

## **CORRIGENDUM-2**

This Corrigendum No. 2 dated 05.12.2025 to IFB No. **CDI0599P26** for “**NDR Data Center Augmentation and Facility Management Services**” is issued to notify the following:

- (1) Table showing the amendments in the SoW, SoQ and Annexure-X to SoW (Specification and Compliance) of the tender has been attached as **Comparison Sheet**.
- (2) **Revised SoW, Revised SoQ and Revised Annexure-X to SoW (Specification and Compliance)** have been attached.
- (3) Consequent to the revision of the SoQ, the descriptions of the Line Items A (50 & 60) of the Price Bid Format have been slightly modified. The revised Price Bid Format is available in the following link - [https://docs.google.com/spreadsheets/d/12Lp4\\_vqgkREZmr2tDq7osOvNDT73Gxro/edit?usp=drive\\_link&ouid=111548344606459037627&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/12Lp4_vqgkREZmr2tDq7osOvNDT73Gxro/edit?usp=drive_link&ouid=111548344606459037627&rtpof=true&sd=true)
- (4) **Extension of Dates:**
  - The Bid Closing Date of the tender has been amended as: **18.12.2025 (11:00:00 Hrs)**.
  - The Bid Opening Date of the tender has been amended as: **18.12.2025 (14:00:00 Hrs)**.

The amendment mentioned herein shall prevail over the contradictory clauses in the NIT. All others terms and conditions of the Bid Document remain unchanged. Details can be viewed at [www.oil-india.com](http://www.oil-india.com).

**Sd/-**  
**MANAGER – CONTRACTS (S)**

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### Comparison Sheet

Sl. No.	Tender Clause No	Item	Earlier Description/Specification	Amended Description/Specification	Remarks
1	E. Precision Air Conditioners, Clause 1 of Annexure-X to SoW	Precision AC, 34.2 kW, gross cooling capacity for Server Room 1.	Make: To be same as the existing PACs Model: Vendor must specify	Make: To be same as the existing PACs Model: Vendor must specify  Gross Cooling Capacity of Precision Air-conditioner: 34.2KW or higher subject to confirmation through a comprehensive heat-load calculation that considers server room layout, IT equipment heat dissipation, occupancy, lighting load, and actual site conditions.	
	E. Precision Air Conditioners, Clause 1 of Annexure-X to SoW	Precision AC, 44.6 kW, gross cooling capacity for Server Room 2.	Make: Vendor must specify Model: Vendor must specify	Make: Vendor must specify Model: Vendor must specify  Gross Cooling Capacity of Precision Air-conditioner: 44.6KW or higher subject to confirmation through a comprehensive heat-load calculation that considers server room layout, IT equipment heat dissipation, occupancy, lighting load, and actual site conditions.	
2	E. Precision Air Conditioners, Clause 5 of Annexure-X to SoW	Unit return air temperature	24 ± 1 Degree C	26 ± 1 Degree C, Rack inlet temperature shall however be maintained at 24 ± 1 Degree C.	
3	E. Precision Air Conditioners, Clause 6 of Annexure-X to SoW	Ambient air design temperature	38 Deg C	Design ambient temperature in the range of 35-38 deg C	
4	O. IP CCTV SURVEILLANCE SYSTEM, Clause 1.2 of Annexure-X to SoW	Effective Resolution	4 MP	4 MP or better	
5	O. IP CCTV SURVEILLANCE SYSTEM, Clause 1.3 of Annexure-X to SoW	Minimum Illumination	Color: 0.005 Lux; 0 Lux with IR	Color: 0.01 Lux or better	
6	O. IP CCTV SURVEILLANCE SYSTEM, Clause 1.13 of Annexure-X to SoW	Certifications	NDAA Compliant, BIS Certified (IS:13252), STQC Certified as per MeitY Essential Requirements Guidelines	BIS Certified (IS:13252), STQC Certified as per MeitY Essential Requirements Guidelines	
7	O. IP CCTV SURVEILLANCE SYSTEM, Clause 2.2 of Annexure-X to SoW	Effective Resolution	4 MP	4 MP or better	
8	O. IP CCTV SURVEILLANCE SYSTEM, Clause 2.3 of Annexure-X to SoW	Minimum Illumination	Color: 0.005 Lux; 0 Lux with IR	Color: 0.03 Lux or better	
9	O. IP CCTV SURVEILLANCE SYSTEM, Clause 2.6 of Annexure-X to SoW	Audio	Built-in mic	Built-In Mic / Ch In 1/ Ch Out 1	
10	O. IP CCTV SURVEILLANCE SYSTEM, Clause 2.17 of Annexure-X to SoW	Certifications	NDAA Compliant, BIS Certified (IS:13252), STQC Certified as per MeitY Essential Requirements Guidelines	BIS Certified (IS:13252), STQC Certified as per MeitY Essential Requirements Guidelines	
	O. IP CCTV SURVEILLANCE SYSTEM, Clause 3.10 of Annexure-X to SoW	Intelligent Analysis	Supports 64-channel Intelligent Analysis Processing	AI by NVR which shall include Face detection, Face recognition, Perimeter protection and SMD Plus	
11	O. IP CCTV SURVEILLANCE SYSTEM, Clause 3.12 of Annexure-X to SoW	ANR Support	Yes (Automatic Network Replenishment)	<del>Yes (Automatic Network Replenishment)</del>	The Clause has been removed
12	O. IP CCTV SURVEILLANCE SYSTEM, Clause 3.13 of Annexure-X to SoW	Cloud Support	Cloud upgrade and IPC (camera) cloud upgrade	<del>Cloud upgrade and IPC (camera) cloud upgrade</del>	The Clause has been removed
13	Documents to be submitted, Clause 1.2 of Annexure-X to SoW	CBRI or ARAI test report or certificate for fire rated partition (FRP)		<del>CBRI or ARAI test report or certificate for fire rated partition (FRP)</del>	The Clause has been removed
14	Clause - 3.4.5 ACOUSTIC ENCLOSURE of 3.4 Diesel Generator of <b>SoW</b>		a) The generating set comprising of engine coupled with alternator, control panel, AMF should be placed inside an acoustic enclosure. Contractor should submit the wiring diagram of the DG set.	a) The generating set comprising of engine coupled with alternator, control panel, etc. should be placed inside an acoustic enclosure. Contractor should submit the wiring diagram of the DG set.	
15	Clause - 3.4.6 SKID of 3.4 Diesel Generator of <b>SoW</b>		a) Engine and Alternator shall be directly coupled or coupled by means of flexplate/flexible coupling as per manufacturer standard design and both units shall be mounted on a suitable designed common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with minimum vibrations. The bed plate shall be suitable for installation on suitable anti-vibration mounting system.	a) Engine and Alternator shall be directly coupled or coupled by means of flexplate / flexible / disc coupling or other suitable coupling as per manufacturer's standard design, and both units shall be mounted on a suitably designed common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with minimum vibrations.	

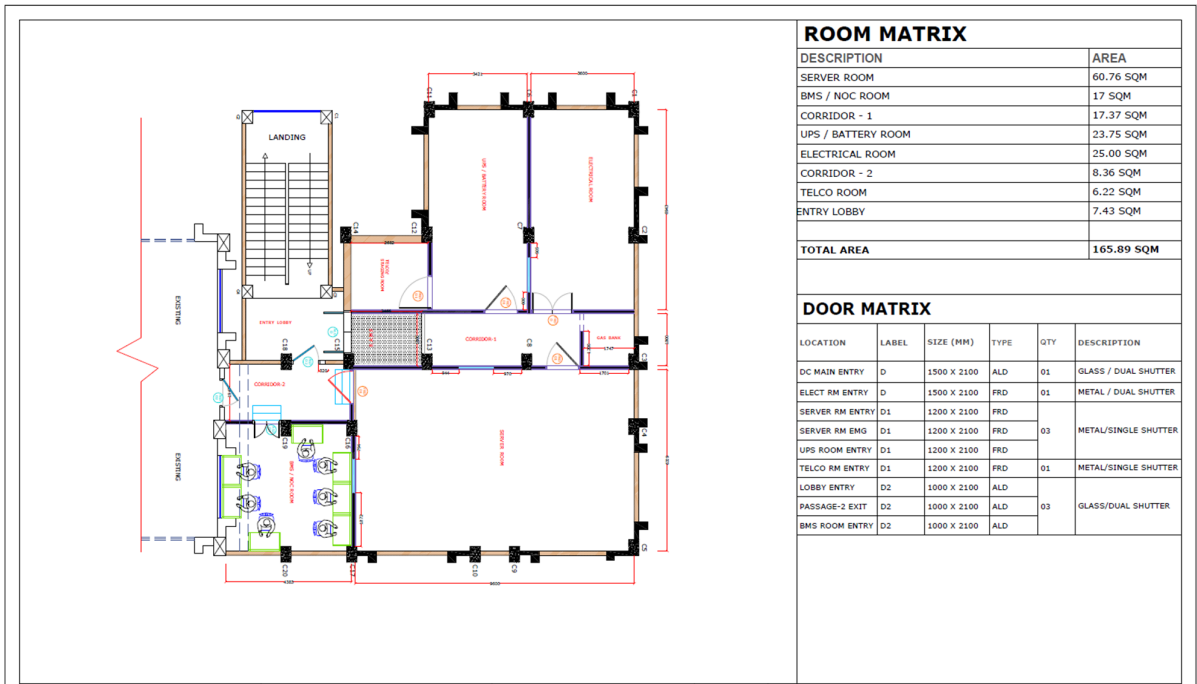
**PART-II**

**Revised SCOPE OF WORK**

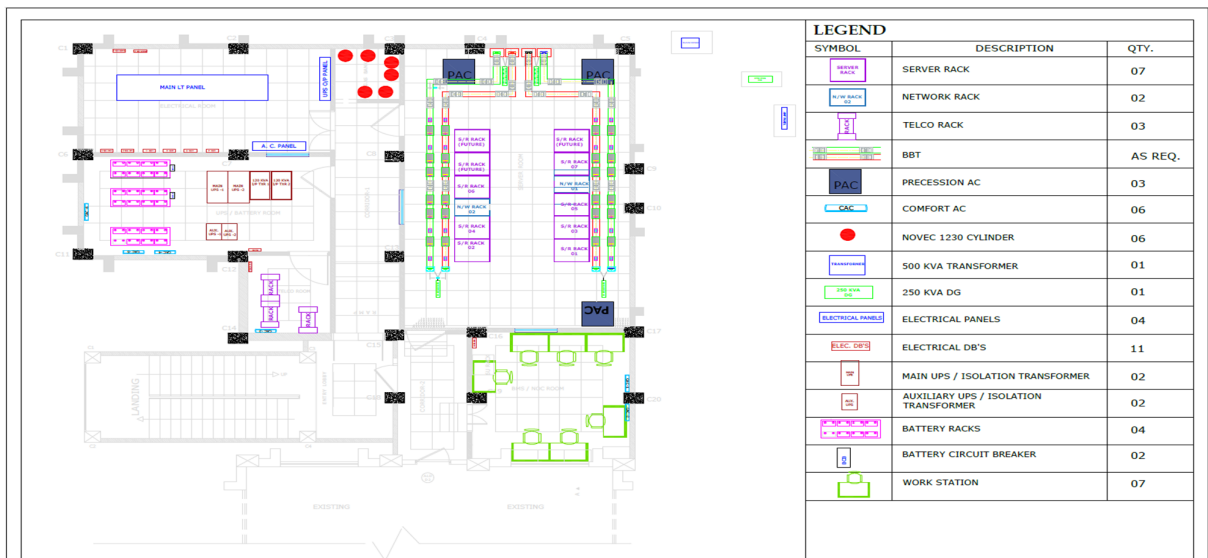
**1.0 Introduction and available set up**

1.1 Oil India Ltd. maintains its primary Data Centre at the IT Department R&D Building in Duliajan, with a Near Disaster Recovery (NDR) site located on the 2nd Floor, North Block, Administrative Building, Oil India Ltd., Duliajan, Assam – 786602 (India). The NDR facility is classified as a Tier II data centre, covering approximately 2278 square feet, with a server farm area of about 630 square feet. The current layout for the NDR site is as follows:

a) Layout diagram:



b) Diagram with equipment:



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- 1.2** The comprehensive layout diagram of SLD, BBT, PAC, Fire suppression, LAN, Lighting etc. are attached as **Annexure-II (Existing Layout)**.
- 1.3** The NDR currently includes a single server room, approximately 630 square feet in size, referred to as “Server Room 1” in this tender. An additional proposed server room, approximately 300 square feet in size, is designated as “Server Room 2.”
- 1.4** The NDR is currently installed with the following main components:
- 12 Nos of 42Uracks as shown in the figure.
  - 500 kVA, 11 kV/415VAC Prefabricated / Unitised Substation (USS) (Main supply).
  - 250 kVA DG set (Standby supply).
  - 2x90 kVA UPS for the server work load.
  - 2X10 KVA Auxiliary UPS.
  - Bus Bar Trunking System.
  - PAC with total 8.5 ton capacity.
  - CAC .
  - LT Panel.
  - AMF Panel.
  - UPS Panel.
  - PAC Panel.
- 1.5** The comprehensive list of existing items are attached as **Annexure-VII**.

## **2.0 Broad Scope of Work**

The broad Scope of Work of the contractor is as follows:

### **a) Augmentation of the NDR:**

- i) Contractor has to supply, install, commission, integrate, test and maintain the datacenter Infrastructure as per minimum specifications elaborated in this tender. The contractor has to study the TENDER and quote for the total solution of works in all respect. Detailed BOQ in line with the TENDER requirements has to be provided by the contractor. A high-level BOQ has been attached, which the contractor must comply with while preparing their detailed proposal. The contractor shall have the entire responsibility to complete the solution and integrate the same for proper functioning. **Bidders are strongly advised to conduct a site visit to assess the existing conditions and gather all relevant information needed for preparing their bid.**
- ii) This specification covers supply, installation, testing, commissioning & maintenance of a high availability datacenter infrastructure at Oil India Limited, Duliajan, for NDR augmentation as detailed in the specifications, complete with all accessories required for efficient and trouble-free operations.
- iii) Contractor have to comply with the **'Specifications & Compliance' (Annexure-X)** in totality and supported by OEM datasheets / OEM reference.
- iv) The datacenter infrastructure augmentation should include all necessary civil and interior works, a fault tolerant electrical distribution system,

## **SOW**

automatic switching between utility and secondary power, redundant or backup power supplies, environmental controls (e.g., precision air conditioning, fire suppression, smoke/fire detection, water leak detection, humidity sensor, etc), security systems, racks, networking and monitoring capabilities, etc. Contractor

are requested to go through the Schedule of Requirements and submit a detailed bill of materials, as per site requirement.

- v) As per the existing layout (Annexure-II), the wall between the current BMS room and Corridor-2 is to be removed, and the combined space shall be designated as Server Room 2. The final layout shall align with the attached **Annexure-I “PROPOSED DESIGN”**. The contractor is required to carry out all related civil works, including flooring. Existing modular furniture must be shifted to the newly proposed BMS room, following the guidelines provided in the **‘Specifications & Compliance’ (Annexure-X)** document.
- vi) Server Room 1 currently houses 12 units of 42U racks, each measuring 800 x 1000 mm. Server Room 2 is planned to accommodate at least 8 units of 42U racks of the same size. All racks must be equipped with dual metered PDUs, as per the specifications. Server Room 1 has the capacity to hold 14 racks, and it is proposed to add four medium to high-density racks (800 x 1200 mm) there. As a result, two of the existing 800 x 1000 mm racks will be relocated from Server Room 1 to Server Room 2. In the final configuration, Server Room 1 will contain 14 racks, and Server Room 2 will contain 8 racks.
- vii) Precision AC’s in Server Room 1 and 2 needs to be integrated in way so that desired levels of cooling and relative humidity is maintained. Outdoor units for all precision AC’s shall have to be installed on the roof top with adequate foundation.
- viii) Existing modular main UPS, 02 x 90 KVA, needs to be upgraded to 02 x 120 KVA with the addition of power modules from same OEM and rating, as per specification and site requirement.
- ix) Fire suppression based on total flooding needs to be deployed for Server Room 2, as per specification. Other modes of fire suppression for the Server Rooms will not be accepted.
- x) Utility power will be provided by OILs own power generation plant / transformer. Secondary power to the entire datacenter infrastructure to be provided by a single silent diesel generator of adequate rating, as per specifications. Existing DG along with AMF panel needs to be replaced.
- xi) Auxiliary areas inside the datacenter facility should have comfort cooling systems. Existing AC’s needs to be replaced.
- xii) UPS power distribution to the racks should be through overhead redundant busbar trunking system, as per specification and site requirement.
- xiii) Local area network cabling of the racks as per design requirement and specifications.
- xiv) Existing Building Management System (BMS) needs to be upgraded to the latest version and all equipment’s / systems to be integrated as per specification and site requirement.

