing its operability in terms of performance, reliability, safety and information traceability based on the LLD, HLD and alike.

1. Performing required tests and producing a test report
2. Preparing comprehensive report on the Inspection, assessment, auditing and testing activities performed in the first commissioning phase;
3. Finalizing the remaining project works and completing the project as a turnkey plant;
   1. Supply of required hardware and its parts
   2. Supply of required software products
   3. Supply of required software licenses
   4. Delivery of Installation and configuration services
4. Conducting maintenance services
5. Documentation
6. Training and Knowledge transfer
7. Commissioning (Second-phase/final) of the project
8. Post-implementation/ After sales-support/

This RFP document contains all the required basic materials, software products and services for finalizing the design and construction of data center at the head office and disaster recovery sites; and completing the project as intended in the OMFI’s requirements document. This is to mean that Supply of hardware and software are required, network design modification and installation, configuration of devices and software used in the data center and on the VPN network, performing suitable knowledge transfer and training, commissioning, testing and maintenance of the data center and the disaster recovery site.

Thus, with the completion of remaining project works and handover and commissioning of the data center project; OMFI shall experience seamlessly integration and data center operation and thereafter for uninterrupted services to OMFI’s digital banking technologies, clients and stakeholders.

# Overview of the Existing Data Center and Applications Landscape

## Introduction

OMO MICROFINANCE INSTITUTION (OMFI) with ZTEICT and its joint-venture NETEX-CAYMAN Co. Ltd started a turnkey data center project in the year 2016. The Project has so far progressed to some major phases; and with this the PR has started production though some of the project works not yet completed. Regarding the DR site, significant portion of project works are remaining and not yet started production.

Regarding the OMFI’s original requirements which is stated in the RFP document; The project aimed to design and implement a secure, reliable and highly available Main Data Center and Disaster Recovery Site. The system shall have Internet and Intranet connectivity of the Main Data Center, Disaster Recovery and the branch offices, secure data storage and file exchange with backup facility. The data centers implementation will be in accordance with TIA-942 Tier 3 – 2012 Standard.

According to OMFI’s requirements and the project design document agreed between the Client and ZTEICT, the project comprises the following works and subsystems:

The Data Center Design, Supply and Implementation Main Components and Major Tasks

* + - * Design, supply, implementation and testing of a standard primary data center
      * Design, supply, implementation and testing of standard disaster recovery site
      * Design, supply, implementation and testing of a secured network infrastructure.
      * Implementation and Testing of LAN and WAN connections
      * Design and implementation of power and cooling systems for DC, NOC and DR
      * Design and implementation of fire suppression
      * Implementation of CCTV (Video Surveillance System) system with a centralized monitoring room
      * PBX supply and installation
      * Implementation of Network Operation Center (NOC) at DC site
      * Implementation of Physical security systems
      * Integration and commissioning of all systems
      * Transfer of knowledge to the client professionals through class room and on job trainings.

## Existing Data Center Infrastructure and Application Details

* + - 1. *Existing Data Center Infrastructure Details*

The Design and implementation of the OMFI’s Data center is a combined application of esthetic: design, architecture, electric works, engineering, network and other technologies. The Main Data Center has a total area of 108m2 which is located at OMFI’s Head Office, and Disaster Recovery site has 30 m2 located at Wolayta Sodo. The data center has three sub rooms namely: the datacenter room, the Control room and the UPS room. A datacenter room adopts racks with related auxiliary devices set supporting the Data center running. The network control room is separate from the datacenter room. There is also a separate UPS room. The data center infrastructure is split into five areas: Core, WAN edge, Internet Edge, Server access and storage area infrastructure.

**Main Datacenter Components Datacenter (Server Farm)**

* + - * + The server farm area within the DC hosts / co-locate VPN, Network devices, enclosure, Web logic

servers, and various Antivirus Servers, Application Servers, DC etc....

* + - * + This area also hosts the Security components. This is/would be multilayer architecture with layers of firewall separating the Internet, web, and database/application and Intranet Areas/access.
        + Precision Air conditioner

**Network Operation Center (NOC)**

* + - * + LCD monitors with native resolution wide angle to run 24/7, 6x2 55’’.
        + Split type AC
        + Enterprise end panel Swivel chair
        + Standard assembled wood table with convenience of computer peripheral and network

**UPS /Battery/ Electrical room**

* + - * + This area houses all the Un-Interrupted Power Supply Units, Main Power Distribution Units (PDU) and Sub Distribution Units to feed the components such as PAC, UPS, lighting fixtures etc.
        + Batteries accompanying the UPS components.

Split type AC

**I. Existing Materials in the Current Data Center Infrastructure**

The list of Materials mentioned here are those materials (Equipment, Application Software and Services) existing in the present Data center Infrastructure.

**Present Data Center Infrastructure Components- PR**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Infrastructure Type** | **Description** | **Details of Components** | **Quantity** |
| 1 | Server (Blade type) | System enclosure | HP Blade System c7000 Platinum Enclosure | 3 |
| Web logic Server | HPE ProLiant BL460c Gen9 | 3 |
| Mail Server | HPE ProLiant BL460c Gen9 | 1 |
| Antivirus Server | HPE ProLiant BL460c Gen9 | 1 |
| Backup Server | HPE ProLiant BL460c Gen9 | 1 |
| Report Server | HPE ProLiant BL460c Gen9 | 1 |
| Oracle DB Server | HP ProLiant BL660c Gen8 | 2 |
| Domain Controller Server | HP ProLiant BL660c Gen8 | 2 |
| ATM/POS Server | HPE ProLiant BL460c Gen9 | 1 |
| DMS System Server | HP ProLiant BL660c Gen8 | 1 |
| HR System Server | HPE ProLiant BL460c Gen9 | 1 |
| Internet Banking Server | HPE ProLiant BL460c Gen9 | - |
| EATS Interface Server | HPE ProLiant BL460c Gen9 | 1 |
| ITIL System Server | HPE ProLiant BL460c Gen9 | 1 |
| NMS Server | HPE ProLiant BL460c Gen9 | 1 |
| Access Control Server | Cisco Secure Network Server Cisco CSACS-3595-K9 |  |
| 2 | Switch and Router | Core Switch | Cisco WS-C6513-ECore Switch | 2 |
| Fabric Switch (32 port) | Cisco MDS 9148S Multilayer Fabric Switch | 2 |
| Router | CISCO 3945/K9 Integrated Services Router | 2 |
| Router for Branches | CISCO2901/K9 | 5 |
| 3 | Storage |  | HP 3PAR StoreServ 7200 |  |
|  | MSL2024 Tape Library |  |
| 4 | Other Infrastructure Components and Rack Accessories | Datacenter Server Racks | ZTEICT Rack with Accessories 4X63A |  |
| Datacenter UTM for Internal Security | FortiGate- 1500D |  |
| Load Balancer (embedded with licensed management)  software | ZTEICT ZXDCS AD1150 |  |
| IP based CCTV Solution | (1080P, Dome, IP Network Camera) \*16; DVR for 16 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | Cameras\*1; LCD Display wall, 2x2, 60", with Control system |  |
| Access Control Door with Accessories | 2 doors controller, Fingerprinting and ID card DS- K1T96MF/CF/CRF |  |
| 5 | Power, electrical and Civil | UPS 40KVA | Kstar UPS YMK3320-40KVA |  |
| Silent 100KVA Diesel Generator for Main Datacenter | PRAMAC GSW110 DEUTZ |  |
| Precision Air Conditioner (PAC) | Kstar, 23Kw, Air-Cooled precision air conditioner |  |
| AC split-type for NOC | Hisense 24000 BTU / |  |
| Fire Detection and Control | FM- 200 Automatic Fire Suppression Systems, |  |
| Fire Suppression Systems | FM- 200 Automatic Fire Suppression Systems, |  |
| Monitoring and Control Room (NOC) Facility | NOC with false floor, celling, 10 sets， 55"LCD, |  |
| Rodent Repellent system | Ultrasonic |  |
| Water leak detection system | An audio alarm as well as an LED indicator to show that a leak has been detected. |  |
| PBX | ZTE ECS IBS1000S with eP930  Telephone\*20 |  |

