NATIONAL SUPERCOMPUTING MISSION

INFRASTRUCTURE | APPLICATIONS | R&D | HRD

Centre for Development of Advanced Computing

A Scientific Society of Ministry of Electronics & Information Technology,

Government of India

Innovation Park, PANCHAVATI, Pashan Road, Pune - 411008

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www.cdac.in / mmg@cdac.in

Tender No: CDACP/NSM-DC-ROORKEE/20-21/325

CDAC, Pune invites `ONLINE' bids for Design, Site Preparation, Supply, Installation, Testing, Commissioning and AMC services of Basic Infrastructure for the establishment of a Data Center at IIT, Roorkee

Prospective Bidders may download the Tender Document from www.cdac.in / https://eprocure.gov.in/eprocure/app. Bidders are advised to go through instructions provided at `Instructions for online Bid Submission' and submit duly filled bids online on the website https://eprocure.gov.in/eprocure/app as per the schedule given in the Tender Document.

TENDER SCHEDULE

Tender No: CDACP/NSM-DC-ROORKEE/20-21/325

Name of the Institute:	Centre for Development of Advanced Computing, Pune 411008.
Place of Setting up Data Centre with Supply, Installation & Commissioning, Testing, AMC Support etc.	Indian Institute of Technology Roorkee, Roorkee-Haridwar Highway, Dist. Haridwar, Uttarakhand India–247667
Date of Release of Tender	February 15, 2021
Date of Site Visit	February 23, 2021 – 1030 hrs – 1630hrs. (Contact: Sh. Navneet Gupta- guptafcc@iitr.ac.in / 9897093716)
Date & Time of Pre-bid meeting (online)	February 25, 2021 – 1130 hrs. (The link to join online meeting will be informed upon request for joining and submission of queries, doubts, clarifications etc., if any)
Last date of submission of bids	March 18, 2021 – 1500 hrs.
Date of opening of Technical bids	March 18, 2021 – 1600 hrs.
Place of opening of technical bids	C-DAC, Pune 411008.

Instruction for Online Bid Submission:

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal. More information useful for submitting online bids on the CPP Portal may be obtained at: https://eprocure.gov.in/eprocure/app. For any technical related queries, please call the Helpdesk. The 24 x 7 Help Desk Number 0120-4200462, 0120-4001002, 0120-4001005. Mobile: 91 8826246593. Note- Bidders are requested to kindly mention the URL of the Portal and Tender Id in the subject while emailing any issue along with the Contact details. E-Mail: support-eproc@nic.in.

In case of any doubts and/ or queries pertaining to technical solution, specifications terms and conditions of the tender, prospective bidder may send their queries in writing through e-mail (mmg@cdac.in). The queries, requests for clarifications etc. must be sent minimum two days prior to the pre-bid meeting date/time i.e on or ***before 24/02/2021 – 1000 hrs.*** *positively. The bidders are requested to go through the entire tender document thoroughly, before raising any query. C-DAC, Pune shall address the queries raised by the bidders. The replies to queries would be made available on C-DAC's web site in due course of time. All the queries, doubts, clarifications etc. must be submitted in xls format only as below.*

Name of the bidder:				
Sl.No.	Section / Page No	Clause Reference	Query from bidder	C-DAC Response

SECTION I – INVITATION OF BIDS

1 Introduction

This RFP is being floated to select the most appropriate vendor to build & operate the Data Center for a period of two years. The model of the proposed Data Center (DC) should be capable of enhancing capacities by incrementally augmenting the infrastructure. The monitoring of the proposed DC is planned through an Integrated Building Management System (IBMS) and therefore, the equipment's to be installed in the proposed Data Centre should be BMS compliant. As a part of this project, C-DAC invites on-line bids from eligible bidders for supply, installation, commissioning and AMC Services of Data Centre Solutions, as per the requirements stipulated in this document, at the Locations as mentioned in the Tender Schedule Table i.e. I.I.T. Roorkee.

2 Contact information

Materials Management Group (MMG)
Centre for Development of Advanced Computing (C-DAC)
Innovation Park, Panchavati Pashan Road,
Pune - 411008, Maharashtra India
E-mail: mmg@cdac.in

3 Two Bid (ePacket) System:

The bids must be uploaded on-line through https://eprocure.gov.in/eprocure/app, as explained below:

3.1 e-Packet No. 1: TECHNICAL BID (pdf format)

3.1.1 Section-I

a. **Annexure G**: The contents must be organized & submitted as per the Annexure G with proper page nos containing the required information/data etc.

b. Covering Letter, as per **Annexure – A.**

c. Authorization letter (on bidder's letterhead) issued by the competent authority of bidder, authorizing the signatory to sign on behalf of the bidder, as per **Annexure – B.**

d. Scanned copy of Demand Draft/UTR no. towards tender fee of Rs. 2000/- (INR Two Thousand Only) directly deposited in C-DAC's account or drawn in favor of C-DAC payable Pune. (The tender fees /DD must reach physically at the place of Opening of the Tender on or before the Due Date & Time of the Tender)