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- xv) All network cables shall run through wire mesh cable trays suspended from the ceiling or laid over cable trays running below the floor. The cable trays for network and power cables should be separated in order to avoid any electromagnetic interference.
- xvi) Raised access floor of minimum 450 mm height to be considered in Server Room 2.
- xvii) A glass partition with a glass door is to be installed between Server Room 1 and Server Room 2. Additionally, the existing double fireline gypsum board partition between Server Room 1 and the current BMS room is to be dismantled.
- xviii) Transparent floor tiles to be considered in certain areas.
- xix) Water and electricity for construction works as well as running the datacenter infrastructure would be provided by Oil India Limited, Duliajan.
- xx) Contractor has to arrange for all transportation of materials up to NDR facility building including un-loading, un-packing, lifting and mounting of all equipment's without damaging the existing civil infrastructure. Any damage caused to the civil infrastructure during such movement needs to be repaired at contractor's own cost.
- xxi) A general layout showing the placement of equipment to be submitted along with the bid.
- xxii) Contractor may have to arrange for shifting of some of the existing racks from Server Room 1 to Server Room 2, as per direction of the engineer-in-charge, Oil India Limited, Duliajan.

### **b) Datacenter Facility Management**

- i) **Managed Service for NDR:** The contractor shall deliver managed services for the NDR datacenter for a continuous period of five (5) years. Services must commence ~~immediately upon award of contract~~ w.e.f. 01.04.2026 (tentatively). The Contractor shall deploy a minimum of seven (07) qualified personnel, working in a three-shift model to ensure 24x7 operations and management of the datacenter. The deployed team shall be responsible for all routine monitoring, incident handling, coordination, and reporting related to the datacenter environment. The shift schedule shall be approved by the engineer in charge.
- ii) **Comprehensive Onsite AMC of existing items:** A comprehensive onsite AMC (Annual Maintenance Contract) for the existing equipment and items in the NDR, as detailed in the provided list, must be offered for a period of 60 months. For specific major equipment, the contractor is required to provide AMC through a back-to-back agreement with the respective OEM, in accordance with the details outlined in the attached annexure\_existing\_items.
- iii) **Warranty/AMC of items as part of augmentation:** The items mentioned as part of the augmentation must have 1 year warranty from the date of commissioning and shall have comprehensive onsite AMC after completion of warranty period till the contract end date. AMC for the newly installed PAC, DG, BBT must be provided through a back-to-back agreement with the respective OEM.

**3.0 Augmentation including Supply, Installation, Testing and Commissioning:** (The SOQ list is exhaustive, but any items/services required additionally to complete the project has to be provisioned/facilitated by the contractor at no extra cost.

**3.1. Civil & Interior Works**

- a) The internal layout for expansion of the NDR is attached as per **Proposed Design (Annexure-I)**.
- b) The scope for civil work in this TENDER is to expand the NDR to create an adjacent Server Room which can accommodate 08 x (800 x 1000 mm) 42U racks and 02 PAC units, a new BMS Room and to furnish the facility area in all aspects. The furnishing includes but is not limited to the following:
  - i) Fire Rated and Glass Partitions.
  - ii) Cement Concrete works, as required.
  - iii) Wall treatment including POP, Putty & Paint work, thermal insulation etc.
  - iv) Raised Access Floor.
  - v) False Ceiling.
  - vi) Fire rated and Aluminium-glass doors.
  - vii) Furniture & fixture.
- c) Toughened laminated glass panels shall be installed in specified sections of the raised access floors in Server Rooms 1 and 2, as well as in selected other areas, to allow the maintenance team to visually inspect the underfloor space without removing floor tiles.
- d) All material to be used shall be of approved quality ISI mark unless otherwise specified. Detailed specifications as mentioned in the "SPECIFICATION & COMPLIANCE" (**Annexure-X**) must be complied.

**3.2. Electrical Works:**

**3.2.1 GENERAL**

- a) Power to the Data Centre is currently fed from two primary sources:
  - i) 500 kVA, 11 kV/415VAC Prefabricated / Unitised Substation (USS) (Main supply)
  - ii) 250 kVA DG set (Standby supply).
- b) Power to the Data Centre is proposed to be drawn from two primary sources:
  - i) 500 kVA, 11 kV/415 VAC Prefabricated / Unitised Substation (USS) (Main supply)
  - ii) 500 kVA DG set (Standby supply).
- c) The DG set shall start upon failure of mains supply, and power restored to the Data centre automatically.

- d) The power shall be drawn through PVCA Aluminium cables of existing size/rating & required runs and terminated on a LT panel.
- e) Detailed description of the above items is given in the following clauses.

### **3.2.2 Upgradation of Main LT Panel**

#### **a) MAIN LT PANEL**

- i) The main LT panel, UPS O/P panel and the AC panel have to be upgraded at site with higher rating switchgears and associated accessories as per the attached peak load calculation (Annexure-VIII) for the augmented data center. Existing LT panel components with rating may be referred to in **Existing\_SLD (Annexure-III & IV)** and **List of Existing Items (Annexure-VII)**. Bidders have to submit detailed single line diagram (SLD) of each panel mentioning switchgear ratings and upgradation plan with implementation timelines & shutdowns required, along with the technical bid.
- ii) The upgradation work have to be completed with minimum total datacentre shutdown. Shutdown plan for upgradation of the LT Panel have to be submitted by the contractor along with the technical bid.
- iii) The existing LT Panel shall have to be upgraded at the site using suitable switchgears, cables, connectors and required accessories as per below specifications and site requirement. Detailed electrical SLD to be submitted by the contractor.
- iv) The main LT panel must have 2 nos of incomers with ACB of 800 A and one bus coupler ACB of 800A. Bus bar of LT panel shall be 1250A (min). Outgoing's of LT panel shall be as per site requirement.
- v) All the components shall be mounted on separate steel plate with necessary stiffeners or suitable channels so that all the components can be checked and replaced from front side after opening the door. Labelling using riveted engraved metallic labels.
- vi) LT Panel should have adequate protection against high & low voltages. All panel doors shall be earthed. No bimetallic joints shall be permitted in the links of connections. Sufficient space should be provided for proper glanding, dressing, connecting up and maintenance of all cables.
- vii) All items of the Panel must conform to relevant IS or IEC (with latest amendments) for performance and safety. Power supply to multifunction meter shall be 230 VAC, and through dedicated circuit, protected by suitably rated MCB.
- viii) Incoming cable entries should have provision for terminating upto 3 nos of 3.5C × 240 sqmm XLPE aluminium armoured cable. All cable entries shall be done from bottom side. Separate detachable type gland plates shall be provided for all cables.

**Note:** Existing LT panel components may be referred to Annexure-VII (List of existing items).

#### **b) AIR CIRCUIT BREAKERS**

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- i)** The input air circuit breakers to be upgraded. ACBs shall be 4P, 50kA, EDO, Microprocessor release for O/L, S/C, E/F (LSI-g), with closing, shunt trip and UV coils. Control voltage shall be 230VAC.
- ii)** ACB shall incorporate shunt trip feature, electrical and manual spring charging, electrical and manual trip.
- iii)** All three ACB shall be of equal rating of 800 Amps. Further Specifications are given in SPECIFICATION & COMPLIANCE (**Annexure-X**).

### **c) PANEL BUSBAR**

- i)** The nominal current rating of the bars shall be minimum of 1250 Amps (min; +/- 10%), and be sized adequately. The bus-bar shall be insulated with heat shrinkable PVC sleeves, and shall be supported at required intervals with non- hygroscopic, non-deteriorating, and non-inflammable SMC / FRP supports having adequate mechanical strength and a high tracking resistance, to withstand short circuit fault levels up to 50 kA for 1 sec.
- ii)** All risers and connections from bus bar shall be carried out with same material as the main bus bars of current rating as per rating of individual cubicle switch. Adequate non-hygroscopic insulating sheet barriers between the bus chambers and feeders shall be provided.

### **d) MCCB**

- i)** All power outgoing should be through adequately sized MCCB. Each MCCB shall be located in its own individual compartment, and should be capable of being operated independently of other MCCB.
- ii)** Detailed technical specification for upgradation of the existing LT Panel is available in the SPECIFICATION & COMPLIANCE (**Annexure-X**).

### **3.2.3 Upgradation of Main UPS Distribution Panel**

- a)** The Main UPS Distribution panel shall have to be upgraded as per the following:
  - i)** Two nos. of incomer's of adequate rating.
  - ii)** Adequate numbers of outgoing feeders of suitable rating.
- b)** The power to the bus-trunking system should be through the outgoing feeder MCCBs. The load should be distributed amongst these outgoing MCCBs so that each MCCB carries equal load. The power to the TELCO racks shall be from the Main UPS Distribution panel. All required arrangements (MCCBs, DBs, MCBs, cables, etc.) for this supply shall be made accordingly.

### **3.2.4 Auxiliary UPS Distribution Panel**

The Aux. UPS Distribution panel (VTPN DB) sources power from the Auxiliary UPS, and delivers power to Fire & Security systems, Emergency lighting, Building Management System, Workstations, etc.

**3.2.5 Power and control Cables**

- a) **USS TO LT PANEL:** Power Cables from USS to LT panel shall be suitably sized, 3.5 or 4 core, Copper/Aluminium conductor, PVC insulated, PVC sheathed. Cables shall be rated for 1100 Volts. Single run cable of rating 3.5x240sqmm PVCA Aluminium to be laid from existing transformer/CSS to main LT panel to cater into the additional load. The glanding and terminating of this cable at the LT Panel end shall be in the scope of the contractor.
- b) **POWER CABLES FROM DG SET TO LT PANEL:** Power Cables from DG to LT panel shall be suitably sized, 3.5 or 4 core, Copper/Aluminium conductor, PVC insulated, PVC sheathed. Cables shall be rated for 1100 Volts. The glanding and terminating of this cable at the LT Panel end shall be in the scope of the contractor. PVCA Aluminium to be laid from DG panel to main LT panel to cater into the additional load.
- c) **INTERCONNECTION CABLES BETWEEN LT PANEL /VARIOUS DBS / POWER DISTRIBUTION BOARDS / AIR CONDITIONERS / OTHER USAGE POINTS WITHIN BUILDING:** All cables between LT Panel and DBs, between DBs and various usage points, busbars, etc. shall be in the scope of supply. These cables shall be suitable sized for peak calculated loads, and be of multi-stranded copper conductor, PVC insulated and sheathed, single or multi-core as needed.
- d) **CONTROL CABLES:** All control cables shall be single core, multi-stranded copper conductor, PVC insulated/sheathed, 1.5 sq.mm size, colour coded to identify phase.

**Note:** All cables used for CT connection shall be 2.5 mm size.

- e) **CABLE ROUTING:** All cables laid shall be through PVC conduits or PVC casing capping, with the cable route designed for safety and aesthetics.

**3.2.6 Illumination**

- a) All light fixtures shall be LED type and recessed mounted on the false ceiling. Existing light fixtures to be replaced as per SPECIFICATION & COMPLIANCE (**Annexure-X**). Existing quantities of Lighting Fixtures may be referred to Annexure -VII (List of Existing items).
- b) For Server Room 2 and new BMS room, lighting requirements shall be as follows –
  - i) **Normal Lighting (1 x 4 LED fittings):** 1 x 4 type LED luminaries should be used, with a colour temperature of 6000K and power efficiency of 100 lumens/watt or better. All lamps/lamp drivers should be installed in an aesthetic manner.
  - ii) Illumination levels should be as per following table:

<b>Location</b>	<b>Illumination level in lux</b>
Server Room 2	600
New BMS Room	400

- iii) A tolerance of 10% from the above values shall be considered as normal.

- iv) Normal lighting shall draw power from the nearest lighting DBs.
- v) **EMERGENCY LIGHTING:** Existing emergency lights shall be replaced. All rooms, including server rooms, and corridors and stairways should have emergency lighting. The emergency lights should glow when the main supply fails. The emergency lighting should achieve a minimum of 50 lux at all rooms/corridors. The emergency lighting shall draw power from the Auxiliary UPS DB. Existing quantities of Lighting Fixtures may be referred to Annexure-VII (List of Existing items).
- vi) **EXIT SIGNAGE:** All rooms and corridors should have prominent glow signs to indicate exit path to be followed in cases of emergencies. These exit signs should be visible during smoke. All signs to be preferably edge lit LED type, with battery backup for no-power situations. All exit signs shall draw power from the Auxiliary UPS DB.

**3.2.7 Upgradation of PAC Panel:** The PAC panel shall draw power from the main LT panel and supply power to individual Precision Air conditioners. The existing PAC panel shall have to be upgraded to include two micro-processor based MCCB of suitable rating as incomers and adequate number of microprocessor based MCCB outgoings of suitable rating. In case the PAC panel cannot be upgraded, then a new or an additional panel needs to be supplied, as per SPECIFICATION & COMPLIANCE (**Annexure-X**).

### **3.2.8 Busbar Trunking (BBT)**

- a) For Server Room 1 existing busbar shall be used. Annexure-VII (List of Existing items) may be referred. For Server Room 2 new BBT system shall be installed.
- b) The busbar trunking (BBT) system shall provide power to the servers located in the server room. The BBT system shall draw power from the Main UPS output panel MCCB breakers. The Compact Air Copper Bus Trunking system suitable for Server Room application shall not exceed 125 Amps with rated operational and insulation voltage of 1000 Amps. The BBT system complying with IEC 61439-1 & 6 should have fire rating of 120 min and seismic compliance as per Zone 5, IS: 1893/ IEEE 693. The system complete in all respect should include but not limited to the following components:
  - i) Supply isolator
  - ii) Main trunking units
  - iii) Junction units
  - iv) Feeder units
  - v) Insulation
  - vi) Tap-off units of suitable rating.
  - vii) Tap-off plugs of suitable rating.
  - viii) Mounting / hanging facilities
  - ix) Ancillaries and accessories.
- c) The BBT system shall be complete with all accessories like End flanges, Fixing brackets, Suspension hooks, Suspension brackets, Cable fixtures, etc. The BBT system shall be 3 phase, with minimum 100% neutral or better. It should be adequately insulated throughout its entire length, from start to end point, including all joints, junctions and tap-off points. Degree of protection shall be minimum IP54.

**d) REDUNDANCY**

- i)** Each server rack shall two intelligent PDUs (Power Distribution Units), and each PDU shall be connected to one power rail, such that each server is connected to two different power rails (one rail is “hot standby” – in case one rail is switched off, the other rail shall continue supplying power without any interruption).
- ii)** Each such pair of BBT rails shall supply four server racks (Total eight server racks, hence two pairs of BBT rails). The expected peak load is given below:

<b>Sl #</b>	<b>Component</b>	<b>Qty</b>	<b>Load / Unit (kW)</b>	<b>% Tolerance</b>	<b>Expected Peak Load</b>	<b>UOM</b>
1	Medium Density Server Racks (5 kva/rack)	8	4	0	32	kW

- iii)** The redundant rails shall extend from the power source to the usage point.

**e) TAP-OFF PLUGS:**

- i)** Power from the rails shall be delivered to individual server racks through “tap-off plugs/tap-off points” inserted into the busbar rails. The rating and type of plug shall be suitable for Server Room/Datacenter applications.
- ii)** Tap-off plugs shall be rated as per peak rack load at operational voltage. Tap-off plugs/points should be capable of being detached or connected from the power rails when the rails are powered up at the rated operational voltage.
- iii)** Tap-off plugs/points shall be of metal, adequately protected against electrical shocks to operating personnel. The tap-off plugs/points shall be of same make as the BBT system. Details of busbar trunking system as per SPECIFICATION & COMPLIANCE **(Annexure-X)**.

**3.2.9 Earthing**

The earthing system shall consist of chemical earth electrodes, spaced 4-6 meters apart from each other and 2 m away from building walls, as per available space and interconnected by 50mm GI straps to form a earthing network. The earth network shall have a max resistance of 3 ohms. All earth electrodes shall be enclosed and capped by cemented earth-pit covers.

**3.2.10 DOCUMENTS TO BE SUBMITTED AFTER ORDER**

**a) AFTER ORDER**

The following drawings & documents shall be submitted for approval:

- (i)** GA drawing,
- (ii)** SLD,
- (iii)** Termination details,
- (iv)** Wiring diagram and(v)
- (v)** Complete bill of material (BOM)

**b) WITH SUPPLY / UPGRADATION:** For LT Panel and Electrical Items-

Four sets of the following documents shall be submitted with the supply

- i)** Approved GA drawing showing all details, including constructional detail and component layout for panels.
- ii)** Approved SLD & Schematic Diagram.
- iii)** Technical specification of all equipment with installation instructions etc.
- iv)** Bill of Materials with technical details.

**c) AFTER COMMISSIONING**

For LT panel and Electrical items-

- i)** Commissioning records and final “as-built” drawings
- ii)** List of recommended spares.