**Present Data Center Infrastructure Components – DR**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Infrastructure Type** | **Description** | **Details of Components** | **Quantity** |
| 1 | Server (Blade type) | System enclosure | HPE ProLiant BL460c Gen9 enclosure | 2 |
| Web logic Server | HPE ProLiant BL460c Gen9 | 1 |
| Oracle DB Server | HP ProLiant BL660c Gen8 | 1 |
| Domain Controller Server | HP ProLiant BL660c Gen8 | 1 |
| ATM/POS Server | HPE ProLiant BL460c Gen9 | 1 |
| DMS Server | HP ProLiant BL660c Gen8 | 1 |
| HR System Server | HPE ProLiant BL460c Gen9 | 1 |
| Internet Banking Server | HPE ProLiant BL460c Gen9 | 1 |
| EATS Interface Server | HPE ProLiant BL460c Gen9 | 1 |
| 2 | Switch and Router | Core Switch | Cisco Catalyst WS-C6513-E | 1 |
| Fabric Switch (32 port) | Cisco MDS 9148S 16G  Multilayer Fabric Switch | 1 |
| Router | CISCO3945/K9 Integrated Services Router | 1 |
| 3 | Storage |  | HP 3PAR StoreServ 7200 | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| 4 | Other Infrastructure Components and Rack Accessories | Racks (for servers) | ZTEICT Rack with Accessories, 4X63A | 2 |
| Datacenter UTM for Internal Security | FortiGate-1500D | 2 |
| IP based CCTV Solution | (1080P, Dome, IP Network Camera) \* 4; DVR for 4 Cameras\*1; | 1 |
| Access Control Door and Accessories | 2 doors controller, Fingerprinting and ID card | 1 |
| 5 | Power, electrical and Civil | UPS Systems 20KVA for DR | Kstar External Battery Specifications VRLA battery cabinet | 1 |
| Silent 70KVA Diesel Generator for Disaster Recovery | Pramac, GSW80Deutz | 1 |
| 20KW Precision Air Conditioner (PAC) | KSTAR 20kW PAC | 1 |
| Fire Detection and control system | FM 200 Automatic Fire Suppression Systems, | 1 |
| Fire Suppression Systems | FM 200 Automatic Fire Suppression Systems, | 1 |
| Rodent Repellent | Ultrasonic | 1 |
| Water Leak Detection | An audio alarm as well as an LED indicator to show that a leak has been detected | 1 |

* + - 1. *Current Business Application Landscape*

The below CBS application is partially operational at the Institution.

|  |  |
| --- | --- |
| **Application Name** | **ORBIT-R** |
| **Vendor** | **Neptune** |
| **Platform** | **Linux** |
| **Database** | **Oracle 12C** |
| **Middleware** | **WebLogic version 9.22** |
| **No. of Online Branches as on Date** | **92** |

# Current Scope of Work

## Introduction

The prospective Bidders must understand all the required products and services for finishing/finalizing and commissioning the data center project work at OMFI.

Generally, Bidders must bear in mind that the works stated in this RFP are of three (3) phases’ tasks. The first phase includes like inspecting, assessing and auditing the project work done so far by the former Vendor and producing comprehensive detailed report on the stated topics and alike. And, the second phase includes all the undertakings required for finalizing the remaining required project works. Finally, the third phase is about commissioning the project and delivering post- implementation support services.

## Summary of Key Implementation Activities

All the required tasks for finalizing and completing the data center are categorized in 3 phases, Below, are described the detailed scope of work to be carried out under these phases.

The scope of services for finalizing, completing and Commissioning the Data Centre project works is described in the subsequent section

The prospective bidder i.e., the selected Vendor shall inspect, assess, audit, finish started works, and commission, the DC including successful completion of Final Acceptance Test (FAT). The minimum specified work to be undertaken by the Vendor for setting up and operating and maintaining DC at both centers has been categorized as under:

**Phase 1: Inspection, Assessment, Auditing, and Delivery of Comprehensive Report on the Existing Data Center**

Note this task is the first task the Bidder is expected to accomplish. This phase or category of activities aims to perform first-phase commission activities like assessment, testing and producing reports.

This task is required mainly to identify and verify completed project works since the start of the project till the termination of the former project Vendor. The main objective is to facilitate the safe and orderly handover of the Unit, i.e., the data center turnkey project, guaranteeing its operability in terms of performance, reliability, safety and information traceability based on the LLD, HLD and alike.

**Phase 2: Finalizing Remaining Required Project Works**

This phase includes all the activities required to finalize remaining project works and completing the project. In this phase, tasks will be like:

* + - * Supply of required hardware and software,
      * Configurations,
      * Customizations and modifications,
      * Maintenance services including both hardware and system
      * Integration
      * Optimization of basic and critical data center components, and alike

**Phase 3: Commissioning of the Project and Post-implementation Support Services**

This phase includes activities required to fully commission the data center project. Tasks like:

* + - * Infrastructure testing,
      * System documentation,
      * Training and knowledge transfer
      * Post-implementation support services will be done in this phase.

**1. Inspection, Assessment, Auditing, and Delivery of Comprehensive Report on the Existing Data Center: Phase 1**

**1.1 Overview**

In order to perform remaining project activities and complete the data center properly, former project works in the data center and its subsystems – power, cooling, fire suppression, security, storage, software and alike must be reviewed and tested first. This is basically to ensure the design and the construction of the data center as a holistic system, and assure highest level of reliability. So, OMFI requires Bidder to perform such activities and lay foundation for accomplishing remaining tasks, for smooth handover and operation of later enhancement activities.

This process which must be executed first by the Bidder aims to assure that all systems and components of the data center are installed, tested, and operated according to the operational requirements of the owner, i.e., The Owner’s Project Requirements (OPR).

* 1. **Required Services**

Below are the major required services to be undertaken by the Bidder under the above category: The scope of work of the selected party under this category must undertake the following:

* + 1. Review project documents (LLD, HLD, and alike)
    2. Prepare a plan for commissioning activities (first phase task)
    3. Undertake complete inspection of the data center and sub systems (Power, Cooling, Fire Suppression, IT Infrastructure, Software), etc., installed at the OMFI’s PR and DR sites
    4. Make complete audit on the data center and its sub systems with respect to the project design documents
    5. Conduct required tests and produce a test report:
       1. Hardware Test
       2. Functional Performance Testing (SAT)
       3. Integrated System Testing (IST)
       4. Security Test
       5. Performance Test
    6. Review existing Hardware Warranty and License information for all the data center sub systems
    7. Make assessment how the entire IT infrastructure, data center can be made robust, secure, and scalable over a period to future technological development.
    8. Evaluate the project and measure the level of success, so far
    9. Upon successful completion of the above tasks, the Bidder is required to prepare comprehensive reports

1. **Finalizing Remaining Required Project Works: Phase 2**

Tasks required for finalizing remaining works and completing the data center like supply of hardware and software, installation, configuration, customization/modification will be carried out in this phase.

The objective of this section is to work out the outstanding task in the project on the basis of the document which are used as reference for actual implementation. Those documents, they are like LLD, HLD and alike we refer has been used as guideline during project execution and discusses the most detail of every single technology, devices and related techniques. And, here as a result the undelivered devices, software, licenses and services during the project implementation both at main data center and disaster recovery data center are identified. Refer to the BOM for the required materials, software products and licenses for the detail.

* 1. Finalize the remaining works of both primary DC and DR site and make both sites to seamlessly perform the desired functions. This might include:
     + Supply the required hardware and its parts
     + Supply the required software products
       - Supply the required software licenses
       - Undertaking configuration services
       - Undertaking installation works
  2. Provide capacity building for Internal IT staff (both class room based and hands-on trainings) on the selected topics. The list of the courses will be provided in the subsequent section 6.3.
  3. Support internal IT staff in conducting provisional acceptance test and final acceptance test of the final project.

**2.1 Requirements for Services**

Here, all the required services like supply of products, installation, configuration, and physical work are described in the following table. Bidders are required to propose all the necessary accessories for the main required installations and configurations. The services detailed below include works for both centers.