~~e.~~ Scan copy of the Undertaking on bidder's letterhead, towards EMD as per format given in **ANNEXURE-F**

3.1.2 **Section-II:**

a. A copy of Certificate of Incorporation, Partnership Deed / Memorandum and Articles of Association / any other equivalent document showing date and place of incorporation, in India as applicable.
b. A copy of GST registration certificate.
c. Copies of at least two purchase orders or contracts and successful installation and completion reports in the name of bidder from the end client / end user, completed during last Five years for Data Centre work, as per para. 3.3 of Section II. Self-declarations will not be entertained.
d. Copy of at least one purchase order from the end client/ end user for data center facility management / O & M activities completed / ongoing, as per eligibility para. No 3.3.2 of Section III.
e. The self-certified copies of audited balance sheets or the certificate/s from a Chartered Accountant for the last three financial years indicating the annual sales turnover.
f. A photo copy of the commercial bid actually submitted without prices (prices blocked) and copy of commercial terms and conditions (in detail) as included in the commercial bid. C-DAC reserves the right to reject the bid in case of any discrepancy observed in the un-priced commercial bid and the actual commercial bid.
g. Manufacturer authorization certificate as per **Annexure-C**, for DG set, UPS and battery, Adiabatic Dry Cooler, PAC/PAHU, BMS Software, Pumps, VFD Drives, LT Panels issued by respective OEMs
h. All the necessary documents in support of eligibility criteria stipulated in Section–II, Para-3 (Eligibility Criteria).

3.1.3 **Section-III:**

a. The executive summary of the bid submitted.
b. Duly filled Technical Bid (covering the details of solution, detailed bill of material, bill of quantities, technical specifications, makes and models of items, diagrams, layouts, all drawings etc.)
c. The details of electrical power consumption, foot-print, ambient temp, temperature range targeted, cable schedule along with voltage drop calculations, battery sizing and back up calculations etc.
d. Details of diesel consumption & water consumption on various loading conditions.
e. Design Basic Report along with annual average Power Usage Effectiveness (PUE) calculations for 25%, 50%, 75% and 100 % of IT load.

f. Design basis and analysis of cooling solution at full and partial load conditions including complete details, assumptions made and the specific references/standards used for the same. Applicable derations while selecting the dry cooler and bidder to submit selection of the product considering site ambient conditions as per ASHRAE 2017 Guideline and ASHRAE TC9.9.

g. Technical Compliance matrix against all details requested as per Para. 9 of Section IV.

h. The printed catalogue / leaflet/brochures published by the principal manufacturer of the items quoted to be submitted along with the Technical Bid.

i. Legal / statutory permissions required, if any.

3.2 e-Packet 2: FINANCIAL BID : (in BOQ.xls format – online)

The Financial Bid complete in all respects with all details filled in the `Name of the Bidder' column with name, designation and contact no. as per BOQ.xls format given in SECTION-VI.

Note:
All the documents listed in e-packet-1 (Section-I, II & III) and e-packet-2 must be arranged in the flow / in sequence as mentioned as per Annexure-G strictly.
C-DAC reserves the right to reject the bid, if any of the above listed documents are not submitted.

4 Pre-Bid Meeting – Date/ Time/ Venue / Online:

The pre-bid meeting will be held at C-DAC, Pune or Online as given in schedule to sort out/resolve queries raised by the prospective bidders regarding the tender scope, conditions, terms & conditions etc. The prospective bidders requiring any clarification of the bidding document may send their queries in writing through e-mail in the format given above. C-DAC, Pune will respond to these queries during the pre-bid meeting. The queries/doubt/clarifications etc. must be sent at least two days prior to the date of pre-bid meeting.

5 Last Date of submission of bids:

Last date for submission of e-bids through http://eprocure.gov.in/eprocure/app shall be as per schedule.

The bid should be addressed to:
Materials Management Group,
C-DAC, Innovation Park, Panchavati, Pashan Road, PUNE 411008.

The bids must be submitted on-line and the Tender Fees & EMD etc. must be submitted in person or through post/ courier/ online so as to reach **on or before the due date and time**. C-DAC- Pune shall not be responsible for any postal delays or any other reason for

non-receipt of the tender fees/ EMD etc. in the specified time and will result in disqualification / rejection of the bid.

In case bidder requires any clarifications / information, they may contact C-DAC Pune at the address given.

Note: Please do not put "Commercial Bid" (prices quoted) in the technical e-bid. If the price quoted is submitted with technical e-bid the tender will be summarily rejected.