For PAC: Testing and Commissioning Report

**3.3. UPS system**

- a)** There are two modular UPS systems in the facility to cater to the IT load. An auxiliary UPS system for power supply to Emergency Lights, BMS, Security systems, PC Workstations, NOC Display Panels. UPS and battery banks to be placed away from the IT racks and outside the Server Room.
- b)** Each Main UPS shall draw power directly from its dedicated MCCB at LT Panel, and provide power to the server racks and the TELCO racks, via the Main UPS Distribution Panel. Each Auxiliary UPS shall draw power directly from its dedicated MCCB at LT Panel, and provide power to the Building Management System, Workstations, Emergency lights, etc, via the Auxiliary UPS Distribution Board.
- c)** The existing UPS has to be upgraded by adding power modules of the same make and rating, as per specifications outlined under ‘SPECIFICATIONS & COMPLIANCE’ (**Annexure-X**), so that each individual UPS can take the entire IT load of all the racks in the datacenter. The battery banks and battery circuit breakers should be adequately sized and integrated to provide a minimum of 30 minutes backup on existing load.
- d)** Common battery banks shall not be approved. The UPS system should ensure a minimum battery power backup of 30 minutes in each UPS and power availability of 99.9% annually. All new power modules should carry a minimum comprehensive warranty of 12 months.
- e)** Existing battery banks for main and auxiliary UPS shall be replaced and designed as per the upgraded capacity. Existing battery quantities and make may be referred to Annexure-VII (List of existing items).
- f)** All UPS have to be integrated with the BMS system to indicate vital parameters of the UPS.

### **3.4. Diesel Generator**

#### **3.4.1 SCOPE OF SUPPLY:**

- a)** The scope of supply by the contractor shall include one 500 kVA, 415 Volts, 3 Phase, 50 Hz, Diesel Engine driven Generating set with all accessories, and associated items housed in an acoustic enclosure (Generating set, control panel). The Generating Set shall conform to **IS/ISO 8528 (Part 1 to 12, Latest Version) Standard**. Details of Diesel Generator shall be as per SPECIFICATIONS & COMPLIANCE (**Annexure-X**).
- b)** The generating set shall be used as secondary source of power for the application. The rating applies to supplying continuous power running at variable load continuously for 500 Hrs, subject to fuel availability. A 10% overload is allowed for upto 01 hour in every 12 hours.

#### **3.4.2 GENERAL NOTES ON ENGINE**

- a)** The engine shall be rated for continuous power with an overload power rating of 110 % of the continuous power corresponding to engine application, for a period of 1 hour within a period of 12 hrs of operation.
- b)** The contractor should submit the following information along with relevant performance rating curves and engine product catalogues, Gross HP developed at rated RPM, Deduction for fan, charging alternator and other ancillary equipment, Net HP developed at rated RPM, Specific fuel consumption at rated power as well at 110%, 75%, 50% of rated load.
- c)** Generator Set should be mounted on suitable foundation as per site conditions.
- d)** Contractor to submit filled in data sheet enclosed with the enquiry.
  - i)** Make
  - ii)** Model
  - iii)** Number of cylinders
  - iv)** Aspiration
  - v)** Displacement
  - vi)** Bore x stroke
  - vii)** Length x width x height
  - viii)** Rated speed
  - ix)** Gross HP at rated RPM
  - x)** Deduction for fan, altitude, temperature.
  - xi)** Net HP available at rated RPM
  - xii)** Specific fuel consumption at
    - 110 % load
    - 100 % load
    - 75 % load
    - 50 % load
  - xiii)** Lubricating oil consumption (ltr/hr)
  - xiv)** Make and type of governor
  - xv)** Accuracy class
  - xvi)** Speed droop
  - xvii)** Speed range

**3.4.3 AUTO MAINS FAILURE (AMF) PANEL**

Drawing of AMF panel shall have to be supplied by the contractor to OIL. The AMF panel shall be tested at manufacturer's works and OIL reserves the right for inspection of the same prior to dispatch of switches.

**3.4.4 MISCELLANEOUS ITEMS**

- a) Heavy duty Single Compression Cable Glands shall be used at all cable entries for power and control cables. Cable Glands shall also be provided for the outgoing power cable. All cable glands, as per required quantity, to be supplied by the contractor.
- b) All power and control cable terminal ends will have suitable heavy duty crimping lugs of tinned copper. All lugs, as per required quantity, to be supplied by the contractor.
- c) All hardware shall be high tensile type, zinc passivated, and with spring and flat washer of appropriate size and as per IS. Quantity as required.
- d) Each earth electrodes will be made from 100mm ID, 5.0mm wall thickness, ISI approved medium grade GI pipes. The length of electrode will be 3000 mm. Each electrode will have four nos. of L- shaped GI connection straps of 50 x 6 mm size welded to its top for connection to earth system. The electrode top will be 300 mm below the ground level. Each electrode will have its separate enclosure made from brickwork and have removable concrete cover for inspection, testing and connection. Size, construction and watering arrangement of the enclosure will be as per IS-3043. There will be openings in the enclosure sides for passing the earth straps. The straps will be laid 300mm below the ground level. Electrode no. shall be marked on the earth pit cover. Earthing quantity shall be as per manufacturer's recommendations.
- e) The existing AMF panel to be replaced by the new AMF panel and grouted to the floor.
- f) Any item not specified above but required for installation, testing, commissioning of all items.

**3.4.5 ACOUSTIC ENCLOSURE**

- a) The generating set comprising of engine coupled with alternator, control panel, etc. should be placed inside an acoustic enclosure. Contractor should submit the wiring diagram of the DG set.
- b) Generating set should be mounted to a common base frame. The set should have proper arrangement for easy loading /unloading to facilitate ease in transportation.
- c) The Acoustic enclosure shall be designed and manufactured conforming to relevant standards suitable for outdoor installation exposed to weather conditions, and to limit overall noise level to 75 dB(A) at a distance of 1 meter from the enclosure as per latest CPCB norms under free field conditions.
- d) There shall be provision for oil, coolant drain and fill.
- e) The batteries shall be accommodated in the enclosure in electrically insulated battery box.
- f) The inside of the enclosure shall be provided with adequate lighting during servicing etc. of the genset.

**3.4.6 SKID**

- a) Engine and Alternator shall be directly coupled or coupled by means of flexoplate / flexible / disc coupling or other suitable coupling as per manufacturer's standard design, and both units shall be mounted on a suitably designed common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with minimum vibrations.
- b) The skid/base shall be designed to help protect against damage and misalignment that could result while the unit is being moved. It shall be such that it should help to isolate the generator set from impact loads that occur during movement and from distortions of the skid/base resulting from rough handling, protecting the generator driveline and its alignment.

**3.4.7 EXTERNAL FUEL TANK:** The generating set to be connected to an external fuel tank of 990 liters. The external fuel tank must be stored in a safe and secure place. The external fuel tank to be connected with a fuel pumping system.

**3.4.8 NOISE and EMISSION COMPLIANCE:** Test certificates towards compliance of noise and emission norms as per the latest CPCB guidelines for gas engine and generator set shall be furnished along with the technical bid. The bid will be liable to be rejected in the event of non-submission of the CPCB compliance certificates.

**3.4.9 INSPECTION AND TESTING:**

- a) The complete unit/ alternator/ control panel may be inspected and tested at manufacturer's works / factory by a team of OIL Engineers prior to dispatch. Amongst others, all routine tests of the alternator and control panel shall be witnessed during the inspection. Intimation for inspection of complete unit must be sent to OIL at least 30 days in advance.
- b) All routine tests of the alternator and control panel shall be witness during the inspection at respective manufacturer's works. Prior information to be given to OIL. Any modification suggested during inspection shall be carried out by supplier at no additional cost. Supplier shall affect dispatch of the unit to OIL, Duliajan only on receipt of OIL's dispatch advice.

**3.4.10 INSTALLATION AND COMMISSIONING:**

- a) Installation and Commissioning of the generating sets, control panels, Acoustic Enclosure, AMF etc. shall be carried out by the supplier in the presence of OIL representatives at its fields at Duliajan, Assam (India). Services of qualified and competent personnel from equipment manufacturer are essential during installation and commissioning of the generating sets. Persons engaged for installation, testing and commissioning of alternator and control panel should have valid electrical license. A person who is authorized for supervision of all electrical works should have supervisory license.
- b) Party shall connect the earthing loops of the unit to OIL's earth system using four nos. 10.0 M long earth loops provided inside the unit.

- c) The genset will be treated as successfully commissioned after successful load test of the unit at OIL's field site with available load for 72 hrs and submission of all necessary documents.

**3.4.11 SERVICE AND WARRANTY:** The warranty period for the Genset and ancillary equipment shall be 12 months from the date of commissioning of the equipment. The warranty coverage shall include repair parts, labor, reasonable travel expense necessary for repairs at the jobsite, and expendables (lubricating oil, filters, antifreeze, and other service items made unusable by the defect) used during repair or any defects in the engine or alternator during warranty period shall be replaced by the party at his cost without any extra charge to OIL.

**3.4.12 PARTS LIST, INSTRUCTION MANUAL & DRAWING**

The supplier should provide 02 (two) sets each of the manuals and books listed below for each unit:

- a) OPERATING INSTRUCTIONS - with description and illustration of all switchgear controls and indicators for engine and generator.
  - b) PARTS BOOKS - that illustrate and list all assemblies, sub-assemblies and components, except standard fastening hardware (nuts, bolts, washers, etc.,)
  - c) PREVENTIVE MAINTENANCE INSTRUCTIONS- on the complete system that cover daily, weekly, monthly, biannual, and annual maintenance requirements and include a complete lubrication chart.
  - d) ROUTINE TEST PROCEDURES- for all electronic and electrical circuits and for the main AC generator.
  - e) TROUBLESHOOTING CHART- covering the complete generator set showing description of trouble, probable cause and suggested remedy.
  - f) RECOMMENDED SPARE PARTS LIST- showing all consumables anticipated to be required during routine maintenance and test.
  - g) WIRING DIAGRAM AND SCHEMATICS- showing function of all electrical components.
  - h) One set of drawing showing installation details of the generating set, DG foundation, wiring diagram for the control panel and wiring drawing between the alternator and control panel. All control panel diagram and schematic diagram are to be sent to us before supply of order materials.
  - i) Warranty Certificate.
  - j) Complete step-by-step SOP for the generating set.
- 3.4.13 PACKING:** Packing should be sufficiently robust to withstand rough handling during transit. All items should have their respective identification

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tag and should be suitably packed to provide ease of handling / storage and offer maximum protection during transit. Crates and boxes should have a list secured to the exterior wherein the items contained inside should be mentioned in addition to a duplicate list inside. The sling points on the crates should be properly indicated. Internal parts should be sprayed with a rust inhibitor and all openings should be covered with masking tapes to prevent ingress of water. Manuals/ packing cases containing electrical equipment should be lined with water proof material.

Detailed Specifications are as mentioned in SPECIFICATION & COMPLIANCE **(Annexure-X)**.

### **3.4.14 DOCUMENTS (For Electrical part of GENSET):**

- a) The contractor shall obtain approval for the following drawings / documents prior to manufacturing of alternator & control panel
  - i) GA drawing
  - ii) Detailed power & control wiring diagram, detail enclosure drawings for control panel, earthing scheme.
  - iii) Layout plan of the unit showing all parts, cable routes.
  - iv) Illumination scheme with plug socket.
  - v) Details of power cables, control cable and their routes.
  
- b) Following documents shall be submitted in bound form after commissioning of the genset:
  - i) GA drawing
  - ii) Detailed power & control wiring diagram, detailed enclosure drawings for control panel, earthing scheme, and layout plan of the unit showing all parts.
  - iii) Details of power cables, control cable and their routes.
  - iv) Technical literature of alternator.
  - v) Manual for datacenter management.
  - vi) Catalogues of various components.
  - vii) All test certificates for tests done at manufacturer's works for alternator, control panel and complete unit.
  - viii) Reports of tests done during commissioning.
  - ix) List of recommended spares for two years.

### **3.5. Precision Cooling**

- a) The contractor will be required to design, supply, transport, store, unpack, erect and commission the Precision Cooling units for the datacenter infrastructure.
  
- b) The server room temperature should be maintained at 22 DegC  $\pm$  2 DegC. To achieve this, required number of Precision Air-Conditioners (PAC), in N+1 shall be used.

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- c)** Server Room 1 currently has 03 PAC's which are working as 2W +1S. Due to load enhancement, one additional PAC would be required which would work either as 2W+1S or 3W+1S, as per load conditions.
- d)** The new Server Room 2 would have two PAC's working as 1W+1S.
- e)** Air cooled precision type packaged air conditioning units, self-contained floor discharge type complete with digital scroll compressors, fan section with dynamically balanced backward curved fan driven by electronically commuted (EC) Motor, multi rows deep cooling coil of copper tubes and fins, air cooled condenser with copper tubes and fins, copper refrigerant piping and thermostatic expansion valve.
- f)** The power for these PAC shall be drawn from the PAC panel. The power per PAC unit shall be limited to 30 kW. The PAC shall be connected so as to achieve adequate redundancy (of cooling capacity) as per relevant Tier standards for the datacentre. The cables from the PAC Panel to the individual PAC shall be PVC armoured type of suitable size. Each PAC shall be connected independently to the PAC panel.
- g)** The following shall be the broad scope of work for the Precision Air Condition System:
  - i)** Design of the Precision Air Conditioning (PAC) System.
  - ii)** Supply, inspection and delivery at site. Electrical Cabling, earthing, cable trays etc shall be in the contractor/supplier scope.
  - iii)** Installation and configuration of the PAC units at the datacentre.
  - iv)** Providing and fixing at site of all equipment associated with PAC system, including floor/under-deck/ceiling/wall insulation, false flooring (if required by design/specs)
  - v)** Execute all incidental work at site, including materials supply, related to PAC system
  - vi)** Commissioning the PAC system.
  - vii)** All items mentioned in these specifications shall be complete in all respects and any component or, equipment not covered here but essential for proper design, operation and maintenance shall be brought to the notice and included by the contractor/supplier without any extra cost. The contractor/supplier shall take full responsibility for the guaranteed operation of the system, as regards performance / reliability etc.
  - viii)** The AC system must comply with prevailing energy efficiency norms. (EER/SEER).

**Note:** Detailed Specifications for the PAC's are as mentioned in SPECIFICATION & COMPLIANCE (**Annexure-X**).

### **3.6. Comfort Room Cooling**

- a) All existing comfort AC's have to be replaced by new AC's as per detailed specifications as mentioned in SPECIFICATION & COMPLIANCE (**Annexure-X**).
- b) The tonnage of the AC units shall be as per existing or better. Care should be taken that no equipment's within the room is damaged while replacing the AC units. Outdoor units to be installed at respective locations as per existing. All IDU to ODU connecting cables and refrigerant piping's should be well insulated and concealed through ducts to prevent damage from external environment. The cables from the power source to the individual Air Conditioner shall be FR-LSH type.

### **3.7. Fire detection and alarm**

- a) Fire can have disastrous consequences and affect operations of a critical IT facility. The early detection of fire and employing means for automatic suppression of the fire is important for effective functioning.
- b) The scope of work for the fire detection and alarm system would include :
  - i) Dismantling and re-installation of the control panel and other devices.
  - ii) Extension of all cabling upto the new control panel location.
  - iii) SITC of additional smoke detectors and other required devices as per SPECIFICATION & COMPLIANCE (**Annexure-X**).
  - iv) Integration with access control, precision AC, fire suppression and public address system.
  - v) Integration with the building management system.

### **3.8. Fire Suppression System**

The scope shall include, design, supply, installation, testing and commissioning of FK-5-1-12 based fire suppression system for Server Room 2. The racks along with the equipment installed inside the Server farm should be protected by an automatic fire suppression system using environment friendly FK-5-1-12 or equivalent clean agent. Design of the system shall be in accordance with NFPA guidelines. System should ensure that no harm to human beings and environment is caused. Equipment in other areas should be protected by adequate fire extinguishers.

Detailed Specifications are as mentioned in SPECIFICATION & COMPLIANCE (**Annexure-X**).

**Note:** Additionally, ensure that six (06) nos. of 4Kg clean agent portable firefighting extinguishers filled with FE-36 clean agent shall also be provided at strategic locations within the protected area.

### **3.9. Access Control System**

- a) An IP based Access Control system should be available for the datacenter facility. The system should be smart and robust for continuous operation.

- b)** The scope of work shall include :
  - i)** Dismantling and re-installation of the control panel and other devices.
  - ii)** Extension of all cabling upto the new control panel location.
  - iii)** SITC of additional readers and other required devices as per SPECIFICATION & COMPLIANCE (**Annexure-X**).
  - iv)** Integration with fire detection and precision AC system.
  - v)** Integration with the building management system.
- c)** All access control doors should be provided with heavy duty door closers and magnetic locks. Magnetic locks should be of reputed makes and as per specification.