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Services and Configurations (Not Completed)** | **Description** | **Remark** |
| 1 | Network connectivity service and Security devices configuration | * load sharing enablement between   the two components (Active-Active configuration).   * Secure Shell (SSH) Protocol and   Simple Network Management Protocol security by encrypting administrator traffic during Telnet and SNMP sessions   * IPsec VPN connection * IPsec High Availability connection * GRE Tunneling over IPsec connection * Implementing AAA to scale access   control device security,   * Network security configuration | Both at PR & DR |
| 2 | PBX Service | Configurations required to make PBX active | At PR |
| 3 | Network Management and Monitoring service (NMS) | Supply, installation and configurations of PRTG Network Monitor solutions and Grafana Enterprise solution or similar | At PR |
| 4 | ITIL based management System service | Reinstall and configure **HP ITSM (ITIL) Software:** Like  - HP Service Manager Help Desk module, | At PR |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | * Incident Management, * HP Service Manager, * Change Management module |  | | |
| 5 | HP Data Protector | License (unlimited or maximum supported) supply and installation like   * Installing Cell Manager * Install Data Protector * Installing clients * Configuring backup devices * Formatting media * Backing up system (create different   backup policies and perform scheduled backups)   * Restoring from a backup |  | Both at PR & DR |  |
|  | | |
| 6 | Storage Management Software - HP 3PAR 7200C SAN Array Storage | License Supply (unlimited or maximum supported) and configuration for HP 3PAR 7200C SAN Array Storage | At DR | | |
| 7 | HP StoreEver MSL2024 LTO Ultrium 6 Tape Libraries | Configuration and setup for   * keep active data on host arrays   while inactive or  compliance data is automatically moved to tape   * The proposed backup solution   should allow creating tape clone facility after the backup process. | At PR | | |
| 7 | AD | Configure Replication AD Primary to Additional Domain controller | At DR | | |
| 8 | Data Center Infrastructure Management System (DCIM) Solution | * Supply, installation and configurations; * Integration with existing DC   components |  | Both at PR & DR |  |
|  | | |
| 9 | Access Control Security Service | Access Control Service   * The Secure Access Control Server (CS   ACS) integrated to Microsoft active directory provides the central management of the RADIUS and TACACS+ systems configured on each network device throughout the architecture.   * Access control relying on privilege   levels, queries the management server to determine whether this user or group is authorized to issue a command at this privilege level.   * Implementing AAA to scale access   control |  | Both at PR & DR |  |
|  | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 10 | DR Replication and Synchronization service | * Layer 2 (L2) VPN configuration able to replicate and synchronize with PR site to DR site. * All the state-of-art Replication services and configurations | Both at PR & DR |
| 11 | Information Security Management System Solutions | * Metasploit Pro * Nexpose Enterprise * Installation and configuration * Prepare a basic operational guide for   exploits and penetration tests   * Verify the security implementations   using standard penetration testing software (Metasploit configuration and testing). | At PR |
| 12 | SUSE Enterprise Linux 15 | License supply and installation | Both at PR & DR |
| 13 | Access Control door System | Supply, installation and configuration | At DR |
| 14 | Enclosure and Flex Fabric | Configurations | At DR |
| 15 | Rodent Repellent System | Supply, installation and configuration | Both at PR & DR |
| 16 | Fire Suppression System | Modification and Maintenance | Both at PR & DR |
| 17 | Water Leak Detection System | Supply, installation and configuration | Both at PR & DR |
| 18 | AVR, STS | Supply, installation and configuration | Both at PR & DR |
| 19 | Generator | Supply, installation and configuration | At PR |
| 20 | Change Over Switch | Supply, installation and configuration | At PR |
| 21 | CCTV Solution | Supply, installation and configuration | At DR |
| 22 | Maintenance Services –   * Fixing malfunctions,   modifications, and   * preventive maintenance | Power system | Both at PR & DR |
| Cooling and Precision AC | Both at PR & DR |
| CCTV based Video Surveillance | at PR |
| Access Control | Both at PR & DR |
| 23 | Maintenance Services –   * Repairing, * replacing, and * fixing services | Repairing/Replacing:   * Enclosure power module, * Enclosure display * UPS display screen * KVM display | At DR |

**3. Commissioning Data Center and Post-implementation Support Services: Phase 3**

**3.1 Required Services and Deliverables**

Below are the major required services to be undertaken by the Bidder under Phase 3:

The scope of work of the selected party under this category must undertake the following: Specifically, the following activities are expected from the bidder to be considered:

1. Prepare a plan for commissioning activities
2. Undertake complete inspection of the data center and sub systems (Power, Cooling, Fire

Suppression, IT Infrastructure), etc., installed at the OMFI’s PR and DR sites

1. Make complete audit on the data center and its sub systems with respect to the project design document
2. Conduct required tests and produce test report:
   1. Hardware Test
   2. Functional Performance Testing (SAT)
   3. Integrated System Testing (IST)
   4. Security Test
   5. Performance Test
3. Ensure critical infrastructure (Power system, cooling system, and IT infrastructure) operability and system operation verification,
4. Ensure data center safety and compliance
5. Perform security audit of all the data center sub systems
6. User requirements Document for newly introduced processes, if any.
7. Providing trainings on selected topics
8. Make assessment, identify gaps; and make recommendations for data center enhancement and optimization
9. Commissioning Activities Report, i.e., Upon successful completion of the above tasks
10. Enhancement Recommendations Report
11. Perform Project acceptance and Handover
12. Commissioning and formal handover the project by preparing ‘As-Is’ document
13. Post-implementation support services

## 6.3.3 Expected Deliverables

The following are the list of deliverables expected from the selected vendor:

1. Comprehensive inspection report
2. Complete assessment report
3. Final commissioning report
4. PAT and FAT test cases
5. PAT and FAT test report
6. Monthly and weekly progress reports
7. Manuals and operating procedures
   1. Installations and Configurations manuals
   2. Standard Operating Procedures (SOPs)
   3. Technical Architecture Manual (TAM)
   4. Technical Operational Manual (TOM)
   5. Low level and high-level Network diagrams for DC & DR.

# Training Requirements

## Introduction

In order to protect the investment and administer the data center facilities and all the related IT infrastructures, professional and high-quality industry-grade trainings are required for Technical Managers, Planning and Optimization Engineers, O&M Engineers, Network Supervision Engineers, etc. Such kind of trainings will be helpful for these senior managers or engineers to master the whole data center and IT infrastructure components and conversant to all the operation of related Equipment.

At this level, the training course includes theoretical and practical parts, in which practical part will make up of at least 50 percent of the whole curriculum.

After the training, the students will have thorough knowledge of equipment structure, equipment installation, network debugging, data creation, and troubleshooting.

## Training Instructors

A team of skilled, innovative, motivated and professional training instructors are required for competent training. All trainers must have comprehensive and related professional knowledge as well as practical experience and Industry certifications in the respective courses and trainings.

## Training Methods

These methods are covered by using latest techniques that include:

1. Lecture
2. Hands-on practice on equipment
3. Computer-based training
4. Troubleshooting via simulations
5. Multimedia Training

## Training Documentation

The Bidder is required to provide English training documentations to trainees. All the essential training materials in hard copy and soft copy forms both for Industry-grade courses and custom- made trainings/courses are required to be delivered.

## Certificates and Exam Vouchers

Certifications of course completion are necessary for the industry-level courses listed in the following table. The table also lists the exam vouchers that are necessary for certain courses.