6 Opening of on-line e-bids

The technical e-bids will be opened as per through www.eprocure.gov.in/eprocure/app portal - **online.**

Opening of commercial e-bids:

Commercial e-bids of the qualified bidders only will be opened. The decision of C-DAC's bid evaluation committee in this regard will be final and binding on bidders. C-DAC's bid evaluation committee will be authorised to take appropriate decision on minor deviations, if any.

The date, time and venue of opening of commercial bids will be informed later to the qualified bidder. The financial bids will be opened `on-line' through www.eprocure.gov.in/eprocure/app portal.

The bidder's name, bid prices and other appropriate details will be displayed after the opening of the commercial bids.

(END OF SECTION I)

1 Locations for the Supply, Installation, Commissioning, Warranty Services & AMC Services

The entire data centre solutions as described in Schedule of Requirements must be supplied, installed, commissioned & supported at

IIT Roorkee - details as per the Tender Schedule.

2 Order Placements & Payment by

The orders will be placed and payments shall be released by
Centre for Development of Advanced Computing (C-DAC),
Innovation Park, Panchavati, Pashan,
Pune 411008, Maharashtra, INDIA

3 Eligibility Criteria

The bidder must satisfy/comply the eligibility criteria stipulated below.

3.1 The bidder must submit all the documents listed at para 3 Section – I above, along with the technical bid.

3.2 The bidder should be an entity registered in India under appropriate Indian Laws. Certificate for the same need is to be submitted along with the bid.

3.3 The bidder must have successfully executed at End client sites/ End User at least 2 numbers of data centres in India in last five years. Each of the data centres should be with minimum of UPS feeding power of 200 KVA IT (excluding redundancy provided) and minimum feeding cooling load of 55 Tons (excluding redundancy provided) for each datacenter site. The value of each such order should not be less than Rs. 2 Cr. along with Fire- fighting and suppression systems, UPS and Battery etc. with high end integration of building management system and all the allied works required for successful installation & completion of the Data Centre. This order should be on the name of bidder issued by the end client / End User.

3.4 The bidder should have undertaken/ completed the activities of providing on-site support and facility management / O & M services to at least one data centre. The scope of the activity should cover operation and maintenance of Electrical Systems, Cooling systems (Chillers, PAC/PAHU /In ROW/RDHX etc.) UPS and Battery, IBMS etc. Bidder to provide the documentary evidence that minimum three technical manpower had deployed at site and maintaining electrical system and cooling system. Such Data center having minimum cooling load of 50 Tr

3.5 A summary of the projects implemented covering all the details must be enclosed with the Technical Bid.

3.6 Bidder should have minimum turnover of Rs. 10.00 Crs for each of the last three financial years.

3.7 If the bidder is not a principal manufacturer of Data Centre components, the undertaking/s (in original) from the respective principal manufacturers (on the letterhead), as per format given in **Annexure-C** must be submitted for the components as DG set, UPS and battery, Chiller, Adiabatic Dry Cooler, PAC/PAHU, BMS Software, Pumps, VFD Drives, LT Panels etc. (in e-packet – 1- Section-II).

3.8 The principal manufacturers/ original equipment manufacturer (OEM) of Data Centre components viz. UPS, PAC, DG Sets, Adiabatic Dry Cooler should have service center in the respective state of site location. Documentary evidence for the same to be provided.

3.9 The bidder must submit all the documents as per Document Checklist – **Annexure-G**, with appropriate page nos for the same. The flow of the submitted documents must be in the same order.

3.10 The bidder must not be blacklisted by any Govt. Organizations as on date of submission of the bids. A certificate or undertaking to this effect must be submitted (Annexure – A).

The bidder should provide sufficient documentary evidence to support the eligibility criteria and exemptions mentioned. C-DAC reserves the right to reject any bid not fulfilling the eligibility criteria.

4 Exemptions

If in the view of bidder, any exemption / relaxation is applicable to them from any of the eligibility requirements, under any Rules / process/ Guidelines/ Directives of Government of India, bidder may submit their claim for the applicable exemption /relaxation, quoting the valid Rule/ process/ Guidelines/ Directives. In this case the bidder must submit necessary and sufficient documents along with the technical bid, in support of his claim. The decision about granting the exemption/ relaxation will be taken by the bid evaluation committee which is empowered to grant exemption/relaxation. The relevant and valid certificates in support of claim of exemption must be submitted.

5 Local Conditions

It will be incumbent upon each bidder to fully acquaint himself with the local conditions and other relevant factors at the proposed Data Centre site which would have any effect on the performance of the contract and / or the cost. The Bidder is expected to make a site visit to the proposed Data Centre facility to apprise them self and obtain all information that may be necessary for preparing the bid and entering into contract.