**d) Key Objectives**

- i)** All entry and exits through the access doors should be recorded.
- ii)** The system should generate alarms for tailgating.
- iii)** All access doors to be fitted with door sensors.
- iv)** The biometric reader should be able to store fingerprint data of at least 1000 users.
- v)** The system should be able to log all the entry & exits with respective person and print the same on demand.
- vi)** A visitor management system have to be incorporated and suitable training for the same have to be provided.
- vii)** The system should be able to handle queries related to movement log of a particular person or of particular date or date range.
- viii)** The system should be able ascertain the total number of persons present inside the datacenter facility at any point of time.

**Note:** Detailed specifications for various components of the access control system are mentioned in SPECIFICATION & COMPLIANCE (**Annexure-X**).

**3.10. IP based CCTV System:** IP based CCTV system to be implemented for the entire datacenter facility. Additionally, the DG and transformer areas should also be monitored through outdoor type cameras. Camera should produce high clarity colour video signals.

To operate in day & night conditions the cameras should be provided with adequate IR capability. All cameras, NVR and PoE switches to be replaced as mentioned under SPECIFICATION & COMPLIANCE (**Annexure-X**).

### **3.11. Rodent Repellant System**

Supply, installation, testing and commissioning of microprocessor based Master Controller with 16 X 2 LCD display capable of operating in four ultrasonic frequency band spectrums. The controller should support upto 20 transducers in dedicated connection & 24 transducers in single loop @300 sq.ft each for Room Void Area & 150 sqft each for Ceiling & Floor Void each and networkable on RS 485 having facility to support hardwired third party integration via Modbus & potential free NO-NC contacts. The system shall use UL and CE approved transformers for power supply. Rodent repellent system to be designed for Server Room 2 and BMS room areas so that the entire facility is covered.

Detailed Specifications are as mentioned in SPECIFICATION & COMPLIANCE **(Annexure-X)**.

### **3.12. Water Leak Detection System**

Water leak detection System shall be designed to protect the IT racks and shall be installed as an integrated system to generate water leak alarms, if found in precision AC systems. These systems to be installed under PAC units to detect any water leakage in the Server Rooms. The system shall be capable of interfacing to water leak detection sensors, condensation sensors & I/O modules.

Events should be clearly reported on LCD/LED display with full English language description of the nature of the fault in the panel.

Detailed Specifications are as mentioned in SPECIFICATION & COMPLIANCE **(Annexure-X)**.

### **3.13. Building Management System**

- a)** An integrated building management system to monitor several installed equipment's, viz., UPS, PAC, DG, Fire alarm, access control, etc., is already implemented. The scope of work would include the following:
  - i)** Dismantling of the BMS devices from the existing BMS room and re-installation at new location.
  - ii)** Extension/ laying of all cabling from equipment's / devices upto the controllers and new BMS room, as per design requirement.
  - iii)** SITC of additional required devices.
  - iv)** Upgradation & configuration of the BMS software along with graphical interfaces, layouts and overall design.
  - v)** Integration of the BMS software with the following to fetch real-time data and monitor the same –
    - Electrical LT Panel input feeder status
    - UPS O/P Panel & AC Panel input feeder status
    - DG
    - Main UPS
    - Auxiliary UPS
    - Fire Detection & Alarm System
    - Fire Suppression Systems

- Access control system
- Water leak detection systems
- Rodent repellent systems
- Rack PDU's

- b)** The BMS system equipment's shall be installed in a suitable place as approved by engineer in charge of OIL and to be monitored from the BMS Room.

Detailed specifications for BMS system are mentioned in SPECIFICATION & COMPLIANCE **(Annexure-X)**.

### **3.14. IT Rack (Server / Network)**

- a)** It is proposed to provide 08 enclosed IT Racks, 42U, 800 x 1000 mm in the Server Room 2. Server Room 1 would include 02 Network Racks (600 x 1000 mm), 8 Server Racks (800 x 1000 mm) and 04 new high-density Server Racks (800 x 1200 mm). Since the capacity of existing server room is of 14 racks, two racks may be shifted to the new server room.
- b)** Total no of racks proposed in this scope is 06 enclosed IT Racks, 42U, 800 x 1000 mm and 04 high-density Server Racks (800 x 1200 mm).
- c)** All the racks shall have metallic perforated doors both at the front as well as at the back for easy airflow through perimeter type precision cooling. Front door to be fitted with digital keypad lock. Each rack should be fitted with adequate cable managers and dual metered PDU which has to be integrated to the building management system. Each rack should have OIL logo fixed in the front.
- d)** The telecom racks are installed separately inside the Telco Room. Dismantling and re-installation of all IT hardware equipment's, as may be required, shall be under the scope of the client.

**Note:** Detailed Specifications of the new racks and metered PDU's are as mentioned in SPECIFICATION & COMPLIANCE **(Annexure-X)**.

### **3.15. Local Area Networking**

- a)** Passive network cabling to be extended to Server Room 2 and the BMS room. All cables inside the Server Room are required to be routed in cable wire baskets running over the racks – suspended from the ceiling. The cable wire ducts or baskets to be customizable to accommodate large number of wires.
- b)** The new IT racks in the Server Rooms have to be connected to the two existing redundant network racks through redundant paths. Access switches to be provided OIL. The cables inside the racks should be neatly dressed and labelled. Passive network cabling to be done for the BMS room with proper termination to UTP information outlet. Any other data cabling to be covered to facilitate BMS operations.
- c)** Detailed specifications for all passive cables and components are mentioned in SPECIFICATION & COMPLIANCE **(Annexure-X)**.

## **4.0 Project Execution**

The human resource requirement for project execution is defined under the clause MANPOWER REQUIREMENT (Clause no 6).

**4.1. Pre-installation activities:**

Pre-installation activities shall include, various permits, clearances/ approvals required before commencement of activities. Contractor has to arrange all the jobs associated with the installation and commissioning of the systems required in connection with the project as per scope of work. Following shall be part of the Pre-installation activities wherever they are applicable for this project.

**4.2. PERMISSION FROM STATUTORY AGENCIES:**

Liasoning with local authorities ( State / Labour Dept/Building /Fire ) for obtaining necessary permissions /clearance ( if any ) for taking up installation activities, if required.

**4.3. MOBILISATION OF MAN AND MATERIAL AT SITE FOR INSTALLATION:**

Before receipt of material at site, the contractor shall mobilize personnel and site execution team(s) at site to make necessary arrangements for obtaining local clearances to start the site works, establishing site offices, arrangement for storage of materials received on delivery at site etc.

**4.4. INSTALLATION, CONFIGURATION AND COMMISSIONING TESTS:**

Contractor shall carry out all jobs related to construction of datacenter as per requirement of “Scope of Work” and approved engineering documents & drawings. The contractor shall carry out commissioning checks in line with the approved test plans to ensure that the equipment/ subsystems/ systems are performing satisfactorily before offering the system for Site Acceptance Test.

**4.5. SITE ACCEPTANCE TEST (SAT):**

The acceptance test shall cover the following scope:

Factory Visit for Product Acceptance:

Contractor shall arrange a factory visit for OIL inspection team before transporting the material to site (pre-despatch inspection). Two weeks of prior notice shall be given by Contractor to OIL so that necessary travel arrangements can be made; however OIL reserves the right to finalize the date for inspection. Contractor is not required to bear the cost of OIL team’s visit to the factory for inspection.

Items list for inspection – DG, BBT and PAC.

**4.6. USER ACCEPTANCE TESTING (UAT)**

- a) The UAT shall cover all the systems installed in the datacentre after successful testing by the contractor. The contractor, after successful self-testing shall schedule the UAT for OIL. After successful testing by OIL, an Acceptance Test Certificate shall be issued by OIL.
- b) Pre-requisite for carrying out UAT:
  - i) Detailed test plan shall be defined by the contractor in consultation with respective OEMs. This plan shall be submitted to OIL for review and approval. OIL reserves the right to modify the type and / or number of parameters being tested. Approved test plan will be given back to the contractor for execution.
  - ii) All documentation (as built drawings, equipment labelling details, cable routes, manuals, datasheets, software, maintenance schedule, asset

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inventory, communication and escalation details etc.) related to the datacenter shall be completed and submitted to OIL, in hard and soft copy, before the final acceptance test.

**iii)** The training requirements as mentioned in below training section shall be completed after the final acceptance testing; the schedule shall be decided in consultation with OIL.

**iv)** The UAT shall include the following:

- All hardware and software items must be installed at Data Centre as per the layout drawings and technical specifications.
- Availability of all systems shall be verified. The contractor shall be required to demonstrate all the features / facilities / functionalities as mentioned in the TENDER.
- The Contractor will arrange the test instruments or equipment required for performance verification and will also provide documented test results.

### **4.7. Project Milestone:**

<b>Code</b>	<b>Milestone</b>	<b>Description</b>	<b>Timeline</b>
MS-00	Activity-0	Project Preliminary Meeting (Kick-Off Meeting)	2 weeks
MS-01	Activity-1	The Contractor shall prepare and submit to OIL a detailed Project Plan covering all the phases of the project, establish various milestones, project organization chart, planned resources deployment, CV of Project Manager and other key resources identified for the project execution, signing of SLA (Annexure-V), escalation matrix, implementation methodology etc., during the Project Kick-off meeting.	2 weeks
MS-02	Activity-2	Submission of technical datasheets (TDS) and layouts by the contractor and approval.	2 weeks
MS-03	Activity-3	Completion of all Civil Works including supply and installation of all material under the following parts of Scope of Work / BOM : Civil & Interiors.	4 weeks
MS-04	Activity-4	Completion of all Electrical Works including supply and installation of all material under the following parts of Scope of Work / BOM : Electrical Distribution System.	4 weeks
MS-05	Activity-5	Completion of all UPS, PAC & CAC Works including supply and installation of all material under the following parts of Scope of Work / BOM : UPS, PAC, CAC	4 weeks
MS-06	Activity-6	Completion of all IBMS Works including supply and installation of	4 weeks

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		all material under the following parts of Scope of Work / BOM : Fire detection & alarm, High Sensitivity Smoke Detection, Fire Suppression, Portable Fire Extinguishers, Access Control System, IP CCTV Surveillance System, Public Address System, Water Leak Detection System, Rodent Repellent System.	
MS-07	Activity-7	Completion of all DG Works including supply and installation of all material under the following parts of Scope of Work / BOM : Diesel Generator	3 weeks
MS-08	Activity-8	Completion of all IT Racks, Passive Networking & Building Management System Works including supply and installation of all material under the following parts of Scope of Work / BOM : IT Racks, Passive Networking, Building Management System.	3 weeks
MS-09	Activity-09	Completion of self testing of all systems installed and preparation of project handover documentation.	2 weeks
MS-10	Activity-10	Completion of User Acceptance Tests (UAT) of all systems installed and operational training.	2 weeks
<b>Total Project Duration</b>			<b>32 weeks</b>

**Note:** Pending completion of the whole Works, provisional / milestones based progressive payments for the part of the Works executed by the Contractor shall be made by Company, on the basis of work completed and verified/certified by the OIL's Head - IT or his authorized representative.

### **4.8. Handing Over & Project Completion**

- a) On successful completion of UAT followed by 3 days continuous test and acceptance of the equipment/ systems by OIL, the contractor shall hand over the all requisite certificates, engineering documents and statutory permission taken for the project to OIL. The contractor shall provide orientation and familiarization of datacenter, systems, software and maintenance schedule of the systems to OIL engineers.
- b) The date of taking over the complete system by OIL shall be treated as the commencement/ handover date of the system and one-year warranty shall be commenced from this date.

### **4.9. Training**

- a) The contractor in association with respective OEM (wherever required) shall conduct minimum 02 (Two) days training by experienced DC certified professional for OIL's designated officials. Training will be provided for a batch of 10 (Ten) people at OIL's premises or any other premises accepted by OIL. OIL in consultation with the contractor shall decide the detailed scope and schedule of training program. All the training material will be provided by the contractor. The training shall cover all the systems involved in the datacenter.

- b)** Additionally, separate training for Data centre managers, required for smooth handling of data centre operations shall be provided to maximum 05 (Five). OIL official for minimum 03 days, preferably in any major cities in India. The venue and training infrastructure will be the responsibility of the contractor. However, transportation and accommodation of OIL personnel for training shall be the responsibility of OIL. The above training shall be planned and executed with mutual agreement of both the parties.

#### **4.10. Documentation**

- a)** Contractor shall provide documentation, which follows the ITIL (Information Technology Infrastructure Library) / ISO20000 (ITSM) guidelines. This documentation shall be submitted as the project undergoes various stages of implementation. Indicative list of documents includes but is not limited to:
  - i)** Project plan in MS Project/ other giving out micro level activities with milestones and deadlines. Project Plan should cover all the phases of the project, establish various milestones, project organization chart, planned resources deployment.
  - ii)** Factory Test Certificate (Original) from OEMs.
  - iii)** Training material shall be provided (hard / soft copy), which shall include the presentations used for training and also the required relevant documents for the topics being covered.
  - iv)** The Contractor shall be responsible for preparing process documentation related to the management of each component of the DC. The prepared process document shall be formally approved and signed off by OIL before commencement of UAT. The Contractor shall document all the installation and commissioning procedures and provide the same to OIL at least one week before the UAT.
- b)** The Contractor shall submit a complete set of floor layout drawings, SLD (Single Line Diagram), a complete cabling system layout (as built), including cable routing (Electrical and Data), labelling designations etc. The layout shall detail location of all components.
- c)** Manuals for configuring control panels shall be provided by Contractor.
- d)** The Contractor shall be responsible for documenting configuration of all panels / devices and keeping back up of all configuration files to enable quick recovery in case of failure of device.  
**Note:** The Contractor shall be responsible for preparing documentation required for certification wherever applicable or as required by OIL.

#### **5.0 Datacenter Facility Management**

- a)** The Contractor shall provide Datacenter Facility Management for a period of 5 (Five) years. The scope of work encompasses the complete lifecycle management of the datacenter infrastructure, operations, and support services. The key components of the scope are outlined below:

## **SOW**

- i) Managed Services for NDR Datacenter:** The contractor shall deliver managed services for the NDR datacenter for a continuous period of five (5) years. The Contractor shall deploy a minimum of seven (07) qualified personnel, working in a three-shift model to ensure 24x7 operations and management of the datacenter. The deployed team shall be responsible for all routine monitoring, incident handling, coordination, and reporting related to the datacenter environment.
- ii) Comprehensive Onsite AMC of existing items:** The comprehensive onsite AMC of existing equipment, items of the NDR as per the detailed list must be provided for a period of 60 months. For specific major equipment, the contractor is required to provide AMC through a back-to-back agreement with the respective OEM, in accordance with the details outlined in the attached Annexure-VII (List of Existing items). Replacement or repair of defective product/ system/ component shall be carried out within the defined Service Level Agreement.
- iii) Warranty/AMC of items as part of augmentation :** The items supplied as part of the augmentation must have 1 year warranty from the date of commissioning and shall have comprehensive onsite AMC after completion of warranty period till the contract end date.
- b)** The scope of services under datacenter infrastructure management during this period shall encompass the monitoring, maintenance, and overall management of all components, systems, and equipment supplied and installed during the datacenter build phase. This also includes the provision of a dedicated Helpdesk service for issue logging and resolution support.
- c)** The Contractor is expected to deploy skilled and experienced personnel to perform datacenter management activities on all working days, ensuring seamless and uninterrupted operations. The overall scope of work during the Datacenter Management Services phase is structured into various categories, as detailed in the sections below. Specific requirements related to human resource deployment are outlined under MANPOWER REQUIREMENT (Clause No. 6.0).
- d)** Replacement of consumables- refrigerant for air-conditioning systems, faulty batteries for UPS, light fittings, access cards shall be in the scope of the Datacenter Facility Management.

### **5.1. Physical infrastructure system management & maintenance services**

- a)** The objective of this service is to support and maintain all the systems supplied and installed during augmentation as well as the existing equipment. This physical infrastructure management and maintenance services shall include but is not limited to:
  - i)** The entire Physical Infrastructure of the Data Centre supplied and installed including all the services are to be comprehensively maintained & operated as per manufacturer's practice.
  - ii)** Proactive and reactive maintenance, repair and replacement of defective components (hardware and software). This includes carrying out the necessary repairs and replacement of parts whenever needed to keep the service and operations levels in tune with the requirements of the SLA

## **SOW**

(Annexure-V). The cost of repair and replacement shall be borne by the CONTRACTOR. CONTRACTOR shall carry out scheduled preventive maintenance activities to keep all the Data Centre Infrastructure systems in optimum working conditions. CONTRACTOR will inform OIL three (03) working days in advance and undertake the preventive maintenance activity with written consent of OIL.