## Training Programs and Course List

**Table: Training Course Description**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Training Program** | **Courses** | **Key Knowledge** | **Delivery Method** | **Participants** | **Duration** | **Remark** |
| 1 | IT Infrastructure | Custom-made course for OMFI’s IT Infrastructure | * Network infrastructure   Switching & Routing.   * Infrastructure security including, MPLS, VPN * Network design, * Network Security, UTM firewall configuration, VPN, IPSEC, IPS, SSL, * Operation, maintenance   and troubleshooting | Class room & Hands-on | 15 | 5 | NOTE: The Bidder is required to prepare a training program/course based on deployed technologies and DC facilities at OMFI. |
| Custom-made course for Administration and Maintenance of OMFI’s DC & IT Infrastructure | Administration and Maintenance Training for OMFI’s DC and IT Infrastructure   * DC Infrastructure,   Installation, configuration   * Management of UPS,   AC, CCTV, Fire  extinguisher   * Planning Maintenance   for Complex Networks | Class room & Hands-on | 15 | 5 | NOTE: The Bidder is required to prepare a training program/course for Administration and Maintenance of |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | * Selecting Maintenance   and Troubleshooting Tools and Applications   * Planning   Troubleshooting Processes   * Maintaining and   Troubleshooting OMFI’s DC and IT Infrastructure facilities   * Maintaining and   Troubleshooting Network Security Solutions, and alike |  |  |  | OMFI’s DC & IT  Infrastructure |
| Virtualization – VMWare Data Center Virtualization | * Introduction * Designing * Installing * Managing VMWare vSphere for a DC environment |  | 15 | 5 | Industry Course |
| 2 | Data Center | Data Center Infrastructure Specialist (DCIS) | * Advanced data center   engineering and design principles   * Availability engineering * Sizing data center capacity | Class room & Hands-on | 6 | 5 | Industry Course NOTE: This course shall be integrated with OMFI’s deployed DC facilities |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | * Calculating data center   load for power/cooling   * Safety, security, telecom, and cabling * Optimize facility and IT   systems   * The latest data center engineering and design best experiences |  |  |  |  |
| 3 | Security | CompTIA Security+ |  |  | 15 | 5 | Industry Course |
| Certified Information Systems Security Professional |  |  | 10 | 5 | Industry Course – Exam voucher required 5 |
| 4 | ITSM | * ITIL v4 Foundation * ITIL Managing Professional (MP) |  |  | 15 | 10 (5 + 5) | Industry Course |
| 5 | Project Management | PRINCE2 Foundation & PRINCE2 Practitioner Combined 6th Edition |  |  | 15 | 10 | Industry Course –  PRINCE2  Foundation Exam voucher required 5 |

# Project Management

## Project Delivery Period

The institution is currently waiting for the DC infrastructure to get ready for the implementation of Core Banking System. Thus, vendors are advised to come up with at most two months project period to deliver the services. Bidders are required to provide their most feasible project plan at most high task breakdown clarity that could show: supply of goods and installation services and overall total period of project completion.

## Project Management Plan

The bidder is expected to clearly articulate the project management plan and the plan must show the responsibility matrix of all stake holders.

## Team Composition

The bidder is expected to give details of its project team composition like project manager, infrastructure team, training team, civil and electrical team including qualification, years of experience and certification.

## Project Implementation Plan

This project being a turnkey, bidders are expected to provide detailed and realistic project implementation plan including Supply, Design and commissioning.

## Material Delivery and Completion Schedule

Bidders are expected to fill the below delivery schedule and warranty table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Item Description** | **Qty** | **Delivery Schedule (Days)** | **Warranty Period (Months)** |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| 6 |  |  |  |  |

# Acceptance Testing

* OMFI will carry out the acceptance tests as per Scope of work supplied & implemented by the selected bidder as a part of the Project.
* The Vendor shall assist OMFI in all acceptance tests to be carried out by OMFI. The

provisioned items will be deemed accepted only on successful acceptance of those products and the vendor would need to provision insurance of those items till successful acceptance.

* The Vendor shall arrange for the tests at the relevant sites in the presence of the officials

of OMFI.

* The Vendor should ensure that the tests will involve trouble-free operation of the complete system apart from physical verification and testing and that there shall not be any additional charges payable by OMFI for carrying out this acceptance test.

# Bill of Materials (BOM)

|  |  |  |  |
| --- | --- | --- | --- |
| No | Component | Measurement | Quantity |
| 1 | HP Blade System c7000 Platinum Enclosure Onboard Administrator | Pcs | 5 |
| 2 | Fixed Camera | pcs | 13 |
| 3 | Network Camera video Recorder (NVR) | pcs | 1 |
| 4 | CCTV Solution | service | Lump sum |
| 5 | Dome Camera | pcs | 2 |
| 6 | Data Center Infrastructure Management System | Supply & installation | Lump sum |
| 7 | Rodent repellent | pcs | 12 |
| 8 | Access Control Door and Accessories solution | Supply & installation | Lump sum |
| 9 | Water leak detection service | Supply & installation | Lump sum |
| 10 | 20KVA UPS Power Module | pcs | 3 |
| 11 | Automatic voltage Regulator (AVR) | pcs | 2 |
| 12 | Silent Diesel Generator | pcs | 1 |
| 13 | STS (Dual Power Static Transfer Switch) 32A 230V | pcs | 6 |
| 14 | NOC room Workstation | pcs | 8 |
| 15 | Network Monitoring System (NMS) | Supply & installation | Lump sum |
| 16 | SUSE Linux 15 EL Server | Pcs |  |
| 17 | Generator battery 12V for pramac GSW80D | Pcs | 1 |
| 18 | Generator change over switch | pcs | 1 |
| 19 | Windows Server 2019 or latest standard edition licenses | pcs | 4 |
| 20 | Windows Server 2019 or latest datacenter edition licenses | Pcs | 2 |
| 21 | Penetration testing software (Metaspliot pro and Nexpos) | pcs | 1 |
| 22 | HP Data Protector-Unlimited licenses or maximum supported licenses | pcs | 2 |
| 23 | HP StoreEver MSL2024 LTO Ultrium Tape Libraries configuration and services | Service | Lump sum |

|  |  |  |  |
| --- | --- | --- | --- |
| 23 | HP 3par 7200c SAN Array storage unlimited licenses or maximum supported license | pcs | 1 |
| 24 | IPPBX service | Service | Lump sum |
| 25 | Network connectivity service and configuration | Service | Lump sum |
| 26 | Fire Suppression System | Service | Lump sum |
| 27 | Maintenance Services – Fixing malfunctions, modifications, and preventive maintenance | Service | Lump sum |
| 28 | Maintenance Services – Repairing, replacing, and fixing services | Service | Lump sum |
| 29 | After sales service | Service | Lump sum |
| 30 | Knowledge transfer service | Service | Lump sum |

# Technical Specifications

**Table 1. Onboard Administrator (OA) Module**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| 1 | * Compatible with HP Blade System   c7000 Platinum Enclosure |  |  |
| 2 | * Robust, multiple enclosure setup   and control.   * Reports asset and inventory   information for the devices in the enclosure.   * Reports thermal and power   information, including real-time actual power usage per server and per  enclosure.   * Front-mounted Insight Display for   easy management within the datacenter.   * Integrated access to all server blade   iLOs from a single cable.   * Provides integrated access to   interconnect bay device management ports from the single BladeSystem Onboard Administrator cable.   * Single sign-on capability for all   devices in the enclosure   * Role-based security locally and/or   with LDAP directory services.   * Provides a wizard-based initial   setup process for easy configuration. |  |  |
| 3 | * 1\*2400W power supply module   Compatible with HP Blade System c7000 Platinum Enclosure |  |  |