Failure to obtain the information necessary for preparing the bid and/or failure to perform activities that may be necessary for the providing services before entering into contract, will in no way relieve the successful bidder from the responsibility of performing any work in accordance with the Tender documents. It will be imperative for each bidder to diligently be informed of all legal conditions and factors which may have any effect on the execution of the contract as described in the bidding documents. C-DAC Pune shall not entertain any request for clarifications from the bidder regarding such conditions. It is the responsibility of the bidder that such factors have properly been investigated and considered while submitting the bid proposals and that no claim whatsoever including those for financial adjustment to the contract awarded under the bidding documents will be entertained by C-DAC Pune and that neither any change in the time schedule of the contract nor any financial adjustments arising thereof shall be permitted by the C-DAC Pune on account of failure of the bidder to appraise himself of local laws and site conditions or otherwise.

6 C-DAC Right to amend / cancel

- At any time prior to the deadline for submission of bids, C-DAC may, for any reason, whether on its own initiative or in response to the clarification request by a prospective bidder, modify the bid document.
- The amendments to the tender documents, if any, will be notified by release of Corrigendum Notice on www.eprocure.gov.in/eprocure/app / www.cdac.in/ tender against this tender. The amendments/ modifications will be binding on the bidders.
- C-DAC at its discretion may extend the deadline for the submission of bids if it thinks necessary to do so or if the bid document undergoes changes during the bidding period, in order to give prospective bidders time to take into consideration the amendments while preparing their bids.
- the right to cancel the entire RFP without assigning any reasons thereof

7 Precautions while preparing the Bids

Bidder should avoid, as far as possible, corrections, overwriting, erasures or postscripts in the bid documents. In case however, any corrections, overwriting, erasures or postscripts have to be made in the bids, they should be supported by dated signatures of the same authorized person signing the bid documents. In case of discrepancies and/ or calculation errors, if any, the lower unit prices and amounts shall only be considered for comparison of bids. Only Single technical solution to be submitted.

8 Earnest Money Deposit (EMD)

8.1 Undertaking as per GFR-2017, Rule 170(iii) towards EMD as per **ANNEXURE-F** Subject to conditions stipulated therein

8.2 The successful bidder, on award of contract / order, must send the contract/ order acceptance in writing, within 15 days of award of contract/ order.

8.3 C-DAC reserves the right to declare the bidder as un-eligible for said tender and/or debar from any future bidding processes of C-DAC & Other Govt. Institutes,

8.3.1 If the bidder withdraws the bid during the period of bid validity specified in the tender.

8.3.2 If the successful bidder fails to furnish the acceptance in writing, within 15 days of award of contract/ order.

8.3.3 If the successful bidder, fails to furnish the Security Deposit as stipulated in Clause 4 of Section III.

9 Period of validity of bids

9.1 Bids shall be valid for minimum 120 days from the date of submission. A bid valid for a shorter period shall stand rejected.

9.2 C-DAC may ask for the bidder's consent to extend the period of validity. Such request and the response shall be made in writing only. The bidder is free not to accept such request without forfeiting the EMD Declaration. A bidder agreeing to the request for extension will not be permitted to modify their bid.

10 Submission of Bids- Online

The Bid documents shall be neatly arranged and all pages should be numbered. They should not contain any terms and conditions, printed or otherwise, which are not applicable to the Bid. **The conditional bid will be summarily rejected.** Insertions, postscripts, additions and alterations shall not be recognized, unless confirmed by bidder's signature.

11 Late Bids

C-DAC shall not be responsible and liable for the delay in receiving the bid for whatsoever reason. C-DAC will not be responsible for any issues arising / pertaining with CPP Portal (www.eprocure.gov.in/eprocure/app) for non-submission, failure in submission of bids on-line. Bidders are advised to submit e-bids well in advance of the last date and time of submission of the bids. C-DAC will not be responsible for failure in submission/upload of bids for non-working of the on line portal on last day/hours of submissions of bids. It will be very hard for C-DAC to seek extension on the last day of

the Due Date/Time, as the portal is designed; developed, maintained & controlled by NIC & its DR site

12 Evaluation of Bids

The bids will be evaluated in two steps.

12.1 The bids will be examined based on eligibility criteria stipulated to check the eligibility of the bidders. The technical bids of only the eligible bidders will be evaluated based on technical requirements stipulated in the RFP.

12.2 Only the bidders, whose technical bid is found to meet the requirements as specified above will qualify for opening of the commercial bid and will be informed about the date and time of the opening of the commercial bid.

12.3 The decision of the TEC with respect to complete technical evaluation is final and binding on all the bidders.

12.4 During evaluation of the bids C-DAC at its discretion may ask the Bidder for clarification of its Bid. The request for clarification and the response shall be in writing, and no change in the prices is permitted. If required C-DAC may invite the Bidders for technical presentation on the solution offered. During the process of evaluation of bids, if any discrepancies are observed in the bid submitted, the bidders may be given an opportunity to clarify on same. If in the view of bidder, any change in quantity, make or model is required or any additional items are required, for clearing the said discrepancy, the bidder has to arrange for said change and/or addition of material without any increase in the prices quoted.