- b)** Preventive maintenance (PM) should be carried out at least once in every quarter. Moreover, PM shall be carried out on the advice of OIL's Engineer-in-charge, whenever deemed essential to ensure operational efficiency. PM activity includes but is not limited to the following:
  - i)** Checking for any loose contacts in the cables and connections.
  - ii)** Run diagnostics tests on equipment.
  - iii)** Updating wiring and connection diagrams, whenever modifications are made.
  - iv)** Ensuring that all software, tools, manuals, documentation, and other documentation related to the Non-IT systems are kept properly labelled and organized in catalogue.
  - v)** Carrying out and verifying back up (surveillance system) consistency on regular interval.
  - vi)** Checking and listing all wear and tear of the equipment and site environment.
  - vii)** Ensuring no flammable material is present in DC area.
  - viii)** Clearing up of any unnecessary items / spares.
- c)** If any maintenance activity needs involvement/support of OEM, it is the sole responsibility of the service provider to arrange for the required OEM services.
- d)** CONTRACTOR shall maintain cleanliness within the DC area.
- e)** The CONTRACTOR shall maintain records of all maintenance (preventive & breakdown) of the systems and shall maintain a logbook on site that may be inspected by OIL at any time.
- f)** All Preventive maintenance (PM) activity reports must be submitted to OIL's Engineer in-charge for their scrutiny and comments. Preventive maintenance (PM) is deemed completed only after review and acceptance of OIL. Otherwise, penalty will be imposed as per penalty clause of the contract.
- g)** The CONTRACTOR shall stock and provide adequate onsite and offsite spare parts and spare components to ensure that the Uptime commitment as per the SLA (Annexure-V) is met.
- h)** CONTRACTOR shall provide a copy of the SLA signed with respective OEMs for the entire contract period at the time of UAT. Contractor shall also ensure back to back agreement with OEM's for the existing equipment provided in the comprehensive list by OIL and also for the equipment supplied as a part of augmentation of the NDR.

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- i)** Component that is reported to be down on a given date should be either fully repaired or replaced by within the time frame indicated in the SLA. In case the CONTRACTOR fails to meet the above standards of maintenance, there will be a penalty as specified in penalty clause.
- j)** Monitor and take appropriate prompt actions for different alarms generated by the system.
- k)** To manage the Datacenter Facility effectively, a Help Desk may be established either onsite or offsite to serve as a single point of contact for all data center-related issues and service requests, encompassing all associated equipment. The Help Desk shall undertake the following activities:
  - i)** Log issues / complaints related to supplied systems / components / equipment at the Data Centre under the scope of work and issue an ID number for the service request.
  - ii)** Assign severity level to each service request.
  - iii)** Track each issue/service request to resolution.
  - iv)** Escalate the issue / service request if necessary as per the escalation matrix defined in discussion with OIL.
  - v)** Provide feedback to the callers.
  - vi)** Analyze the issue / complaint statistics.
  - vii)** Creation of knowledge base on frequently asked questions to aid the users of the supplied systems/components/equipment.
- l)** The CONTRACTOR shall undertake end to end analysis for all the systems running in the Data Centre to achieve optimum performance.
- m)** The CONTRACTOR's personnel shall take utmost care while operating the installation and insure all his personals deployed for performing datacenter management activities at OIL Data Centre.
- n)** **Reports:** The CONTRACTOR shall provide the reports as defined in SLA for all the systems / devices installed in the Data Centre in a prescribed format and media as mutually agreed with OIL on a periodic basis. Whenever required by OIL, CONTRACTOR shall provide additional reports in the format required by OIL.

### **6.0 Manpower Requirement**

Given below is an indicative list of minimum resources required for OIL datacenter during augmentation and datacenter management phases. However, contractor has to ensure the suitability and adequacy of required resources so that Contractor can maintain the project execution timelines, quality and SLA as desired and required by OIL. OIL however reserves the right to interact with the resource/service engineer assigned by the service provider to assess his/her competency. The service provider shall have to replace any engineer if found not suitable for the proposed job.

The datacenter has to be manned in 3 shifts on all days of a week.

**SOW**

<b>Sl. No.</b>	<b>Resource</b>	<b>Experience &amp; Certification(s)</b>	<b>Location</b>	<b>No. of resources</b>
<b>A</b>				
<b>During datacenter augmentation phase</b>				
1	Project Manager	Minimum 10 years' experience in implementing datacenter's; B.E. / B.Tech / MBA; Valid Certified Datacenter Professional (CDCP) certification	Onsite	01
2	Project Engineer (Electrical)	Minimum 5 years' experience in implementing datacenter's; B.E. / B.Tech / Diploma In Engineering; Valid Electrical Supervisory License	Onsite	01
3	Project Supervisor Civil/ Electrical / Air Conditioning / IBMS / Networking	Minimum 3 years' experience in similar work; Diploma / ITI / Graduate in relevant trade.	Onsite	Minimum 02
<b>B</b>				
<b>During Datacenter Facility Management Phase</b>				
1	Operation Manager	Graduate / Post Graduate; More than 10 years' experience in IT Services; PMP or Certificate in Project Management	Offsite	01
2	Specialist Engineer	Minimum 5 years' experience in datacenter operation & maintenance; B.E. / B.Tech / Diploma In Engineering; Service specialist in Electrical / UPS / DG / PAC / BMS / Network / IT	On-Call	As per requirement
3	Lead Resident Engineer	Minimum 5 years' experience in IT/ Network/ Electrical operation & maintenance; B.E. / B.Tech / Diploma in Engineering;	Resident	01
4	L1 Support Supervisor	Minimum 3 years' experience in IT/ Network/ Electrical / Mechanical / Civil operation & maintenance;	Resident	Minimum 03

**SOW**

		Diploma / ITI or equivalent Fluency in Hindi & local language would be preferred		
5	L1 Support Assistant	Minimum 2 years' technical work experience; 10+2 / ITI / Diploma or equivalent; Fluency in Hindi & local language would be preferred	Resident	Minimum 03

**Note:**

(i) Selection of the Lead Resident Engineer and L1 Support Team shall be finalized by OIL through personal interaction and document review, as deemed necessary. The service provider shall submit a pre-screened list of suitable candidates for final evaluation and selection by OIL. The service provider must maintain a ready pool of screened candidates until the final evaluation is complete.

(ii) In case of any future vacancies, the same selection process shall be followed to ensure continuity and quality of service.

\*\*\*\*\***End of SoW**\*\*\*\*\*

**PART-IV****Revised SCHEDULE OF WORK, UNIT AND QUANTITY (SOQ)****DESCRIPTION OF WORK/SERVICE: NDR Data Center Augmentation and Facility Management Services.**

Sl. No.	Description of Service/Supply	UoM	Qty
<b>1</b>	<b>CIVIL &amp; INTERIORS</b>		
1.1	Dismantling, shifting works & temporary lighting.	AU	1
1.2	Wall treatment works.	AU	1
1.3	Glass partition & view pane	Lot	1
1.4	Floor PCC, plastering, steps.	Lot	1
1.5	Raised access flooring with panel lifter, thermal insulation.	Lot	1
1.6	Toughened laminated glass panels for raised flooring	Nos	10
1.7	Mineral fibre false ceiling.	Lot	1
1.8	Fire rated metal doors & Al. framed / glass doors.	Lot	1
1.9	Carpet flooring & door mats for new BMS room	Lot	1
1.10	Mid-back chairs.	Nos	7
1.11	PAC-ODU mounting platform.	Nos	3
1.12	Signage & displays.	Lot	1
<b>2</b>	<b>ELECTRICAL DISTRIBUTION SYSTEM</b>		
2.1	Upgradation of Electrical Panels	Lot	1
2.2	Upgradation of Distribution Boards	Lot	1
2.3	Power cables	Lot	1
2.4	Cable trays	Lot	1
2.5	Earthing system	Lot	1
2.6	Point wiring along with switch/sockets	Lot	1
2.7	LED Lighting	Lot	1
2.8	Bus bar Trunking (BBT) system	Lot	1
<b>3</b>	<b>GENSET</b>		
<b>3.1</b>	Diesel Generator	Nos	1
<b>4</b>	<b>UPS</b>		
4.1	Upgradation of UPS System (Main)	Nos	2
<b>5</b>	<b>AC</b>		
5.1	Precision Air-Conditioning (PAC) - 34.2 kW, gross cooling capacity	Nos	1
5.2	Precision Air-Conditioning (PAC) - 44.6 kW, gross cooling capacity	Nos	2
5.3	Comfort Air-Conditioning (CAC) - 2 Tr	Nos	2
5.4	Comfort Air-Conditioning (CAC) - 1.5 Tr	Nos	2
5.5	Comfort Air-Conditioning (CAC) - 1 Tr	Nos	1
<b>6</b>	<b>FIRE DETECTION AND SUPPRESSION SYSTEM</b>		
6.1	Addressable Fire Detection & Alarm	Lot	1
6.2	High Sensitivity Smoke Detection	Lot	1
6.3	Fire Suppression System	Lot	1

6.4	4Kg clean agent portable firefighting extinguishers	Nos	6
<b>7</b>	<b>ACCESS CONTROL SYSTEM</b>		
7.1	Upgradation of Access Control System	AU	1
7.2	Visitor Management software	NOs	1
<b>8</b>	<b>IP CCTV Surveillance System</b>		
8.1	Replacement of existing IP CCTV Surveillance System with 30 Fixed dome cameras and 2 PTZ cameras	Lot	1
<b>9</b>	<b>PA System</b>		
9.1	Upgradation of Public Address System	Lot	1
<b>10</b>	<b>WATER LEAK DETECTION SYSTEM</b>		
10.1	Water Leak Detection System for server room 2	Lot	1
<b>11</b>	<b>RODENT REPELLENT SYSTEM</b>		
11.1	Rodent Repellent System for BMS & SERVER ROOM-2	Lot	1
<b>12</b>	<b>RACKS</b>		
12.1	IT RACKS (medium density), 42U, 800 x 1000 MM WITH IPDU	Nos	6
12.2	IT RACKS (high density), 42U, 800 x 1200 MM WITH IPDU	Nos	4
<b>13</b>	<b>PASSIVE NETWORKING</b>		
13.1	Networking components as required.	Lot	1
<b>14</b>	<b>BUILDING MANAGEMENT SYSTEM</b>		
14.1	Upgradation and Shifting of Building Management System	AU	1
<b>15</b>	<b>OTHERS</b>		
15.1	LED Displays	Nos	3
<b>16</b>	<b>PROJECT MANAGEMENT</b>		
16.1	Project Management	AU	1
<b>17</b>	<b>DATACENTER FACILITY MANAGEMENT</b>		
17.1	Comprehensive AMC Services of existing installed equipment's.	Mon	60
17.2	Comprehensive AMC Services of newly installed equipment's	Mon	42
17.3	Managed Service for operation and maintenance of NDR, 07 resources, 03 shifts	Mon	60
<b>18</b>	<b>TRAINING</b>		
18.1	Comprehensive Training Program for OIL Officials	AU	1
<b>19</b>	<b>CONSUMABLES</b>		
19.1	Replacement of APM battery bank as per 120 KVA (Existing 12V, 200AH x 32 Nos in one battery bank for 90 KVA )	Sets	2
19.2	Replacement of ITA2 battery bank as per 10 KVA (Existing 12V, 42AH x 20 Nos in one battery bank for 10 KVA)	Sets	2
19.3	Refilling of existing gas cylinders with F-K-5-12, cylinder testing including I&C ,disconnection, transportation and re-connection. (as per existing BOQ)	Lot	6

**Note:** The total price quoted for the Datacenter Facility Management services (Item No. 17) shall not be less than 50% of the total quoted price for Data center Augmentation (Item No. 1 to 16). If this condition is not met, then the differential amount shall be retained from the bill(s) raised against Item A of the Price Bid Format/SoR. The same shall be released & paid at the end of the contract.

\*\*\*\*\***End of SOQ**\*\*\*\*\*

**Revised SPECIFICATIONS & COMPLIANCE**

<b>Clause Number</b>	<b>Scope Of Work</b>	<b>Bidder's Response(Noted, Complied, Not Complied)</b>	<b>Cross Reference</b>
<b>1</b>	<b>Broad Scope of Work</b>		
<b>2</b>	<b>Augmentation including Supply, Installation, Testing and Commissioning</b>		
<b>3</b>	<b>Project Execution</b>		
<b>4</b>	<b>Datacenter Facility Management</b>		
<b>5</b>	<b>Manpower Requirement</b>		

Sl. No.	Item Name	Description	Bidder's Response(Noted, Complied, Not Complied)	Reference to relevant section/Page No. in the technical bid /documentation / Brochure / Catalogue / OEM Website, wherever applicable
<b>A</b>		<b>CIVIL &amp; INTERIORS</b>		
<b>1</b>		<b>FURNITURE</b>		
<b>1.1</b>	<b>Computer Workstation Tables</b>	Shifting of existing computer tables from the existing BMS room to the new BMS room, as per layout, including UPS power, data and voice connectivity. Make: Godrej ; Qty : 07		
<b>1.2</b>	<b>Overhead storage units</b>	Shifting of existing overhead storage units from the existing BMS room to the new BMS room, as per layout, including UPS power, data and voice connectivity. Make: Godrej ; Qty : 07		
<b>1.3</b>	<b>Office Chair</b>	Supply of office chair for computer tables in BMS Room, as per minimum specifications below.  Required features: a. Mid back revolving chair with ergonomic design. b. The backrest and seat with thick high resilience polyurethane moulded foam. c. Ergonomic armrests. d. Pushback with locking mechanism. e. 5-pronged SS legs with caster wheels. f. Seat and back fabric finish, as per approved color. Make : Godrej / Featherlite / BP Ergo / Durian		

<p><b>1.4</b></p>	<p><b>Carpet Flooring</b></p>	<p>Carpet Flooring for new BMS room as per proposed drawing. Floor finishes shall be of a heavy contract grade carpet and pass the castor chair test. Carpet tiles shall have a reflectance value between 0.2 and 0.3. [Approximately]. Finishes shall meet the minimum standards for vertical electrical resistance at 30% humidity and should have an anti-microbial agent to inhibit contamination. Workplace (Health, Safety and Welfare) Carpet tiles should have a small random pattern or 'fleck' to minimize the effects of soiling.</p>		
<p><b>1.5</b></p>	<p><b>Door mat</b></p>	<p>Supply of door mat with following minimum specification:  a. Material type: Coir.  b. Colour: Brown.  c. Minimum Dimension: 1000 mm x 400 mm x 20 mm thick.</p>		
<p><b>2</b></p>	<b>GLASS DOORS</b>			
<p><b>2.1</b></p>	<p><b>Glass door</b></p>	<p>Frameless glass door, minimum 1000 x 2100 mm, single leaf with 10 to 12mm clear toughened glass including SS door handles on both sides, heavy duty door closer and rubber linings to prevent air leakage.   Door marked as "ALD" in drawing.</p>		
<p><b>3</b></p>	<b>FIRE RATED DOOR</b>			

<p><b>3.1</b></p>	<p><b>Door Frame:</b></p>	<p>Providing and fixing fire resistant door frame having following minimum specification: Profile shall be double rebate KERF frame 143mm x 58mm made out of 1.6 mm thick G.I. sheet (zinc coating not less than 120 gm/sqm). The infill material shall be resin bonded honeycomb core. The frame is fitted with intumescent fire seal strip of size 10x4 mm (minimum) around the frame and fixing with dash fastener of approved size and make, including applying a coat of approved brand fire resistant primer etc. complete.</p>		
<p><b>3.2</b></p>		<p>Frames should be provided with back plate bracket and anchor fasteners for installation on a finished plastered masonry wall opening. Once frame installed should be grouted with cement &amp; sand slurry necessary for fire doors on the clear masonry opening.</p>		
<p><b>3.3</b></p>		<p>Door shutter shall be minimum 46mm thick fully flush double skin door with vision lite. Door shutter shall be manufactured from 1.6 MM minimum thick G.I. sheet (zinc coating not less than 120 gm/m<sup>2</sup>). The internal construction of the door should be rigid reinforcement pads for receiving appropriate hardware. The infill material shall be resin bonded honeycomb core. All doors shall be factory prepped for receiving appropriate hardware. Door shutter shall be fixed with SS (304 Grade) ball bearing butt hinges, mortice lock, Heavy duty door closer, D type pull handle with rose (250x 19mm) and necessary screws all complete.</p>		
<p><b>3.4</b></p>	<p><b>Door Shutter</b></p>	<p>Vision panel shall be provided with necessary beading and screws. The size of vision panel shall be minimum 200mm x 300mm with fire rated glass minimum 15 mm thick.</p>		
<p><b>3.5</b></p>		<p>All doors and frames shall be finished with polyurethane aliphatic grade paint of approved colour. The door leaf and frame shall have passed minimum 250 hours of salt spray test.</p>		

3.6		Panic bar / latch (Double point) fitted with a single body, Trim Latch & Lock on back side of the Panic Latch of reputed brand and manufacture. all complete to be installed on Emergency Exit. (Door as marked in drawing).		
3.7		The complete door system including vision panel shall be tested as CBRI or ARAI for 120 minutes of fire resistance. Test certificates should be available for vision lites /panels as part of the fire door assembly.  <b>Door marked as “FRD” in Server Room 2 as per proposed drawing.</b>		
4		<b>PARTITION SEPARATING SERVER ROOM 1 AND SERVER ROOM 2</b>		
4.1	<b>Fire Rated Partition</b>	Providing & fixing full height partition wall using double fireline gypboard 12.5 mm thick on both sides with GI steel metal vertical stud frame fixed in the floor and ceiling to provide a strong partition. Glass wool insulation inside shall be provided as required. Fixing is by self-tapping screw with vertical studs being at 610 mm intervals. The same should be inclusive of making cutouts for switch board, sockets, grill etc.		
4.2	<b>Glass partition</b>	Glass partition between Server Room 1 and 2 made with 10 ~ 12mm thick toughened glass. The top and bottom sections to me made out of fireline gypboard supported on metal studs with provision of cutouts for passage of cable trays and cables. <b>Glass partition as marked in the drawing.</b>		
5		<b>FALSE CEILING FOR SERVER ROOM 2</b>		
5.1		Plain gypsum false ceiling with approved G.I Frame work and hangers including openings for lights and air conditioning grilles to be framed with G.I. members. Area includes all horizontal, vertical and curved surfaces.		