**Table 2. Fixed Camera**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fixed Bullet Network Camera Specification** | | | | | |
| **No** | **General** | **Feature** | **Omfi requirement** | **Bidder`s Offer** | **Compliance** |
| 1 | Camera | Image Sensor | 1/2.8" Progressive Scan CMOS |  |  |
| Min. Illumination | Color: 0.005 Lux @ (F1.2, AGC ON), 0 Lux with IR Color: 0.009 Lux @ (F1.6, AGC ON), 0 Lux with IR |  |  |
| Shutter Speed | 1/3 s to 1/100,000 s |  |  |
| Slow Shutter | Yes |  |  |
| Focal length | 2.8/4/6/8/12 mm |  |  |
| Focus | Fixed |  |  |
| Lens | 2.8 mm, horizontal field of view: 108° 4 mm, horizontal field of view: 86.4° 6 mm, horizontal field of view: 52°  8 mm, horizontal field of view: 41° 12 mm, horizontal field of view: 25° |  |  |
| Lens Mount | M12 |  |  |
| Iris | F1.6 |  |  |
| Day &Night | IR cut filter |  |  |
| DNR | 3D DNR |  |  |
| Wide Dynamic Range | 120dB |  |  |
| 3-Axis Adjustment (bracket) | Pan: 0° to 360°, tilt: 0° to 90°, rotate: 0° to 360° |  |  |
| 2 | ***Compressio n Standard*** | Video Compression | Main stream: H.265/H.264  Sub-stream: H.265/H.264/MJPEG Third stream: H.265/H.264 |  |  |
| H.264 Type | Main Profile/High Profile |  |  |
| H.264+ | Main stream supports |  |  |
| H.265 Type | Main Profile |  |  |
| H.265+ | Main stream supports |  |  |
| Video Bit Rate | 32 Kbps to 16 Mbps |  |  |
| 3 | ***Image*** | Max. Resolution | 1920 × 1080 |  |  |
| Main Stream | 50Hz: 25fps (1920 × 1080, 1280 × 960, 1280×720)  60Hz: 30fps (1920 × 1080, 1280 × 960, 1280×720) |  |  |
| Sub-Stream | 50Hz: 25fps (640 × 480, 640 × 360, 320 × 240)  60Hz: 30fps (640 × 480, 640 × 360, 320 × 240) |  |  |
| Third Stream | 50Hz: 25fps (1920 × 1080, 1280×720, 640 × 360, 352  × 288)  60Hz: 30fps (1920 × 1080, 1280×720, 640 × 360, 352  × 240) |  |  |
| Image Enhancement | BLC/3D DNR/HLC |  |  |
| Image Setting | Rotate mode, saturation, brightness, contrast, sharpness, AGC, and white balance adjustable by client software or web browser |  |  |
| ROI (Region of Interest) | Support 1 fixed region for main stream and sub- stream separately |  |  |
| Day/Night Switch | Day/Night/Auto/Schedule |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| 4 | ***Network*** | Network Storage | Support microSD/SDHC/SDXC card (128G) local storage, NAS (NFS,SMB/CIFS), ANR |  |  |
| Protocols | TCP/IP, UDP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, PPPoE, NTP, UPnP,  SMTP, SNMP, IGMP, 802.1X, QoS, IPv6, UDP,  Bonjour, SSL/TLS |  |  |
| General Function | Anti-flicker, three streams, heartbeat, mirror, privacy masks, password reset via e-mail, pixel counter, HTTP listening |  |  |
| API | ONVIF (PROFILE S, PROFILE G, PROFILE T), ISAPI, SDK |  |  |
| Security | Password protection, complicated password, HTTPS encryption, 802.1X authentication (EAP-TLS  1.2, EAP-LEAP, EAP-MD5), watermark, IP address filter, basic and digest authentication for HTTP/HTTPS, WSSE and digest authentication for ONVIF, TLS1.2 |  |  |
| Simultaneous Live View | Up to 6 channels |  |  |
| User/Host | Up to 32 users  3 levels: Administrator, Operator and User |  |  |
| Client | iVMS-4200, Hik-Connect, Hik-Central |  |  |
| Web Browser | Plug-in required live view: IE8+  Plug-in free live view: Chrome 57.0+, Firefox 52.0+, Safari 11+  Local Service: Chrome 41.0+, Firefox 30.0+ |  |  |
| 5 | ***Interface*** | Communication Interface | 1 RJ45 10M/100M self-adaptive Ethernet port |  |  |
| On-board Storage | Built-in microSD/SDHC/SDXC slot, up to 128 GB |  |  |
| Reset Button | Yes |  |  |
| 6 | ***Smart Feature-set*** | Smart Event | Line crossing detection, intrusion detection, unattended baggage detection, object removal detection, face detection, scene change detection |  |  |
| Basic Event | Motion detection, video tampering alarm, exception (network disconnected, IP address conflict,  illegal login, HDD full, HDD error) |  |  |
| Linkage Method | Trigger recording: memory card, network storage, pre-record and post-record  Trigger captured pictures uploading: FTP, HTTP, NAS, Email  Trigger notification: HTTP, ISAPI, Email |  |  |
| 7 | ***General*** | Operating Conditions | -30 °C to +60 °C (-22 °F to +140 °F), Humidity 95% or less (non-condensing) |  |  |
| Web Client Language | English, |  |  |
| Power | 12 VDC ± 25%, 5 W  PoE(802.3af, 36 V to 57V, class 3), 6.5 W |  |  |
| IR Range | Up to 30 m |  |  |
| Protection Level | IP67 |  |  |
| Material | Metal |  |  |
| Dimensions | Camera: Φ70 × 155.03 mm (Φ2.76″ × 6.1″) Package: 216 × 121 × 118 mm (8.5″ × 4.76″ × 4.65″) |  |  |
| **Brand and Model** | Hikvision DS-2CD2022WD-I 2MP WDR Mini Bullet Network Camera |  |  |

**Table 3. Network Camera video Recorder (NVR)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Feature** | **Omfi requirement** | | **Bidder's offer** | **Compliance** |
| 1 | Video/Audio input | IP video input | 16-ch |  |  |
| Two-way audio input | 1-ch, RCA (2.0 Vp-p, 1KΩ) |  |  |
| 2 | Network | Incoming bandwidth | 160Mbps |  |  |
| Outgoing bandwidth | 80Mbps |  |  |
| Remote connection | 128 |  |  |
| 3 | Video/Audio output | Recording resolution | 6MP/5MP/3MP/1080P/UXGA  /720P/VGA/4CIF/DCIF/2CIF  /CIF/QCIF |  |  |
| Frame rate | Main stream: 50 fps (P) / 60 fps (N) |  |  |
| HDMI/VGA  output | Sub-stream: 50 fps (P) / 60 fps (N) |  |  |
| 4 | Decoding | Live view / Playback resolution | 1-ch, resolution: 1920 × 1080  /60Hz, 1600 × 1200 /60Hz,  1280 × 1024 /60Hz, 1280 ×  720 /60Hz, 1024 × 768 /60Hz |  |  |
| Capability | 16-ch@4CIF, 12-ch@720P, 6-  ch@1080P |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 5 | Hard disk | SATA | 4 SATA interfaces for 2 HDDs  + 1 DVD-R/W (default), or 4HDDs |  |  |
| eSATA  (Optional) | 1 eSATA interface |  |  |
| Capacity | Up to 6TB capacity for each HDD |  |  |
| 6 | External interface | Network interface | 1 RJ-45 10 /100 /1000 Mbps  self-adaptive Ethernet interface |  |  |
| Serial interface | RS-232 and RS-485 |  |  |
| USB interface | 2 × USB 2.0 + 1 × USB 3.0 |  |  |
| Alarm in / out | 16 / 4 (optionally can be expanded to 16 / 8) |  |  |
| 7 | PoE | Interface | 16 independent 100 Mbps PoE network interfaces |  |  |
| Max. Power | 200W |  |  |
| Supported standard | AF and AT |  |  |
| 8 | Others | Power supply | 100 ~ 240 VAC |  |  |
| Consumption (without hard disk, DVD-R/W or PoE) | ≤ 20 W |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Working temperature | 10 % ~ 90 % |  |  |
| Working humidity | 10 % ~ 90 % |  |  |
| Chassis | 19-inch rack-mounted 1.5U chassis |  |  |
| Dimensions (W  × D × H) | 445 × 390 ×70 mm ( 17.5"×  15.3" × 2.8") |  |  |
| Weight (without hard disk or DVD- R/W) | ≤ 4 kg (8.82 lb) |  |  |
| 9 | Brand and Model | Hikvision Model:DS-7716NI-E4 Series NVR | |  |  |