12.5 If the information provided by the bidder is found to be incorrect/misleading at any stage/time during the Tendering Process, C-DAC reserves the right to reject all such incomplete bids**.**

13 Comparison of Bids

13.1 Only the technically qualified bids as per RFP shall be considered for opening and evaluation of price bid.

13.2 The total price including the tax amounts (@rates considered & quoted by the bidder or tariff rates, whichever are less) or C-DAC reserves the right to consider appropriate taxes for the evaluation purpose for entire Data Centre Solutions along with the warranty support and AMC services. (Please refer para 1, Section- III).

13.3 The prices offered for OPTIONAL ITEMS i.e. Comprehensive AMC for 3rd year, 4th year & 5th year alongwith O&M for 3rd year, 4th year & 5th year will not be considered for calculating L-1 bidder.

13.4 The **post** AMC / O&M charges will be binding on the bidder. C-DAC/I.I.T. Roorkee reserves the right to enter or not, into the AMC & OM after the end of warranty period and after obtaining the approvals to release such AMC & OM orders, if any.

13.5 The date and venue for opening of price bids will be communicated to bidders.

14 Award of Contract

C-DAC shall award the contract to the qualified bidder whose technical bid has been accepted and determined as the lowest evaluated price bid.

14.1 However, C-DAC reserves the right and has sole discretion to reject the lowest evaluated bid.

14.2 If more than one bidder happens to quote the same lowest price, C-DAC reserves the right to place the order with the bidder who has installed a Data Centre with more IT Electrical load at single site. The decision of C-DAC shall be final for awarding the contract.

15 Purchaser's Right to amend / cancel

15.1 C-DAC reserves the right to amend the eligibility criteria, commercial terms & conditions, Scope of Supply, quantities, technical specifications etc. The same shall be published on the Portals.

15.2 C-DAC reserves the right to cancel the entire or partially tender without assigning any reasons thereof.

15.3 C-DAC reserves the right to reject the bid submitted by the lowest evaluated bidder.

(End of Section - II)

1 Prices

1.1 The prices quoted shall remain firm and no price escalation will be permitted. Bidder must indicate applicable GST separately. The bidder should exercise utmost care to quote the correct percentage of applicable GST on each item. Any revision in statutory tax /duty structure as on date of supply/ invoice, shall be considered, as applicable.

1.2 In case due to any error/ oversight, the GST rate quoted by the bidder is different than the actual GST rate as per the tariff, the bidder will not be permitted to rectify the error/oversight. The orders/ contract will be placed with the GST rate quoted by the bidder or actual tariff rate (as on placement of order), whichever is **LOWER.** The difference amount payable, if any, between the quoted GST rate and actual tariff rate shall be borne by the bidder.

1.3 Notwithstanding the para 1.1 and 1.2 mentioned above, if the GST is not quoted separately and the bid is silent whether GST is included or excluded in price, for the purpose of evaluation of bids, the prices shall be taken as quoted with GST. In this case, the order will be placed with the quoted price. The GST applicable, if any will be borne by the bidder/contractor

1.4 The prices will be compared on the basis of GST rates quoted/calculated by the bidder. In case of errors, the bidders will not be permitted to change the GST percentage/amounts thereof.

1.5 Bidder must quote in INR only.

1.6 The prices quoted must be inclusive of packing & forwarding, freight, insurance, loading, unloading charges /entry tax/road permit charges and allied charges till destination at site.

1.7 The group-wise prices must be quoted for all the items as per format given in Section – V. Before the placement of order, the successful bidder must submit the detailed Bill of Material, giving price for each individual line item, keeping the total price quoted un-changed. The order will be placed on the basis of this BoM. The supplier must ensure that their invoice exactly matches this BoM, so as to avoid any payment complications.

2 Project Timeline

All the items covered in the Schedule of Requirements (**Section – IV**) must be supplied, installed and commissioned within 4 months (sixteen weeks) from the date of award of Contract / placement of order.

3 Payments (In INR only)

70% amount of the cost of UPS and batteries, LT Panels, Adiabatic /Dry Cooler and Pumps, PAC/PAHU, Rack, DG set will be released on receipt of these components at site against physical verification and acknowledgement by C-DAC and/ or end user - with 30 days credit period.

20% amount of the cost of UPS and batteries, DG sets, LT Panels, Adiabatic /Dry Cooler and Pumps, PAC/PAHU, Rack, and 90% cost of the remaining supplied items and 90% charges towards installation and commissioning of the system will be released on successful installation, commissioning of the solution. This portion of payment shall be subject to acceptance and submission of Integrated System Acceptance Test (ISAT) report to C-DAC. In case of delay in integration and commissioning of the DC with HPC system for the reasons attributed to C-DAC beyond 60 days, this portion of payment will be released against submission of bank guarantee of equivalent amount. This Bank Guarantee will be released on successful completion of installation, commissioning and ISAT of the solution.