5.2		Mineral Fibre board, 600 mm x 600 mm in true horizontal level suspended on locking grid system made of hot dip galvanized steel section powder coated including making opening for electrical & air conditioning fitting complete as directed. The tiles are to be installed on 15 mm grid system.  <b>Make : Armstrong / ANF/ RK</b>		
6		<b>RAISED ACCESS FLOORING FOR SERVER ROOM 2</b>		
6.1	<b>RAISED ACCESS FLOORING</b>	Providing and fixing raised access flooring system with the following minimum specification: Access Floor panel of size 600 x 600 mm, all steel welded construction with an enclosed bottom pan of hemispherical cones and the top plain sheet is fuse-welded at 144 locations to form a panel.		
6.2		Access floor steel panel shall have a cementitious core, HPL pre-fixed, PVC beads with edge support rigid grid under-structure system. Panel core thickness - 35 mm and panel weight not exceeding 16.5 kgs.		
6.3		The tiles shall have antistatic laminate. The floor shall provide protection from electro-magnetic interference.		
6.4		Access floor system to be installed shall provide a minimum finished floor height of 450 mm from the existing floor level.		
6.5		The system shall provide for suitable floor tiles, pedestals and stringers designed to withstand various static and rolling loads.		
6.6		Access floor tiles shall provide for adequate fire properties, acoustic barrier and air leakage resistance.		
6.7		The minimum UDL bearing capacity of the system shall be 2450 Kgs/Sqm and minimum point load bearing capacity shall be 567 kgs.		
6.8		Fire rating : Class O & Class 1, as per BS 476 Part 6 & 7, And also ASTM E84 1998 (Flammability) and ASTM E136 (Combustibility)		

7		<b>Toughened laminated glass panels for raised flooring</b>		
7.1	<b>Toughened laminated glass panels</b>	Toughened laminated glass panels of size size 600 x 600 mm shall be installed in designated sections of the raised access floors in Server Room 1 and 2 and certain other areas of the datacenter.		
7.2		The view area shall be designed for normal human walking load and must be capable of bearing a concentrated load of at least 110 kg.		
7.3		The glass panels shall be Tampered glass/scratch resistant.		
8		<b>WALL TREATMENT FOR SERVER ROOM 2, BMS ROOM AND WHEREEVER NECESSARY DUE TO DISMANTLING</b>		
8.1	<b>Acrylic Emulsion paint</b>	Wall painting with acrylic emulsion paint to give an even shade : Two or more coats on new work. <b>Makes : Berger / Asian / Dulux</b>		
8.2	<b>Wall putty over Cement Plaster</b>	Providing and applying white putty of average thickness-1 mm, over the plastered wall surface to prepare the surface even and smooth complete. <b>Makes : Birla /JK</b>		
8.3	<b>Epoxy Paint</b>	Finishing with epoxy paint at required floor locations including appropriate priming coat, preparation of surface, etc. complete.		
8.4	<b>Aluminium foiled faced insulation. (To be considered for only Server Room 2)</b>	Insulation material shall be minimum 13mm thick, Closed Cell Elastomeric Nitrile Rubber with aluminium foil laminated on one side. The junction between the insulator and fixtures has to be watertight and airtight. Thermal conductivity of insulation material shall not exceed 0.035 W/(m.K) at mean temperature of 0 deg C as per EN 12667.		
9		<b>OTHERS</b>		
9.1	<b>PAC ODU mounting platform</b>	Construction of PAC ODU mounting platform shall be as carried out with brickwork finished with 12mm thick plaster. Necessary steel platform (Mild steel) to be placed over the brick pedestal. Minimum spacing shall be 1.00 M when measured center to center. Minimum size of one such pedestal shall be 300 mm(H) x 900 mm(L) x 250 mm(W).  The work is to be carried out at roof level of the building with necessary arrangement.		

9.2	<b>Signage and Display</b>	Supply and fixing signage of standard size as per conventional design/ colour code on 3 mm thick aluminium/acrylic panel. The signage shall be glow type and to be fixed on location as directed by engineer -in-charge on wall or hang from false ceiling with the help of necessary chain and screws etc.		
		Repairing of the existing main entry lobby wall signage with Stainless Steel letters, as per existing signage design and letter font / size. OIL logo to be changed as per latest design.		

Sl. No.	Item	Description	Bidder's Response(Noted, Complied, Not Complied)	Reference to relevant section/Page No. in the technical bid /documentation / Brochure / Catalogue / OEM Website, wherever applicable
<b>B</b>	<b>ELECTRICAL DISTRIBUTION SYSTEM</b>			
	<b>NOTES:</b>	<p>The main LT panel, UPS O/P panel and the AC panel have to be upgraded at site with higher rating switchgears and associated accessories as per the attached peak load calculation for the augmented data center. Existing LT/PAC/UPS panel components with rating may be referred to in Existing_SLD and annexure_existing_items. Bidders have to submit detailed single line diagram (SLD) of each panel mentioning switchgear ratings and upgradation plan with implementation timelines &amp; shutdowns required, along with the technical bid. Considering the nature of the work, ACBs, MCCBs, etc. that are to be installed in the existing electrical switchgears panels should be of same make as the existing ones. For the new items make list for electrical items to be referred.</p> <p><b>Upgradation work have to be completed with minimum total datacentre shutdown.</b></p>		
1	<b>Main LT Panel</b>			
1.1	<b>Main LT Panel</b>	<p>The existing LT Panel shall have to be upgraded at the site using suitable switchgears,CTs, cables, connectors and required accessories as per below specifications and site requirement. Detailed electrical SLD to be submitted by the bidder.</p> <p>The main LT panel must have 2 nos of incomers with ACB of 800 A and one bus coupler ACB of 800 A. Bus bar of LT panel shall be 1250 A (min).</p> <p>Outgoing of LT panel: As per site requirement.</p> <ul style="list-style-type: none"> <li>• All the components shall be mounted on separate steel plate with necessary stiffeners or suitable channels so that all the components can be checked and replaced from front side after opening the door.</li> <li>• Labelling using riveted engraved metallic labels.</li> <li>• LT Panel should have adequate protection against high &amp; low voltages.</li> <li>• All panel doors shall be earthed.</li> <li>• No bimetallic joints shall be permitted in the links of connections.</li> <li>• Sufficient space should be provided for proper glanding, dressing, connecting up and maintenance of all cables. Sufficient nos. of cable entry holes shall be provided in the bottom plate.</li> <li>• All items of the Panel must conform to relevant IS or IEC (with latest amendments) for performance and safety. Power supply to multifunction meter shall be 230 VAC, and through dedicated circuit, protected by suitably rated MCB.</li> </ul> <p>Incoming cable entries: Suitable for terminating upto 3 nos of 3.5C x 240 sqmm XLPE aluminium armoured cable.</p> <ul style="list-style-type: none"> <li>• All cable entries shall be done from bottom side. Separate detachable type gland plates shall be provided for all cables.</li> </ul> <p>Shutdown plan for upgradation of the LT Panel have to be submitted by the bidder alongwith the technical bid.</p>		
1.2	<b>AIR CIRCUIT BREAKERS</b>	<p>Each Air Circuit breaker shall incorporate the following:</p> <ul style="list-style-type: none"> <li>• In = 800 Amps</li> <li>• 4 Poles</li> <li>• Shunt Trip</li> <li>• Undervoltage trip @ 80% of rated voltage</li> <li>• Breaking capacity – Icu = 50 kA</li> <li>• Spring charging – Electrical and manual</li> <li>• Closing – Electrical and manual</li> <li>• Tripping – Electrical (shunt coil) and manual trip button</li> </ul>		

	<b>MCCB</b>	Each MCCB shall incorporate the following: <ul style="list-style-type: none"> <li>• Rating as per requirement</li> <li>• 4 Poles</li> <li>• Breaking capacity – Icu = 36 kA or above</li> <li>• Micro processor Based</li> <li>• LSIGN protection</li> <li>• Ics = 100% Icu as per IEC 60947-2</li> </ul>		
1.3	<b>PANEL BUSBAR</b>	The bus-bar shall be insulated with heat shrinkable PVC sleeves, and shall be supported at required intervals with non-hygroscopic, non-deteriorating, and non inflammable SMC / FRP supports having adequate mechanical strength and a high tracking resistance, to withstand short circuit fault levels up to 50 kA for 1 sec. All risers and connections from bus bar shall be carried out with same material as the main bus bars of current rating as per rating of individual cubicle switch. Adequate non-hygroscopic insulating sheet barriers between the bus chambers and feeders shall be provided.		
<b>2</b>		<b>Main UPS Output Panel ( for Rack Load)</b>		
2.1	<b>UPS Output Panel</b>	The existing UPS Output Panel shall have to be upgraded at the site using suitable switchgears, cables, connectors and required accessories as per site requirement. Revised electrical SLD to be submitted by the bidder.		
2.2		Provision to cater to a maximum IT load of 55 kW +/- 10% for Server Room-1 (max 14 racks) and a maximum IT load of 28 kW +/- 10% for Server Room-2 (max 08 racks).		
2.3		Shutdown plan for upgradation of the UPS Output Panel have to be submitted by the bidder along with the technical bid.		
<b>3</b>		<b>Main DB</b>		
3.1	<b>Main DB</b>	The existing Main DB shall have to be upgraded at the site using suitable switchgears, cables, connectors and required accessories as per site requirement.		
<b>4</b>		<b>CAC DB</b>		
4.1	<b>CAC DB</b>	The existing CAC DB shall have to be upgraded at the site using suitable switchgears, cables, connectors and required accessories as per site requirement. Supply to CAC DB shall be taken from main DB.		
<b>5</b>		<b>Lighting / Convenience DBs</b>		
5.1	<b>Lighting / Convenience DBs</b>	Upgradation of LDB's / CDB's for distribution to individual switches, sockets etc.		
<b>6</b>		<b>Illumination (Lighting) system</b>		
6.1	<b>Light fixtures</b>	All fixtures shall be LED type and recessed mounted on the false ceiling, as specifications given below. Wattage : 36 Watts Efficacy: 120% or more Rated voltage : 220 - 240 V Dimension : 595 x 595 mm		
<b>7</b>		<b>PAC Panel</b>		
7.1	<b>PAC Panel</b>	The existing PAC Panel shall have to be upgraded at the site using suitable switchgears, cables, connectors and required accessories as per site requirement. Revised electrical SLD to be submitted by the bidder.		
<b>8</b>		<b>Bus bar Trunking (BBT) system</b>		
8.1	<b>Bus bar Trunking (BBT) system</b>	Make: Vendor must specify Model: Vendor must specify		
8.2		Compact Air Copper Bus Trunking system suitable for Server Room application.		
8.3		Busbar Rating : Not exceeding 125 Amps		
8.4		Rated Operational Voltage : 1000 volt AC		
8.5		Rated Insulation Voltage : 1000 volt AC		
8.6		Rated Frequency : 50 Hz		
8.7		Busbar material : Copper, 99.9% pure ETP grade		
8.8		Degree of protection : IP 54 or better		
8.9		Fire rating : 120 min or better		
8.10		Seismic compliance: Zone 5 as per IS: 1893/ IEEE 693		
8.11		Plug-in-box : 32A / 63A to be provided as per rack load. 32A plug-in box - 16 Nos. 63A plug-in box - 8 Nos. Additional 4 Nos. of 32A and 4 Nos. of 63A plug-in box must be kept for future use.		
8.12		Compliance: IEC 61439-1 & 6		
8.13		Weight of bus trunking : Should not exceed 8 kgs per meter.		
8.14		<b>Preferred Makes : Legrand / C&amp;S / Schneider</b>		
<b>9</b>		<b>Earthing System</b>		

9.1	<b>Earthing System</b>	<p>Earthing system as IS: 3043 and as per site requirement.</p> <p>The earthing system shall consist of chemical earth electrodes, spaced 4-6 meters apart from each other and 2 m away from building walls, as per available space and interconnected by 50mm GI straps to form a earthing network. The earth network shall have a max resistance of 3 ohms. All earth electrodes shall be enclosed and capped by cemented earth-pit covers.</p>		
10	<b>Power Cable</b>	<p>Approximately 300 meters of 11 power cable of following specification to be supplied and laid in ground/wall. These cables are to be drawn from existing 500KVA 11/0.415VKV transformer and 500KVA DG set.</p> <p>1100V 3.5Cx240 PVC Aluminium armoured cable  Cable, 3.5C x 240 sqmm, 1100V, PVCA Alu armoured cable.  Voltage Grade: 1100V  Color: Black  Conductor Material: Stranded compact circular/shaped Aluminum  Shape: Complete round on outer side  Insulation: PVC, Type A  Filler &amp; Inner Sheath: Unvulcanized rubber/ Thermoplastic materials/ Proofed tape (for inner sheath only).  Outer Sheath: PVC, Type ST 1  Armour: Galvanized Steel strip/Wire  Applicable Standard: IS-1554 (part-1)-1988 (with latest amendments if any)  Marking:  a) Manufacturer's name, voltage grade, sequential length (in meters), size of cable, year of manufacture and the letters 'ELECTRIC' shall be printed, indented or embossed on the sheath of the cable throughout the length. The distance between any two consecutive printings, indentations or embossing shall be not more than 1 m.</p> <p>xvi. Submittals:  a. GTP and TDS to be submitted for approval prior to supply of the item.  b. With the supply: Routine test certificate, warranty certificate.</p> <p>Laying of cable:  i. The trenches shall be excavated in reasonably straight lines, wherever there is a change in the direction, a suitable curvature shall be adopted complying with the requirements of above.  ii. Where gradients and changes in depth are unavoidable, these shall be gradual.  iii. The excavation should be done by suitable means, i.e., manual or mechanical. The excavated soil shall be stacked firmly by the side of the trench such that it may not fall back into the trench.</p>		

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<b>C</b>	<b>DIESEL GENERATOR</b>			
<b>1</b>	<b>GENSET</b>			
1.1	500 KVA DG set with AMF Panel	Make: Vendor must specify Model: Vendor must specify		
1.2	Compliance	IS/ISO 8528 (Part 1 to 12, Latest Version) Standard		
1.2	Power Rating ( KVA / KW)	500/400		
1.3	Voltage (V)	415		
1.4	Frequency (Hz)	50		
1.5	Electrical starting system (DC)	24V DC		
1.6	No. of Phases	3Phase - 4 Wire		
1.7	Power Factor	0.8 pf (Lag)		
1.8	Integral Fuel Tank Capacity (Ltrs)(Inbuilt)	Maximum 990 Ltrs. The fuel should be sufficient to operate the DG at 100% load for 06 (six) hours		
1.9	DG set Noise level as per CPCB norms	<75 dB(A) at 1 metres from the enclosure surface under free field condition		
<b>2</b>	<b>ENGINE</b>			
2.1	Engine Rated output (Min) KW(HP)	Bidder to provide calculation details of the selected engine		
2.2	No. of Cylinders	Bidder to specify no. of cylinders and configuration		
2.3	RPM (Max)	1500		
2.4	Fuel consumption at 50% load (max) Ltr/Hr	To be specified by the bidder		
2.5	Cooling	Liquid Cooled		
2.6	Governing	Electronic		
2.7	Governor Class	G3 as per ISO 8528 Part - V		
<b>3</b>	<b>ALTERNATOR &amp; CONTROL PANEL</b>			
3.1	Alternator	Screen protected revolving field self excited alternator conforming to IS/IEC 60034-1.		
3.2	Alternator Voltage (V)	415		
3.3	Frequency (Hz)	50		
3.4	Power Factor	0.8 pf (Lag)		
3.5	Voltage +/- 1% Regulation	± 1%		
3.6	Enclosure	IP 23		