**Table 4. Dome Camera**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Feature** | | **Omfi required** | **Bidder's offer** | **Compliance** |
| 1 | Image Sensor | | 1/2.8’’ Progressive Scan CMOS |  |  |
| 2 | Min. Illuminatio n | | F1.6, AGC On: Color: 0.05 lux, B/W : 0.01lux, 0 lux with IR |  |  |
| 3 | Max. Image Resolution | | 1920 x 1080 |  |  |
| 4 | Focal Length | | 4.3-94.0mm, 20x |  |  |
| 5 | Digital Zoom | | 16X |  |  |
| 6 | Zoom Speed | | Approx.3s(Optical Wide~Tele) |  |  |
| 7 | Angle of View | | 61.4-2.9 degree (Wide~Tele) |  |  |
| 8 | Min. Working Distance | | 10~1,000mm(Wide~Tele) |  |  |
| 9 | Aperture Range | | F1.6-F3.5 |  |  |
| 10 | Focus Mode | | Auto / Semiautomatic / Manual |  |  |
| 11 | DWDR | | Support |  |  |
| 12 | Shutter Time | | 1-1/10,000s |  |  |
| 13 | AGC | | Auto / Manual |  |  |
| 14 | White Balance | | Auto / Manual  /ATW/Indoor/Outdoor/Daylight lamp/Sodium lamp |  |  |
| 15 | Day & Night | | IR Cut Filter |  |  |
| 16 | Privacy Mask | | 8 privacy masks programmable |  |  |
| 17 | Enhanceme nt | | 3D DNR, Defog, HLC/BLC |  |  |
| Pan and Tilt | | | | | |
| 18 | Range | Pan:360° endless; Tilt: -15°~90°(Auto Flip) | |  |  |
| 19 | Speed | Pan Manual Speed: 0.1°~160°/s, Pan Preset Speed: 240°/s Tilt Manual Speed: 0.1°~120°/s, Tilt Preset Speed: 200°/s | |  |  |
| 20 | Number of Preset | 300 | |  |  |
| 21 | Patrol | 8 patrols, up to 32 presets per patrol | |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 22 | | Park Action | Preset / Patrol / Pattern / Pan scan / Tilt scan / Random scan / Frame scan / Panorama scan | |  |  |
| 23 | | Schedule d Task |  | |  |  |
| Features | | | | | | |
| 24 | | Detection | Intrusion detection, Line crossing detection, Audio exception detection, Motion detection | |  |  |
| 25 | | ROI  encoding | Support | |  |  |
| Infrared | | | | | | |
| 26 | | IR  Distance | Up to 150m | |  |  |
| 27 | | IR  Intensity | Automatically adjusted, depending on the zoom ratio | |  |  |
| Alarm | | | | | | |
| 28 | | Alarm I/O | 2/1 | |  |  |
| 29 | | Alarm Trigger | Tampering alarm, Network disconnect, IP address conflict, Storage exception | |  |  |
| 30 | | Alarm Action | Preset, Patrol, Pattern, Recording, Relay output, Upload center, Upload FTP, Email linkage | |  |  |
| Input/Output | | | | | | |
| 31 | | Audio Input | 1 Mic in/Line in interface, line input: 2- 2.4V[p-p]; output impedance: 1KΩ, ±10% | |  |  |
| 32 | | Audio Output | 1 Audio output interface, line level,  impedance: 600Ω | |  |  |
| Network | | | | | | |
| 33 | Ethernet | | | 10Base-T / 100Base-TX, RJ45 connector |  |  |
| 34 | Stream | | | Support three streams |  |  |
| 35 | Main Stream | | | 50Hz:25fps (1920×1080,1280×960,1280×720), 50fps  (1280×960,1280×720) ; 60Hz:  30fps(1920×1080,1280×960,1280×720),  60fps (1280×960,1280×720) |  |  |
| 36 | Sub Stream | | | 50Hz:25fps(704×576,640×480,352×288);6  0Hz:30fps(704×480,640×480,352×240) |  |  |
| 37 | Three Stream | | | 50Hz:25fps (1920×1080,1280×960,1280×720,704×57  6,640×480,352×288);  60Hz:  30fps(1920×1080,1280×960,1280×720,70  4×480,640×480,352×240) |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 38 | Image Compression | H.264/MJPEG | |  |  |
| 39 | Audio Compression | G.711ulaw/G.711alaw/G.726/MP2L2/G.7 22 | |  |  |
| 40 | Protocols | IPv4/IPv6, HTTP, HTTPS, 802.1X, QoS, FTP, SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTP,  TCP, UDP, IGMP, ICMP, DHCP, PPPoE | |  |  |
| 41 | Simultaneou s Live View | Up to 20 users | |  |  |
| 42 | Mini SD Memory Card | Support up to 128GB Micro SD/SDHC/SDXC card. Support Edge recording | |  |  |
| 43 | User/Host Level | Up to 32 users,3 Levels: Administrator, Operator and User | |  |  |
| 44 | Security Measures | User authentication (ID and PW); Host authentication (MAC address); IP address filtering | |  |  |
| System Integration | | | | | |
| 45 | Application programming | | Open-ended API, support ONVIF, PSIA and CG , Support cloud P2P |  |  |
| 46 | Web Browser | | IE 7+, Chrome 18 +, Firefox 5.0 +, Safari  5.02 + |  |  |
| 47 | Power | | High-PoE&24 VAC, Max.40W |  |  |
| 48 | Working Temperature | | 30°C ~ 65°C (-22°F ~ 149°F) |  |  |
| 49 | Humidity | | 90% or less |  |  |
| 50 | Protection Level | | IP66, TVS 4,000V lightning protection, surge protection and voltage transient protection |  |  |
| 51 | Certification | | FCC, CE, UL, RoHS, IEC/EN 61000, IEC/EN 55022, IEC/EN 55024, IEC  /EN60950-1 |  |  |
| 52 | Dimensions | | Φ220×353.4mm (Φ8.66”×13.91”) |  |  |
| 53 | Weight (approx.) | | 4.5kg(9.92Ibs) |  |  |
| 54 | Mount Option | | Long-arm wall mount: DS-1602ZJ; Corner mount: DS-1602ZJ-corner; Pole Mount: DS-1602ZJ-pole; Power box mount:DS-1602ZJ-box; Swan-neck mount: DS-1619ZJ |  |  |
| 55 | Brand | | Hikvision |  |  |
| 56 | Model | | DS-2DE7220IW-AE series 2MP Network IR PTZ Dome Camera |  |  |

**Table 5. Data Center Infrastructure Management System**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| **1** | * system gives data center operators critical   insights on power management, environment management, and real time monitoring of the Data center   * Real-time monitoring of all equipment   operating parameters, environmental temperature and humidity, fire alarm, water leakage, & smoke sensing. |  |  |
| **2** | * Monitoring system compatible with: the   available Kstar UPS (YKM3320), Kstar precision AC (ST020DAACAOBT 20.5kW Precision Air Conditioner), pramac generator (GSW110D), ATS and Data center environment sensors. |  |  |
| **3** | * **Auto-generated statements drive**   **efficiency** |  |  |
| 4 | * Standard 19-inch rack-mounted   installation   * 1Uheight, ultra-lower power consumption * RAM 8G, 120GB solid-state drive * web-based client-server architecture, no need to install other client software * 3D map interactive charts and graphs * Automatic generation of the facility and environmental performance reports * Support browsing on mobile phone or PC * Various alarm types, including audio and light, phone and voice, SMS, email, etc. |  |  |
| 5 | 3 years warranty |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 6 | Brand and Model should be specified |  |  |

**Table 6.Rodent repellent**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Feature** | | **Bidder's offer** | **Compliance** |
| 1 | Type | Ultrasonic |  |  |
| **2** | Power Supply | 220V AC Mains Outlet & Battery Operated For DC 12 Volts) |  |  |
| configuration | One Master Controller with Multiple transducers |  |  |
| Each extra Transducer shall cover | 300 Sq.ft (150 Sq. ft. in false ceilings/underfloor) |  |  |
| Power Output | 800 mW per Transducer |  |  |
| Power Consumption | 5Watts per Transducer |  |  |
| Operating Frequency | Above 20 KHz |  |  |
| Sound Output | 80 - 110 dB (Not Audible to Humans) |  |  |
| Power Supply | 220V AC Mains Outlet & Battery Operated For 12 Volts) |  |  |
| **3** | Quantity of transducers | 8 for DC and 4 for DR or increase as required |  |  |
| **4** | Shall incorporate the following requirements | * Long working life * Smooth operation * Low power consumption * Robust design * Shall alert in case of failure * Shall not harm human * Robust design |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Feature** | | **Bidder's offer** | **Compliance** |
|  |  | * Shall alert in case of failure * Shall not harm human |  |  |
| **5** | Brand and Model | Should be specified |  |  |