Balance 10% payment will be released on successful installation & commissioning of solution against submission of (@3%) PBG. The PBG must be submitted within 30 days from the date of successful installation(s) and ISAT.

The payments for the post warranty period (i.e. 3rd, 4th & 5th year) AMC/O&M charges will be released post quarterly-within 15 days, if applicable and when processed.

The applicable TDS will be deducted.

The payments shall be remitted through NEFT/RTGS only.

Note: All the payments are subject to submission of the valid and complete tax invoices.

4 Security Deposit (SD)

The successful bidder will be required to furnish the Security Deposit in INR equivalent to 3 % of the Contract/Order value (excluding taxes) within 15 days of award of Contract / receipt of Order(s). The Security Deposit should be submitted in the form of Demand Draft drawn in favor of C-DAC payable at Pune or in the form of Bank Guarantee in the name of C-DAC, Pune. The Bank Guarantee submitted towards Security Deposit should be issued by a Scheduled Commercial Bank and must be valid for a period of 6 months. The Security Deposit will be returned within 30 days upon completion of installation, commissioning and ISAT and on submission of Performance Bank Guarantee (@ 3% PBG).

5 Performance Bank Guarantee (PBG)

The successful bidder will be required to furnish the Performance Guarantee towards the Data Centre Solutions supplied, in the form of a Bank Guarantee in INR equivalent

to 3% of the invoice amount for respective site (except for O & M charges and excluding taxes), as per the format attached to this document. This bank guarantee should be submitted along with the invoice after successful installation and commissioning of the Data Centre solution. The Bank Guarantee should be from a Scheduled Commercial bank and shall remain valid for the period of 26 months from the date of installation and ISAT. The PBG must be negotiable at a branch of issuing bank in Pune.

C-DAC reserves the right to invoke the Performance Bank Guarantee(s) submitted by bidder, in case of the following:

a. The Item/Components fail to achieve the performance as stipulated in this document or
b. The bidder fails to provide the warranty and other services in scheduled time frame, as stipulated in this document or
c. The bidder delays to provide the warranty services as stipulated in this document.

6 Completeness Responsibility

The bidders may please note that this is a contract on 'Turn-key' basis. Notwithstanding the scope of work, engineering, supply and services stated in bid document, any equipment or material, engineering or technical services which are not specifically mentioned under the scope of supply of the bidder and which are not expressly excluded there from but which – in view of the bidder - are necessary for the required performance of the datacenter solution in accordance with the RFP specifications are treated to be included in the bid and has to be implicitly performed by bidder. In no case, the bidder will be permitted to increase the prices quoted.

7 Warranty

The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract. The supplier further warrants that all Goods supplied under this contract shall have no defect arising from design, materials or workmanship (except when the design and/or material is required by the Purchaser's specifications) or from any act or omission of the supplier. The warranty should be comprehensive on site, repair/replacement basis free of cost. **Bidder has to enter into agreement / MoU with C-DAC Pune on award of contract which shall be in-line with this RFP document.**

Note: - Supplier has to do the AMC / PM of all the supplied equipment as per the standard schedule with no additional charges to C-DAC. Any consumables required shall be paid by CDAC. The supplier has to take prior approval from C-DAC before using any consumables.

All the equipment and components supplied must have two years onsite comprehensive warranty from date of successful installation, commissioning and signing of ISAT.

SLA and managed service scope as per **Annexure - H.**

8 Post warranty AMC

The bidder should quote for post warranty AMC services towards the integrated datacenter solution/sub-systems supplied and installed. The AMC charges should be for 3rd year, 4th year and 5th year from the date of successful installation and ISAT of datacenter solution at respective locations. The AMC charges per year should be quoted as per price format given in Section VI of this document and must not be more than 7% of the cost of capital items supplied.

The post warranty AMC charges (3rd, 4th and 5th year) will not be considered for arriving at the total prices quoted by the bidder and also not for determining the lowest quoted (L1) bidder.

The post AMC charges will be binding on the bidder. C-DAC/I.I.T. Roorkee reserves the right to enter or not, into the AMC after the end of warranty period – after obtaining the approvals to release such AMC orders, if any.

9 Penalties

CDAC reserves the right to levy penalties for each site, as given below.

Sr. No	Parameters	Penalty
A	Penalty for Delayed Deliveries and installation	0.5% of order value per week for delay in installation and commissioning beyond schedule. If the delay is more than 10 weeks, C-DAC reserves the right to cancel the Contract/ Order. In case of in ordinate delay on the part of bidder in completing the work and cancellation of Purchase order, C-DAC will arrange to complete unfinished work through suitable contactor and expenses incurred by C-DAC in doing of such work shall be recovered from the bidder. Any delay because of CDAC, conditions arising out of Force Majeure will not be considered while calculating the delay period for penalties. i.e. total 5% of maximum penalty shall be levied against Delayed Deliveries, installation and acceptance (AT).