3.7	Control Panel	PS0602 Controller or similar with indicating lamps for 'LOAD ON' and 'Set Running' instrument fuses duly wired and furred, busbar with suitable capacity with incoming and outgoing terminals, MCCB with suitable rating with short circuit protection, AC/Dc separation inside control panel for safety.		
3.8	Excitation	Brushless		
<b>4</b>	<b>EXHAUST SYSTEM</b>			
4.1	Silencer type	Residential		
4.2	No of Silencer	Bidder to specify		
<b>5</b>	<b>EARTHING</b>			
5.1	Earthing scheme	Earthing system as IS: 3043 and as per site requirement. The earthing system shall consist of chemical earth electrodes, spaced 4-6 meters apart from each other and 2 m away from building walls, as per available space and interconnected by 50mmx6 mm GI straps to form a earthing network. The earth network shall have a max resistance of 3 ohms. All earth electrodes shall be enclosed and capped by cemented earth-pit covers.		
<b>6</b>	<b>AMF PANEL</b>			

6.1	Design	<p>Suitable rated (rating should be higher than that of the DG full load current) AMF panel shall be provided with the genset for starting the genset and connecting its output to the load on main power failure. The panel shall have provision for monitoring power from two mains. The genset shall start in the event of failure of supply from either or both the mains. During failure of any or both the mains there shall be a waiting time of 5 sec (Adjustable timer 0- 10 sec) before starting the engine. After the engine starts and the voltage buildup and all operating parameters of the genset are in the normal operating range, the spring charging mechanism of MCCB shall charge the spring and close the MCCB.</p> <ul style="list-style-type: none"> <li>• On restoration power at both the mains only, MCCB shall trip and there shall be a waiting time of 10 sec or as required for proper shutdown, before the engine stops.</li> </ul>		
6.2	Automatic Mode	<p>In the automatic mode, in case of mains failure the DG set shall be started automatically through the AMF facility built in of the Engine control through a mains voltage monitoring relay to be provided on the control panel. The panel shall be provided with a built in facility for 3 consecutive starts on receipt of the signal for starting. In case the DG set fails to start, the logic should be built in such a way that the starting command to the engine both in manual/ automatic mode is locked out and hooter alarm is there to alert the operator.</p> <p>Diesel Engine shall continue to operate off load for a preset time in order to cool down the engine lock and bring the temperature to a uniform level to avoid thermal shocks.</p>		
6.3	Manual Mode	<p>In case of mains failure the DG set can be started manually through DG start push button provided on the control panel.</p> <p>In the event of return of the mains supply, by pushing the Mains supply Push button on the panel, power should be transferred to mains supply.</p>		
<b>7</b>	<b>OTHERS</b>			
7.1	Emergency stop	Yes		

7.2	Internal light	LED Lamp		
7.3	External fuel tank	The DG to be installed with an external fuel tank of 990 litres and associated fuel pumping system.		
7.4	Rain Cap	There should be provision of Rain Cap for vertical Exhaust Emission		
7.5	Skid	Engine and Alternator shall be directly coupled or coupled by means of flexoplate/flexible coupling as per manufacturer standard design and both units shall be mounted on a suitable designed common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with minimum vibrations. The bed plate shall be suitable for installation on suitable anti-vibration mounting system.		
7.6	Emission and Noise compliance	The generating set shall meet the latest CPCB norms as per Government of India notifications for Genset run on diesel.		
<b>8</b>	<b>OEM</b>			
8.1	Presence	The OEM shall have service center in the State of Assam.		
8.2	Make	Bidder to specify		

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<b>D</b>	<b>UPS SYSTEM (Main)</b>			
1	<b>Hi-Performance Modular On Line UPS system, 02 x 90 KVA</b>	Existing main online modular UPS have to be scaled up to 120 KVA by adding 30 KVA power modules.		
2	<b>Backup power modules</b>	UPS system should have at least two (02) backup power modules in case of module replacement within the contract period. Power modules should be exactly of same rating and make as that of the existing modules. (Bidder to mention make & rating of power modules)		
3	<b>Input: 3 Phases + Neutral + Ground</b>	<ul style="list-style-type: none"> <li>• Rated AC Input Voltage: 415 (three-phase and sharing neutral with the bypass input)</li> <li>• Rated Frequency: 50 Hz</li> <li>• Input voltage range: 304~478Vac (Line-Line), full load 228V~304Vac (Line-Line), load decrease linearly according to the min phase voltage</li> <li>• Input Frequency range: 40~70</li> <li>• Input Power factor: &gt; 0.99</li> <li>• THDI: &lt; 3% (full Linear Load)</li> </ul>		

4	<b>Battery</b>	12V VRLA SMF Batteries for a minimum of 30 minutes back-up time. Each UPS should have individual battery bank.		
7	<b>Output</b>	<ul style="list-style-type: none"> <li>• Rated capacity (KVA): as stated, Scalable upwards</li> <li>• Rated AC voltage: 380/400/415</li> <li>• Rated Frequency: 50/60</li> <li>• Frequency Regulation: 50/60 Hz <math>\pm</math> 0.1 %</li> <li>• Voltage precision: <math>\pm</math> 1.5 (0 ~ 100 % load)</li> </ul> <ul style="list-style-type: none"> <li>• Overload:               <ul style="list-style-type: none"> <li>i) 110% for 60 min;</li> <li>ii) 125% for 10min;</li> <li>iii) 150% for 1min;</li> <li>iv) &gt;150% for 200ms</li> </ul> </li> </ul>		
6	<b>Battery Circuit Breaker</b>	Should be as per UPS battery bank.		
7	<b>Isolation transformer</b>	Individual input isolation transformer for UPS.		
8	<b>Parallel operation</b>	UPS should have Hot Sync Paralleling Card		
9	<b>Monitoring</b>	UPS should have SNMP Card for remote monitoring.		

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<b>E</b>	<b>PRECISION AIR CONDITIONERS</b>			
1	<b>Precision AC, 34.2 kW, gross cooling capacity for Server Room 1.</b>	<p>Make: To be same as the existing PACs Model: Vendor must specify</p> <p>Gross Cooling Capacity of Preision Air-conditioner: 34.2KW or higher subject to confirmation through a comprehensive heat-load calculation that considers server room layout, IT equipment heat dissipation, occupancy, lighting load, and actual site conditions.</p>		
	<b>Precision AC, 44.6 kW, gross cooling capacity for Server Room 2.</b>	<p>Make: Vendor must specify Model: Vendor must specify</p> <p>Gross Cooling Capacity of Preision Air-conditioner: 44.6KW or higher subject to confirmation through a comprehensive heat-load calculation that considers server room layout, IT equipment heat dissipation, occupancy, lighting load, and actual site conditions.</p>		
2	<b>General</b>	The microprocessor controlled precision AC Units should have high sensible heat ratios, to match high sensible loads of Computer / Server Rooms.		
3		The Indoor unit shall comprise of Digital Scroll Compressor in independent, corrosion resistant EC fans, Evaporator DX Cooling Coil with hydrophilic coating, Microprocessor controllers, Expansion valves, Driers, G4 Filter, Suction and Discharge piping, Internal power and Control wiring, Crankcase heaters, Infrared Humidifier, Heaters, HP/LP Cutouts, Power and Control contactors, water leak detectors and Other Electrical accessories.		
4		Systems should mandatorily be having variable capacity compressors. Fixed capacity compressor technology like multiple scrolls or fixed capacity tandem scrolls are strictly not allowed.		

5	<b>Unit return air temperature</b>	26 ± 1 Degree C, Rack inlet temperature shall however be maintained at 24 ± 1 Degree C.		
6	<b>Ambient air design temperature</b>	Design ambient temperature in the range of 35-38 deg C		
7	<b>Relative Humidity</b>	50 % ± 5%		
8	<b>Air Flow Direction</b>	Downthrow discharge and top return		
9	<b>Indoor unit depth Indoor unit height</b>	Not exceeding 900 mm Not exceeding 2000 mm		
10	<b>Indoor to Outdoor unit distance</b>	Unit must be capable of functioning upto 100 metre of Copper piping between Indoor & Outdoor units.		
11	<b>Design</b>	Unit shall be floor mounted designed specifically for service from the front. The system shall be designed to draw-through air arrangement to insure even air distribution to the entire face area of the coil. The unit shall modulate cooling capacity and airflow based on site requirements.		
12		Bidder must submit software selection outputs of the proposed units.		
13	<b>Cabinet</b>	The cabinet to be manufactured from CRCA externally painted with RAL 7021 colour epoxy-polyester powder paint and assembled. Double-skinned fan section and side panels with glasswool insulation of 10-25 mm thickness with 30-40 kg/m <sup>3</sup> of density.		
14	<b>Cooling circuit</b>	Single refrigeration circuit, incorporating high efficiency, fully hermetic Digital Scroll compressor with crankcase heater, air-cooled condenser with outlet service valve, safety valve, filter drier, moisture indicating sight glass, liquid line solenoid valve and an expansion valve directly controlled by the unit microprocessor to allow the highest energy saving.		
15	<b>Evaporator coil</b>	The inclined evaporator coil to be manufactured from copper tubes, mechanically bonded to hydrophilic painted aluminium fins, with a stainless steel condensate drain pan.		

16	<b>Fan section</b>	The unit to be fitted with a direct-driven, high efficiency, single inlet, backward curved, centrifugal 'plug' type innovating EC fan. The fan to have an impeller with curved blades made of corrosion resistant fibreglass plastic.		
17		The fan motors should be electronically commutated, IP54, with internal protections, continuous speed regulation via controller signal. The motor should be three-phase with IP54 protection; provided with internal thermal protection.		
18	<b>Humidifier</b>	The electronic controlled humidifier unit to be fitted with an infrared humidifier suitable for use with water of varying degrees of hardness.		
19	<b>Heating / reheating</b>	The heating resistors are of a rigid design for extended operational life and are normally utilised to maintain room dry-bulb conditions during a system call for dehumidification.		
20		Stage heaters to be made of finned armoured stainless steel ANSI 304 to maintain low surface power density.		
21		Heating control to be ON-OFF type. The heaters should be phase balanced and provided with a manual reset safety thermostat to disable them in the event of a high temperature.		
22	<b>Air filtration</b>	Standard filtration grade of G4 (95% down to 5 microns)		
23		The unit to provide 'Filter Clogged' warning indication.		
24	<b>Monitoring</b>	The unit to be supplied with suitable card for both SNMP & modbus connectivity.		
25		The controller should be microprocessor based, 32 bit RISC.		
26		The controller allows setting and monitoring of the following parameters via a 3- button keypad: <ul style="list-style-type: none"> <li>• Air Temperature</li> <li>• Temperature set-point</li> <li>• Temperature band</li> <li>• Humidity</li> <li>• Humidity set-point</li> <li>• Humidity band</li> </ul>		
27		The parameters are to be indicated using symbols and text on a backlit, liquid crystal display.		

28	<b>Microprocessor controller</b>	The controller shall provide unit to unit ethernet connection to operate with multiple units, run/stand-by rotation, automatic changeover and parameter sharing functions, external communications through BMS, sequential auto restart timer, with adjustable time delays to be applied to unit restart after a power loss.		
29		The following warnings / alarms are to be included: <ul style="list-style-type: none"> <li>• High temperature</li> <li>• Low temperature</li> <li>• High relative humidity</li> <li>• Low relative humidity</li> <li>• Humidifier failure</li> <li>• Fan failure</li> <li>• Electrical heater high temperature (when applicable)</li> <li>• Sensor failure</li> <li>• Controller errors</li> </ul>		
30		Unit memory shall hold the 200 most recent alarms with time and date stamp for each alarm.		
31	<b>Type of load</b>	High sensible heat load (SH factor > 0.95)		
32	<b>Power Supply</b>	Unit should be able to work on 415 VAC, 50 Hz, 3-phase, 4 wire supply, with normal voltage and frequency fluctuations.		
33	<b>Safety interlocks</b>	Fire detection signal from fire detector system shall be able to switch off the unit operation in the event of fire in conditioned space.		
34	<b>Refrigerant piping</b>	Refrigerant circuit shall be suitable for operation on R-407C / R410a and shall include the following items: a) Expansion valve with pressure equalization; b) Removable liquid line drier / filter. c) Liquid line sight glass with moisture indicator. d) Hand shut off valves.		
35		OEM should be minimum ISO 9001, ISO 14001 certified.		

36	<b>OEM qualification criteria</b>	OEM should have fully equipped service center (for Precision AC units) within the State of Assam to give prompt & efficient service. Service center address details with documentary evidence must be provided by the bidder.		
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<b>F</b>	<b>COMFORT /SPLIT AIR-CONDITIONER SPECIFICATIONS</b>			
	NOTES:	Existing comfort AC's to be replaced with 2.0 /1.5 Ton inverter type split AC's.		
1	Nominal Cooling Capacity (Tonnage)	2		
2	Star Rating	Minimum 3 Star		
3	Cooling Capacity (Watt)	6350		
4	(Rated) Voltage/ Frequency/ Phase	230 V / 50Hz / Single		
5	ISEER	3.9		
6	Country of Origin	India		
7	Air Conditioner Technology	Inverter		
8	Cooling Capacity (BTU/hr)	21666		
9	Moisture Removal (Litres/Hour)	1.8		
10	Compressor Type	Inverter Rotary		
11	Night Glow Function on Remote Buttons	Yes		
12	Refrigerant	R32		
13	Condenser Type	100% Copper		
14	Installation	Standard Installation		
15	ODU location	Roof top		
16	Operation	Split AC's to be operated through sequential controllers without any manual intervention.		

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<b>G</b>	<b>ADDRESSABLE FIRE DETECTION &amp; ALARM</b>			
	NOTES:	The existing fire detection & alarm system to be upgraded / expanded to accommodate the new areas, as per minimum specifications below.		
1	FIRE DETECTION & ALARM SYSTEM	Addressable multi-criteria type smoke detector with twin LED.		
2		Response indicator with LED.		
3		Addressable control modules		
4		Addressable monitoring modules		
5		Fault Isolator modules (inbuilt or separate) as per Class-X wiring.		
6		Manual Pull Station.		
7		Electronic Strobe cum Hooter		
8		Existing control panel to be integrated with all devices including the building management system.		
9		The system modules shall communicate with an RS 485 network communications protocol.		
10		Manual Call Points shall be 'PULL' type, addressable, and installed with proper fire signage.		
11		Electronic sounders shall be fitted with synchronized flashing lights and adjustable sound outputs.		
<b>H</b>	<b>HIGH SENSITIVITY SMOKE DETECTION</b>			
	NOTES:	A new high sensitivity smoke detection system to be supplied, installed and commissioned for Server Room-2, as per minimum specifications below and as per NFPA standards.		
1	HIGH SENSITIVITY SMOKE DETECTION	Make: Vendor must specify Model: Vendor must specify		
		Laser based VESDA control Panel		
		Power Supply Unit		

2	DETECTION	Aspiration Tubes, Capillary Tubes, Nozzles, accessories, etc. 25mm PVC Conduit		
<b>I FIRE SUPPRESSION SYSTEM FOR SERVER ROOM-2</b>				
	NOTES:	A new fire suppression system to be supplied, installed and commissioned for Server Room 2, as per minimum specifications below and as per NFPA standards.		
1	FIRE SUPPRESSION SYSTEM	Make: Vendor must specify Model: Vendor must specify		
2		FK-5-1-12 based Fire Suppression System.		
3		Fire suppression with total room flooding.		
4		Fire suppression agent should have zero ozone depletion potential.		
5		Fire suppression agent should have global warming potential than 1.		
6		Fire suppression agent shall have minimum atmospheric lifespan of less than 5 days.		
7		The fire suppression agent should be electrically non-conducting in both liquid and gas states.		
8		Seamless PESO approved cylinder.		
9		Backup cylinder to be considered.		
<b>J PORTABLE FIRE EXTINGUISHERS</b>				
1	PORTABLE FIRE EXTINGUISHERS - OTHER AREA	Additionally, ensure that six (06) nos. of 4Kg clean agent portable firefighting extinguishers filled with FE-36 clean agent shall also be provided at strategic locations within the protected area.		

Sl. No.	Item	Description	Bidder's Response(Noted, Complied, Not Complied)	Reference to relevant section/Page No. in the technical bid /documentation / Brochure / Catalogue / OEM Website, wherever applicable
<b>K</b>	<b>ACCESS CONTROL SYSTEM</b>			
	NOTES:	Existing access control system have to be upgraded / expanded to accommodate additional doors along with associated devices.		
1	ACCESS CONTROL SYSTEM	Biometric Finger Print cum Smart Card Reader.		
2		Smart card based readers for other doors.		
3		Exit switch for exit.		
4		Door status to be integrated to the building management software.		
5		Contactless Smart Cards, 13.56 MHz		
6		All readers to be integrated to the existing control panel.		
7		Electromagnetic Locks (600 Ibs) with Magnetic Contact UL listed for single leaf doors.		
8		Electromagnetic Locks for Double Doors (2x600 Ibs) with Magnetic Contact UL listed.		
9		Emergency Door Release (Break Glass Type).		
10		The biometric finger print and proximity / smart card reader should have transaction storage capacity.		
11		All access control doors should be automatically deactivated in the event of fire alarms.		
12		Access control software license should be perpetual.		
13		All additional software licenses, if any, for database etc. for the period of the contract must be provided.		
14		Visitor Management software to be supplied & installed.		
15		Capable of visitors registration.		
16		Be able to perform online requests for appointment.		