**Table 7. Access Control Door and Accessories**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Feature** | **Minimum specification** | **Bidder's offer** | **Compliance** |
| 1 | Access Control door type | Fire rated Armored steel security door fabricated |  |  |
| 2 | Area | 2m height and 1m length |  |  |
| 3 | Magnetic lock | yes |  |  |
| 4 | Push button to exit the room | yes |  |  |
| 5 | Standalone key | yes |  |  |
| 6 | Duration to resist fire | 2 hr |  |  |
| 7 | Customizable graphic interface | yes |  |  |
| 8 | Remotely access control for DR | IP based access control |  |  |
| 9 | USB interface for configuration and data management | yes |  |  |
| 10 | Management | Access control server |  |  |
| 11 | Event handler | yes |  |  |
| 12 | Generate report | yes |  |  |
| 13 | The joint between main door frame and partition | Filled and sealed with Silicon sealant |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 14 | Key feature | The door should be integrated with fire control panel to open the door automatically if fire is happen |  |  |
| 15 | Access control reader | Proximity card reader, biometric and touch screen keypad |  |  |
| 16 | Proximity card reader type | RFID |  |  |
| 17 | frequency of proximity card reader | 125khz |  |  |
| 18 | Access card quantity | 100 |  |  |
| 19 | Biometric reader type | Finger print |  |  |
| 20 | Alarm in case of tamper | yes |  |  |
| 21 | Key pad size and type | 4.8’’ touch screen |  |  |
| 22 | Water proof and hard | yes |  |  |
| 23 | Warranty | 3 years |  |  |
| 14 | Brand and Model | should be specified |  |  |

**Table 8.Water leak detection**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Minimum specification** | **Bidder's offer** |
| 1 | Interface | An audio alarm as well as an LED indicator to show that a leak has been detected and display on graphical representation. |  |
| 2 | Dimensions (mm): | 80 x 88 x 55 |  |
| 3 | Power Supply: | 230 VAC |  |
| 4 | Power Usage | 30mA |  |
| 5 | Alarm Audibility: | 85db @ 10cm |  |
| 6 | Relay Rating: | 230VAC 8 amp |  |
| 7 | Max Sensing Distance: | 30m |  |
| 8 | Connectivity requirement | Have integrated software to monitor and control enable onward connection to our environmental system (Datacenter infrastructure control and Monitor) |  |
| 9 | Additional requirements of sensor cables and installation | * Detect fluid along the entire length sensor cables * Flexible construction and simple to maintain , * Nonconductive and abrasion resistant polymers increase the strength of the cables * Pressure on the cables does not produces false alarm * Senses conductive fluid in a reliable manner   Shall conductive fluid in a reliable manner |  |
| 10 | Warranty | 1-year |  |
| 11 | Brand | should be specified |  |

**Table 9. UPS Power Module for Kstar YKM3320 UPS**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| **1** | * Capacity 20kva * Module Control Panel (LCD display) * By pass switch * Manual Switch * Funs * 3-phase in / 3-phase out * Power Module type - Rack-mounted * LED display * Size (DXWXH) in mm (580X443X131) 3U * Power factor 0.99 * 3U frame |  |  |
| 2 | 2 years warranty |  |  |

**Table 10. Automatic voltage Regulator (AVR)**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| 1 | **Sensing Input**   * Voltage: 195 VAC to 280 VAC (delta) or 360 VAC to 485 VAC (star) * Frequency: 50 Hz to 60 Hz nominal |  |  |
| 2 | **Power Input**   * Voltage: 70VAC to 140VAC 1 phase only * Frequency: 50 Hz to 60 Hz nominal |  |  |
| 3 | **Power Output**   * Voltage: maximum 100 VDC at 115 VAC input * Current * continuous: 5 A * Transient: 12 A for 8 seconds * Resistance: 6 Ω minimum |  |  |
| 4 | **Regulation**  ✓ +/- 0.5% RMS with Linear Load |  |  |
| 5 | **Thermal Drift**   * Typically, 0.0125% per 1 °C change in AVR * ambient temperature |  |  |
| 6 | **Typical Response**   * AVR response in 5 ms * Machine Volts to 97% in 300 ms |  |  |
| 7 | **External Voltage Adjustment**  ✓ +/-5% with 100 kΩ trimmer |  |  |
| 8 | **Unit Power Dissipation**   * Max 8 W at 5 ADC output |  |  |
| 9 | **Build-up Voltage**   * 3 VAC at AVR terminals |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 10 | **Under-Frequency Protection**   * Set point to 95% Hz of nominal value (50 or 60Hz) |  |  |
| 11 | **Output voltage limitation in case of highly unbalanced loads**   * Phase not loaded cannot increase the voltage beyond 13% of the setup voltage * Red LED blinking |  |  |
| 12 | **Over-excitation voltage control**   * AVR protects the alternator by limiting the excitation (Calibrated in factory at moment of final inspection) |  |  |
| 13 | **Short-circuits protection**   * Alarm set points: 3-phase 8 sec, phase-phase 5 sec, phase- neutral 2 sec |  |  |
| 14 | **High AVR operating temperature**   * If the AVR temperature exceeds 70°C the output Voltage is limited until the AVR temperature falls below 70°C and at * 85°C or above, there is a sudden Voltage drop and to   reset the alarm the Genset must be stopped. |  |  |
| 15 | **Environmental**   * Operating temperature: -20 °C to +70 °C * Relative Humidity: 0 °C to 70 °C: 95% * Storage temperature: -40 °C to +85 °C |  |  |
| 16 | 2 years warranty |  |  |
| 17 | Brand and Model should be specified |  |  |

**Table 11. Silent Diesel Generator for DC**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sno** | **Feature** | **Technical specification of items required** | **Bidder’s offer** | **Compliance** |
| 1 | Prime Power: | 80kw/100kva |  |  |
| 2 | Standby Power: | 88kw/110kva |  |  |
| 3 | Frequency: | 50HZ |  |  |
| 4 | Voltage: | 380/230V |  |  |
| 5 | Phase: | 3 Phase |  |  |
| 6 | P.F: | 0.8 |  |  |
| 7 | Fuel: | Diesel |  |  |
| 8 | Rated Current: | 144A |  |  |
| 9 | Start Method: | 24V DC Start Battery |  |  |
| 10 | Accessory: | Battery, wire, exhaust pipe, muffler, damper,  Breaker |  |  |
| 11 | Fuel consumption of 100% load: | 22.6 L/h |  |  |
| 12 | Fuel consumption of 75% load: | 17.1 L/h |  |  |
| 13 | Voltage regulation rate: | ≤±1% |  |  |
| 14 | Random voltage variation: | ≤±1% |  |  |
| 15 | Frequency regulation rate: | ≤±5% |  |  |
| 16 | Random frequency variation: | ≤±0.5% |  |  |
| 17 | Altitude: | ≤1000m |  |  |
| 18 | Soundproof type Size and  Weight: | 2800(mm)×1130(mm)×1600(mm),  1580kg |  |  |
| 19 | Lubricant | 15W40 |  |  |
| 20 | Total Lubricant capacity(L) | 8 |  |  |
|  | **Engine Specification** | | | |
| 21 | Air Intake System: | Turbo, Air/Air cooling |  |  |
| 22 | Cycle: | 4-stroke |  |  |
| 23 | Cylinder Arrangement: | 4 in line |  |  |
| 24 | Displacement: | 4.41L |  |  |
| 25 | Bore and Stroke: | 105×127 mm |  |  |
| 26 | Compression Ratio: | 18.2:1 |  |  |
| 27 | Prime Power/speed(kw/rpm): | 90.1kw/1500 |  |  |
| 28 | Standby Power/speed(kw/rpm): | 99.5kw/1500 |  |  |
| 29 | Governor Type: | Electronic |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 30 | Cooling System: | Forced water cooling cycle, and air cooling  System |  |  |
| 31 | 100%( Prime Power) Load: | 22.6L/h |  |  |
| 32 | 75%(Prime Power) | 17.1L/h |  |  |
| 33 | Total Oil Capacity: | 8.0L |  |  |
| 34 | Total Coolant Capacity: | 12.6L |  |  |
| 35 | Steady speed droop (%) | ≤1% |  |  |
| 36 | Fuel consumption at 100% load(g/kWh) | 205(1500rpm) |  |  |
|  | **Alternator Specifications** | | | |
| 37 | Rated Capacity: | 100KVA |  |  |
| 38 | Winding: | 100% Copper Wire |  |  |
| 39 | Frequency: | 50HZ |  |  |
| 40 | Speed: | 1500 RPM |  |  |
| 41 | Connecting Type: | 3 Phase and 4 Wires, “Y” type  connecting |  |  |
| 42 | Power Factor: | 0.8 |  |  |
| 43 | Protection Grade: | IP23 |  |  |
| 44 | Exciter Type: | Brushless, self-exciting, with AVR |  |  |
| 45 | Cooling Fan | Cast alloy aluminum |  |  |
| 46 | Standard | NEMA,IEC,IEEE,CSA,BS |  |  |
| 47 | Insulation Class, Temperature Rise: | H/H |  |  |
| **48** | **Control System Specifications** | | | |
| 49 | Type: | AMF Automatic Operation |  |  |
| 50 | Operation: | Automatic Start and Auto Mains (Utility) Failure  Control |  |  |
| 51 | Alarm Protect: | Engine pre-heat, Current monitoring, Comprehensive Shutdown, Charge Failure |  |  |
| 52 | Fuel tank capacity | 360L |  |  |
| 53 | Generator house | Designed and built in visually suitable way |  |  |
| 54 | Warranty | 3 years warranty |  |  |
| 55 | MAF | * Mandatory and will be   authenticated   * Please indicate the MAF issuing path as we will verify the MAF |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 56 | Brand and model | * Should be specified |  |  |