B	Penalty if uptime of Data Centre components. Measured on quarterly basis is (as per calendar year)	Penalty for downtime shall be levied as given below in B.1, B.2, B.3 which will be over and above the penalty mention above in para A .
1	Less than 98.5% but more than 97.5% in a quarter	Penalty @0.2% of the order value per quarter.
2	Less than 97.5%	Penalty @1% of the order value per quarter.
3	Less than 95%	C-DAC reserves the right to terminate the contract and invoke the performance bank guarantee.
	Capping	The maximum penalty as stipulated in Para A and B above put together will be capped to 10% of the order value.

The detailed mechanism / method for arriving at the measurable parameters mentioned in table above is covered in the **Service Level Agreement (SLA) as per Annexure –H,** to be signed before award of contract/ release of Order.

10 Force Majeure

C-DAC may consider relaxing the penalty and delivery requirements, as specified in this document, if and to the extent that, the delay in performance or other failure to perform its obligations under the contract is the result of an Force Majeure. Force Majeure is defined as an event of effect that cannot reasonably be anticipated such as acts of God (like earthquakes, floods, storms etc.), acts of states / state agencies, the direct and indirect consequences of wars (declared or undeclared), Pandemic, hostilities, national emergencies, civil commotion and strikes at successful Bidder's premises or any other act beyond control of the bidder.

11 Arbitration

In case any dispute arises between the C-DAC and successful bidder with respect to this RFP, including its interpretation, implementation or alleged material breach of any of its provisions both the Parties hereto shall endeavor to settle such dispute amicably. If the Parties fail to bring about an amicable settlement within a period of 30 (thirty) days, dispute shall be referred to the sole arbitrator mutually appointed by both parties. If the sole arbitrator is not appointed mutually by both the parties then the District Court Pune shall have exclusive jurisdiction for appointment of sole arbitrator through court. Arbitration proceedings shall be conducted in accordance with the provisions of the

Arbitration and Conciliation Act, 1996 and Rules made there under, or any legislative amendment or modification made thereto. The venue of the arbitration shall be Pune. The award given by the arbitrator shall be final and binding on the Parties. The language of arbitration shall be English. The common cost of the arbitration proceedings shall initially be borne equally by the Parties and finally by the Party against whom the award is passed. Any other costs or expenses incurred by a Party in relation to the arbitration proceedings shall ultimately be borne by the Party as the arbitrator may decide. Courts in Pune only shall have the exclusive jurisdiction to try, entertain and decide the matters which are not covered under the Arbitration and conciliation Act.

12 Risk and Ownership

All risks, responsibilities and liabilities in respect of goods delivered at site shall remain with selected bidder till they are successfully installed and commissioned at site and taken over by end users. Part deliveries shall not be treated as deliveries. Only full deliveries of all items ordered will be considered as delivery. The ownership of the items delivered at site, shall be of C-DAC Pune on successful installation of items.

13 Indemnity,

The successful bidder shall indemnify, protect and save C-DAC Pune from/against all claims, losses, costs, damages, expenses, action suits and other proceeding, resulting from/arising out of:

1. Infringement of any law pertaining to intellectual property, patent, trademarks, copyrights etc. by the bidder or
2. Such other statutory infringements in respect of all the equipment's supplied by successful bidder, or
3. Caused due to any act/omission/performance/under or non or part performance/failure of the bidder.

14 Assignment

Selected bidder/ Party shall not assign, delegate or otherwise deal with any of its rights or obligation to other parties under this Contract, without prior approval of C-DAC.

15 Severability

If any provision of this Contract is determined to be invalid or unenforceable, it will be deemed to be modified to the minimum extent necessary to be valid and enforceable. If it cannot be so modified, it will be deleted and the deletion will not affect the validity or enforceability of any other provision.

16 Termination

Validity of purchase order/rate contract will remain till fulfillment of all obligations (including but not limited to providing comprehensive warranty / support till completion of three years from acceptance of the entire integrated solution as a whole) by the successful bidder.

In case of the delays in providing the stipulated services, and /or defect/delay/under or non- performance pertaining to the services / products supplied by the bidder, C-DAC Pune will give written notice to the bidder directing to set the things right within 30 days of notice. If bidder fails to comply with the requirements, C-DAC Pune shall have the right to terminate the contract and / or cancel the order/s. The successful bidder agrees and accepts that he shall be liable to pay damages claimed by C-DAC, in the event of termination of contract / cancellation of order, as detailed in this RFP. The successful bidder may terminate the contract by at least 30 days' written notice, only in the event of non-payment of undisputed invoices for 90 days from the due date. Except this situation, the successful bidder shall have no right of termination.