17		Be able to handle appointment, approvals and rejections.			
18		Should be able to send and receive Email/SMS/Mobile App notifications on requests, approvals, and rejections.			
19		Should produce current date's (today's) appointments and expected visitors.			
20		Capable of accepting Barcode scanning for quick registrations.			
21		Provide visitor history tracking & visitor blacklisting.			
22		It should be able to record items carried in / out post scanning.			
23	Visitor Management software	System should allow integration of MS Exchange / MS Outlook for appointments calendar.			
24		System shall allow Email/SMS/Mobile App notifications on visitor arrival and sign-out.			
25		Should have option of central implementation to monitor sites across geographies.			
26		System shall allow integration IOS & Android mobile app for Visitor Pre-registration and Meeting Approvals			
27		It should be able to show visitor overstay alerts to security and host.			
28		It should be able to send evacuation / security alerts to visitors during emergency situations.			
29		System should provide visitor movement dashboards, statistics and reports.			
30		Software should be 'on-premises' type with perpetual license and no data should be stored on any third-party cloud.			
<b>L</b>		<b>PUBLIC ADDRESS SYSTEM</b>			
		NOTES:	Existing public address system have to be upgraded / expanded to accommodate additional speakers for new / expansion areas.		
1		All areas of the datacenter should be audible through the PA system.			
2		Ceiling Mount Speaker- 6 W to be connected to existing controller.			

3	PUBLIC ADDRESS SYSTEM	PA zones to be defined and accordingly integrated with the call station.		
4		PA system to be integrated with the fire alarm system for running automated voice messages in case of fire alarm.		
<b>M</b>	<b>WATER LEAK DETECTION SYSTEM FOR SERVER ROOM-2</b>			
	NOTES:	A new water leak detection system to be supplied, installed and commissioned for Server Room 2, as per minimum specifications below.		
1	WATER LEAK DETECTION SYSTEM	Water Leak detection Panel with LCD display.		
2		Water leak detection cable		
3		Sounder		
4		2 core 1.5 sq.mm PVC Insulated copper conductor Cable		
5		25mm PVC Conduit		
<b>N</b>	<b>RODENT REPELLENT SYSTEM FOR BMS &amp; SERVER ROOM-2</b>			
1	RODENT REPELLENT SYSTEM	Ultrasound based digital technology		
2		Networkable on RS-485		
3		Auto & Manual mode of operation		
4		Maximum Power Consumption: 15 Watt		
5		Minimum Area coverage per transducers: 150 Sqft above false ceiling, 300 Sqft below false ceiling & 150 Sqft below false floor.		
6		Transducers Sound Output: 50 to 110 dB (Verifiable)		
7		Transducers Power Output: 800 mW		
8		All control panels to be stacked and installed on wall mount racks in one location inside the BMS room.		
<b>O</b>	<b>IP CCTV SURVEILLANCE SYSTEM</b>			
<b>1</b>	<b>Fixed Dome Camera</b>	Make: Bidder to specify. Model: Bidder to specify.		
1.1	Image Sensor	1/2.8" Progressive Scan CMOS Sensor		
1.2	Effective Resolution	4 MP or better		
1.3	Minimum Illumination	Color: 0.01 Lux or better		
1.4	IR Range	30 meters with Smart IR		
1.5	Video Compression	H.265 / H.264		
1.6	Audio	Built-in mic		
1.7	SD Card Slot	Supported, with 128 GB storage capacity		
1.8	Wide Dynamic Range (WDR)	120 dB or better		
1.9	Signal to Noise Ratio (SNR)	50 dB or better		
1.10	Power Supply	PoE		
1.11	ONVIF Compliance	Profile S, G, and T		

1.12	Environmental Protection	IP67 (Ingress Protection), IK10 (Vandal Resistance)		
1.13	Certifications	BIS Certified (IS:13252), STQC Certified as per MeitY Essential Requirements Guidelines		
<b>2</b>	<b>PTZ Camera</b>	Make: Bidder to specify. Model: Bidder to specify.		
2.1	Image Sensor	1/2.8" Progressive Scan CMOS Sensor		
2.2	Effective Resolution	4 MP or better		
2.3	Minimum Illumination	Color: 0.03 Lux or better		
2.4	IR Range	Up to 180 meters or better with Smart IR		
2.5	Video Compression	H.265 / H.264		
2.6	Audio	Built-In Mic / Ch In 1 / Ch Out 1		
2.7	SD Card Slot	Supported, with 512 GB storage capacity		
2.8	Optical Zoom	32x		
2.9	Digital Zoom	16x		
2.1	Pan Range & Speed	0° to 360°, speed 0.1° to 300°/sec		
2.11	Tilt Range & Speed	-15° to +90°, speed 0.1° to 200°/sec		
2.12	Wide Dynamic Range (WDR)	120 dB or better		
2.13	Signal to Noise Ratio (SNR)	50 dB or better		
2.14	Power Supply	PoE+ (IEEE 802.3at)		
2.15	ONVIF Compliance	Profile S, G, and T		
2.16	Environmental Protection	IP67 (Ingress Protection), IK10 (Vandal Resistance)		
2.17	Certifications	BIS Certified (IS:13252), STQC Certified as per MeitY Essential Requirements Guidelines		
<b>3</b>	<b>32 Channel Network Video Recorder</b>	Make: Bidder to specify. Model: Bidder to specify.		
3.1	Video Channels	32 Channels		
3.2	Video Compression	H.265 / S+265		
3.3	Recording Resolution	Up to 12 MP		
3.4	HDD Support	8 × SATA HDD slots		
3.5	HDD Capacity per Slot	Minimum 6 TB per slot		
3.6	Bandwidth (Throughput)	Minimum 320 Mbps Incoming & 320 Mbps Outgoing		
3.7	ONVIF Compliance	ONVIF Profile S or higher		
3.8	Network Interface	1 × RJ-45 (10/100/1000 Mbps)		
3.9	USB Ports	2 × USB 2.0, 1 × USB 3.0 or better		
3.10	Intelligent Analysis	AI by NVR which shall include Face detection, Face recognition, Perimeter protection and SMD Plus		
3.11	Smart Functions	Smart Search & Smart Recording		
3.12	Browser Compatibility	Supports all major browsers: IE, Safari, Chrome, Edge		

<b>4</b>	<b>PoE Switch-24 Port</b>	Make: Bidder to specify. Model: Bidder to specify.		
4.1	Transmission Distance	Minimum 200 meters		
4.2	Transmission Rate	2000 Mbps Full Duplex		
4.3	Power Input	AC 180~240 V		
4.4	Bandwidth	12.8 Gbps		
<b>5</b>	<b>Others</b>	All necessary accessories for fixing of camera to Wall / Ceiling must be supplied.		
<b>P</b>	<b>Building Management System</b>			
1	<b>Building Management System</b>	Existing Building Management System (BMS) to be upgraded to integrate the existing devices as well as the new devices added.		
2	<b>BMS Software</b>	BMS software should be upgraded to the latest version having support for the entire contract period.		
3		BMS software licenses for the additional items shall be supplied.		
10	<b>Integration &amp; Monitoring</b>	Following to be integrated to the BMS system: •Electrical feeders •UPS •PAC •DG •Rack PDU •Fire detection & alarm •Access control system •Water leak detection		
11		BMS should be able to monitor access control door status.		
12		BMS should be able to communicate with the fire detection system.		
13		BMS should be able to generate fault logs.		
14	<b>Others</b>	TCP/IP based freely programmable native BACnet 32-bit network controller.		
15		BACnet MSTP based freely programmable 32-bit DDC Controllers		
16		Wall / ceiling mount temperature cum humidity sensors ( +/- 3% accuracy)		
17		Communication Cabling (Shielded copper conductor cable)		
18		Signal Cabling (Flexible Copper conductor cable)		

Q	WALL MOUNT LED DISPLAY/TV			
1	Wall Mount LED Display	Make : Bidder to specify Model : Bidder to specify		
2	Screen Size	55"		
3	Native Resolution	3,840 x 2,160 (4K UHD)		
4	Sensors	Built-in Wi-Fi		
5	Speakers	Built-in Speaker		
6	Ports	HDMI In, RJ45 (LAN), USB		
7	OEM	SONY/SAMSUNG/LG		
R	IT RACKS (MEDIUM DENSITY), 42U, 800 x 1000 MM WITH IPDU			
1	Rack Size	42U		
2	Dimension	800 x 1000 mm, overall height should not exceed 2120 mm.		
3	Rack Design	Steel sheet punched, welded and powder coated.		
4		To be mounted on the floor with castor wheels and brakes (set of 4 per rack).		
5		Numbered U- positions.		
6		Four 90 CFM fans on top.		
7		Fixed shelf, 715 mm depth.		
8		Keyboard shelf, 715 mm depth.		
9		Vertical and horizontal cable managers.		
10		Provision for cable entry & exit from both top & bottom.		
11		Mounting hardware, pack of 20.		
12		Adapter kit		
13		Doors / side panel	Front single perforated door and dual perforated doors at rear.	
14			Removable side panels with slam latch and lock.	
15	Rack lock	Swing handle lock with mechatronic 2-door keypad standalone 1Point + 3Point		
16	IP PDU	Dual vertical PDU in each rack with different colors		
17	Input Plug	IEC 60309 2P+E 6h 32A		
18	Cord Length	3 Meters		
19	Max Input Current	32A		
20	Rated Input Voltage	200 - 240V		
21	Input Frequency	50/60Hz		
22	Power Capacity	6.4kVA at 200V, 7.7kVA at 240V		
23	Sockets	24 x C13/10A and 6 x C19/16A		
24	Secure lock support	Yes		
25	Controller	Field replaceable controller.		

26	Energy Metering	Voltage (V), Current (A), Active Power (kW), Real Power (kVA), Energy (kWh), Power Factor			
27	Sensors	Compatible temperature and humidity sensors.			
28	Display	Color, matrix LCD display with auto-flip orientation			
29	Embedded Processor	Yes with minimum 64MB SDRAM			
30	Protection	Circuit breaker in closed housing to prevent accidental tripping.			
31	Remote Access	Yes			
32	Regulatory Approvals	CE, FCC, RoHS compliant			
<b>S</b>	<b>IT RACKS (HIGH DENSITY), 42U, 800 x 1200 MM WITH IPDU</b>				
1	Rack Size	42U			
2	Dimension	800 x 1200 mm, overall height should not exceed 2120 mm.			
3	Rack Design	Steel sheet punched, welded and powder coated.			
4		To be mounted on the floor with castor wheels and brakes (set of 4 per rack).			
5		Numbered U- positions.			
6		Four 90 CFM fans on top.			
7		Fixed shelf, 715 mm depth.			
8		Keyboard shelf, 715 mm depth.			
9		Vertical and horizontal cable managers.			
10		Provision for cable entry & exit from both top & bottom.			
11		Mounting hardware, pack of 20.			
12		Adapter Kit.			
13		Doors / side panel	Front single perforated door and dual perforated doors at rear.		
14			Removable side panels with slam latch and lock.		
15	Rack lock	Swing handle lock with mechatronic 2-door keypad standalone 1Point + 3Point			
16	IP PDU	Dual vertical PDU in each rack with different colors			
17	Input Plug	IEC 60309 2P+E 6h 63A			
18	Cord Length	3 Meters			
19	Max Input Current	63A			
20	Rated Input Voltage	200 - 240V			
21	Input Frequency	50/60Hz			
22	Power Capacity	12.6kVA at 200V, 15.1kVA at 240V			
23	Sockets	24 x C13/10A and 12 x C19/16A			
24	Secure lock support	Yes			
25	Controller	Field replaceable controller.			

26	Energy Metering	Voltage (V), Current (A), Active Power (kW), Real Power (kVA), Energy (kWh), Power Factor		
27	Sensors	Compatible temperature and humidity sensors.		
28	Display	Color, matrix LCD display with auto-flip orientation		
29	Embedded Processor	Yes with minimum 64MB DDR2 RAM		
30	Protection	Circuit breaker should be in a closed housing to prevent accidental tripping.		
31	Remote Access	Yes		
32	Regulatory Approvals	CE, FCC, RoHS compliant		
<b>T</b>	<b>PASSIVE NETWORKING</b>			
1	Horizontal UTP Components	Cat6A STP Patch Cord, 2 Mts.		
2	Horizontal Fiber Optic Components	a) Necessary 12F MTP-MTP Cable Assembly Fiber Optic OM4 of various sizes based on the server farm design. b) 12F OM4 MTP-LC Fiber Optic Cassettes c) Necessary Rack mount Fiber Optic Enclosure to take 4 Cassettes, d) 1U and necessary blank modules. e) LC-LC OM4 Duplex Patch Cord, 5 Mts		
3	DC Support Area UTP Components	All the necessary UTP components including following: a) Cat6 UTP Cable, 23 AWG, of 305 Mts. Box b) 24 Port Unloaded Modular Jack Panel, 1U c) Cat6 UTP Jack d) Dual Face Plate e) Cat6 UTP Patch Cord, 1 Mt. f) Cat6 UTP Patch Cord, 2 Mts.		
4	Uplink Fiber Optic Components	All the necessary fibre optic components including following: a) 6 Core SM Outdoor Armored Cable b) Fiber Optic Rackmount LIU, unloaded c) 12 Fiber Adopter Plate d) Blank Plate e) Splice Tray f) 1.5 Mts. SM SC Pigtail g) SM SC-LC Duplex Patch Cord.		

5	Voice Networking	All the necessary components for voice networking for minimum 6 telephone connection in NOC room including following: a) Cat6 UTP Cable, 23 AWG, of 305 Mts. Box b) 24 Port Unloaded Modular Jack Panel, 1U c) Cat6 UTP Jack d) Single Face Plate e) Cat6 UTP Patch Cord, 2 Mts. f) PVC back Box g) Distribution Box 20 Pair, Unloaded h) 10 Pair Disconnect Module i) EPABX System with all accessories j) Table Top analog Telephone Handset k) Wall hanging analog Telephone Handset		
6	Cable Pathways	300mm width Wire Mesh Cable Tray with fitting accessories, 1" PVC Conduit and HDPE Pipe (Preferred Make:Legrand / Molex / Belden)		

Sl. No.	Documents to be submitted	Whether submitted along with the bid(Yes/No)
1	<b>CIVIL</b>	
1.1	CBRI or ARAI test report or certificate for Fire Rated Door (FRD)	
2	<b>DG</b>	
2.1	<p><b>The following Documents / drawings shall be submitted with the offer</b></p> <ul style="list-style-type: none"> <li>• GA drawing</li> <li>• Technical literature of alternator.</li> <li>• Datasheet as mentioned in SOW.</li> <li>• Test certificates towards compliance of noise and emission norms as per the latest CPCB guidelines for gas engine and generator.</li> </ul>	
3	<b>Electrical</b>	
3.1	<ul style="list-style-type: none"> <li>* Proposed SLD of The entire Electrical System Panel.</li> <li>* GA drawing of the LT Panel showing dimensional details.</li> <li>* Type Test certificates (Short Circuit/IP etc.) for the LT Panel</li> <li>* Shutdown plan for upgradation of the LT Panel</li> </ul>	
3.2	<p><b>For Comfort/Split Air-Conditioner</b></p> <ul style="list-style-type: none"> <li>* Catalogue containing the features of offered make and model.</li> </ul>	
3.3	<p><b>For Precision AC</b></p> <ul style="list-style-type: none"> <li>* Detail calculations considering heat load, ambient temp, desired room temp &amp; humidity &amp; redundancy</li> <li>* Technical data of units offered</li> </ul>	
4	<b>Annexures</b>	
4.1	Signed SLA (Annexure_SLA)	
4.2	Signed NDA (Annexure_NDA)	
4.3	General Layout including equipment of Data center	
5	<b>Documents as per BEC/BRC</b>	
5.1	MAF -for PACs to be supplied ( as per format Annexure_MAF)	
5.2	MAF -DG ( as per format Annexure_MAF)	
5.3	MAF -for Busbar Trunking system to be supplied ( as per format Annexure_MAF)	
5.4	MAF -Fire Detection and Suppression system ( as per format Annexure_MAF)	
5.5	MAF -CCTV ( as per format Annexure_MAF)	
5.6	MAF -IT Racks & PDU ( as per format Annexure_MAF)	
5.7	Certificates of personnel along with payroll evidence	
5.8	ISO certificate of the bidder	