**Table 12. STS (Dual Power Static Transfer Switch) 32A 230V**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Feature** | | **Bidder offer** | **Compliance** |
|  | **Interface** | |  |  |
| 1 | Green LED 2 | Input Status |  |  |
| 2 | Green LED 2 | Output Status |  |  |
|  | **General** | |  |  |
| 3 | Output Socket 10 | IEC320 C13 |  |  |
| 4 | Input Connector 10 | Attached IEC309 32A 2P+E plugs, 3 meters |  |  |
| 5 | Power Protection 2 | 16Amp |  |  |
| 6 | Nominal Voltage | 200V-240V |  |  |
| 7 | On-Line Voltage | 180V~262V |  |  |
| 8 | Frequency | 50/60HZ full range |  |  |
| 9 | Max. Output Current | 32Amp |  |  |
| 10 | Transfer Time | 8~16ms |  |  |
|  | **Operation** | |  |  |
| 11 | Temperature | 0 ~ 40 Celsius degree |  |  |
| 12 | Humidity | 0% ~ 90% |  |  |
| 13 | Size | 260 x 432 x 44.5 mm |  |  |
| 14 | Weight | 9 kg |  |  |
| 15 | Warranty | 2 years warranty |  |  |
| 16 | Model | Model should be specified |  |  |

**Table 14. Network Monitoring System (NMS)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Feature** | | **Bidder's offer** | **Compliance** |
| 1 | Monitor all the systems, devices, traffic, and applications in our IT infrastructure. | |  |  |
| 2 | Monitor all types of servers in real time with regard to availability, accessibility, capacity, and overall reliability | |  |  |
| 3 | Keep track of our entire local network, including our workstations, routers, switches, servers, and printers. | |  |  |
| 4 | Monitor a diverse range of devices | |  |  |
| using the SNMP functionality |  |
| 5 | Monitor: Application, Hardware, Network, Database, Performance, service, bandwidth, | |  |  |
| 6 | Monitor up to 2,500 aspects of our devices in our network | |  |  |
| 7 | Monitor 250 devices | |  |  |
| 8 | Easy-to-use dashboards | |  |  |
| 9 | Multiple user interfaces | |  |  |
| 10 | Flexible  alerting: built-in mechanisms for notifications, such as email, push, or HTTP requests. | |  |  |
| 11 | Distributed monitoring | |  |  |
| 12 | Cluster failover solution | |  |  |
| 13 | In-depth reporting | |  |  |
| 14 | All-important technologies are supported: SNMP, WMI, SSH, Traffic analysis using flow protocols or packet sniffing, HTTP requests, REST APIs returning XML or JSON, Ping, SQL, and many more | |  |  |
| 15 | 1 year license should be included | |  |  |
| 16 | 2500 sensors | |  |  |
| 17 | Model: Paessler PRTG Network monitor and Grafana Enterprise or similar | |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Workstation Specification Table 14. Workstation** | | | | |
|  | **General Feature** | **Specification** | **Bidder`s Offer** | **Compliance** |
| 1 | Processor | 11th Gen Intel® Core™ i5- 1145G7 (8 MB cache, 4 cores, 8 threads, up to 4.40 GHz Turbo, 15 W) |  |  |
| 2 | Operating System | Windows 10 Pro |  |  |
| 3 | Memory | 8 GB, 1 x 8 GB, DDR4, 3200  MHz |  |  |
| 4 | Hard Drive | 512 GB, M.2, PCIe NVMe, SSD |  |  |
| 5 | Resolution | 1920x1080 |  |  |
| 6 | Video Card | Intel® Iris®Xe Graphics |  |  |
| 7 | Ports | 4 USB 3.2 Gen2,DC-in ,RJ-45 ,  DisplayPort++ 1 |  |  |
| 8 | Keyboard | Dell KB216 Wired Keyboard English |  |  |
| 9 | Wireless | No Wireless LAN Card (no WiFi enablement) |  |  |
| 10 | Mouse | Optical Mouse - MS116 (Black) |  |  |
| 11 | Short Monitor Cables | Cable Bundle - DisplayPort to DisplayPort, USB-C to USB-C, and USB-A to USB-B 3.0, 0.6  meter included |  |  |
| 12 | Monitor, Stands and Mounts | 24” FHD  OptiPlex Ultra Fixed Stand (Pro2)  All accessories are included |  |  |
| 13 | Power Supply | 65 Watt A/C Adapter |  |  |
| 14 | Brand and model | DELL OptiPlex 3090 Ultra |  |  |
| 15 | MAF | Should be included |  |  |

**Table 15. IPPBX Service**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| **1** | 3level Automatic Reception with voice guidance  DISA (Direct Inward System Access) with message  Built-in Voice Message (BV)  Caller ID display on SLT and APT  Flexible SMS routing Intuitive customization and maintenance  UCD (Uniform Call Distribution) with message Door phones, Door Openers, and Doorbells Automatic configuration for outside (CO) line type Centralized feature setting for T7710 (PBX mode)  PC programming (USB/RS232C) and easy maintenance  CO busy out  Budget management Call charge calculation |  |  |

**Table 16. Network connectivity service and configuration**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| **1** | * Load sharing enablement   between the two components (Active- Active configuration).   * Secure Shell (SSH)   Protocol and Simple Network Management Protocol security by encrypting administrator traffic during Telnet and SNMP sessions   * IPsec VPN connection * IPsec High Availability   connection   * GRE Tunneling over IPsec   connection   * Implementing AAA to   scale access control device security, Network security configuration |  |  |

**Table 17. HP StoreEver MSL2024 LTO Ultrium 6 Tape Libraries**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| **1** | * Configuration and setup for * keep active data on host arrays   while inactive or  compliance data is automatically moved to tape   * The proposed backup solution   should allow creating tape clone facility after the backup process. |  |  |

**Table 18. Maintenance Services – Fixing malfunctions, modifications, and preventive maintenance**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| 1 | * Power system   Maintenance   * Cooling and   Precision AC   * CCTV based Video   Surveillance   * Access Control * Fire suppression   system |  |  |

**Table 19. Maintenance Services – Repairing, replacing, and fixing services**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| 1 | * Repairing/Replacing: * Enclosure power module, * KVM display * Enclosure display   + UPS display screen |  |  |

**Table 20. DR Replication and Synchronization service**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Bidder's offer** | **Compliance** |
| 1 | * Layer 2 (L2) VPN   configuration able to replicate and synchronize with PR site to DR site.   * + All the state-of-art   Replication services and configurations |  |  |