"C-DAC Pune will release the due amount payable to successful bidder towards the material and / or services provided till the date of termination, those are accepted by C-DAC Pune. However, the amount towards penalty, if any will be deducted from the payable amounts."

C-DAC reserves the right to terminate the contract / cancel order with or without cause/ reason, by giving 90 days' notice to the successful bidder.

17 Limitation of Liability

The liability of the Bidder / Contractor arising out of breach of any terms/conditions of the tender / contract/work order and addendums/amendments thereto, misconduct, willful default will be limited to the total contract value. However, liability of the bidder in case of death/injury/damage caused to the personnel/property due to/arising out of/incidental to any act/omission/default/deficiency of bidder/contractor will be at actual. In no event shall either Party, its officers, directors, or employees be liable for any form of incidental, consequential, indirect, special or punitive damages of any kind

18 Disclaimer

The purpose of this RFP is to provide the bidder(s) with information to assist the formulation of their proposals. This RFP does not claim to contain all the information each bidder may require. Each bidder should conduct his own investigations and analysis and should check the accuracy, reliability and completeness of the information in this RFP and where necessary obtain independent advice. C-DAC Pune makes no representation or warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this RFP.

19 Jurisdiction

The disputes, legal matters, court matters, if any shall be subject to Pune jurisdiction only.

20 Corrupt or Fraudulent Practices

It is expected that the bidders who wish to bid for this project have highest standards of ethics.

C-DAC Pune will reject bid if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices while competing for this contract.

C-DAC Pune may declare a vendor ineligible, either indefinitely or for a stated duration, to be awarded a contract if it at any time determines that the vendor has engaged in corrupt and fraudulent practices during the award / execution of contract.

21 Interpretation of the clauses in the Tender Document / Contract Document

In case of any ambiguity/ dispute in the interpretation of any of the clauses in this Tender Document, the interpretation of the clauses by Director General, C-DAC shall be final and binding on all parties.

(End of Section- III)

SECTION IV – SCHEDULE OF REQUIREMENT

This Section covers the general and technical requirements of Data Centres and deliverables/ responsibilities of the successful bidder.

The bidder must submit the detailed technical compliance matrix towards the schedule of requirements as given below in tabular format.

1 Data Centers on Turn-key Basis

The Data Centres are required to be built on 'Turn-key' basis. The successful bidder should build the entire data centre infrastructure which includes civil works, interiors, environmental controls like humidity, temperature etc., security (including access/ monitoring equipment), electrical systems, power systems, power supply, PAC, Piping, Valves, Fire alarm and suppression , BMS etc. as specified. The responsibility towards required material/items/equipment's, work, man power etc. rests with the successful bidder. The overall requirements and available information/ data/documents are included in this Section. The bidders are advised to go through same and visit the sites before working out the details in this perspective and submit the solution document complete in all respects.

2 General Requirements:

The general requirements applicable to the data centres are given below. Other than these requirements, depending on the site conditions, the bidder may propose appropriate changes in other requirements. However, the responsibility towards successful installation and commissioning and smooth running of data centres rests with bidder only.

2.1 The solution shall comprise of supply, installation, testing, commissioning training and handing over of all materials, equipment, hardware, software, appliances and necessary labor to commission said system complete with all the required components strictly as per the latest IS, IEC, IEEE, ASHRAE, NBC etc. codes.

2.2 Also, the scope includes the supply, installation & commissioning of any material or equipment including civil works that are not specifically mentioned in the specifications and design details but are required for successful commissioning of the project.

2.3 The vendor shall provide detailed design, documentation, make, and model, efficiency including user, system and operation manuals along with the necessary diagrams, design drawings and details bifurcation of Bill of Quantity (BOQ) along with details description. Design drawing should include but not limited to Single Line Diagram, Discrimination curves, Lighting drawing, P & ID (Process and Instrumentation Diagram), , equipment sizing and selection along product selection calculations etc. with clear sectional drawings for server as well as utility room, interior, raised flooring, false ceiling, complete BMS system required for data centre etc.

2.4 The vendor shall take the necessary clearance / approval of the drawings, design, quality of material, make and model of the quoted material etc. prior to the execution of the project

2.5 The vendor shall be responsible for providing acceptance checklists for the project.

2.6 The Data Centre should be complete in all respects.

2.7 Electrical power and water during construction of datacenter will be provided by the institute; whereas bidders needs to provide treated water for dry cooler and related subsystem. Client shall not provide any accommodation for the contractor and his staff including labour.

2.8 The scope of installation, configuration, integration and commissioning shall mean to install and configure all components and subsystems integrating the Building Management System with the required components, integrating the entire facility and make the system operational as per scope of work

2.9 The acceptance test shall cover the following scope:

2.9.1 Factory Test Reports

Bidder shall provide factory test report for all products after testing each parameter of products as per their standard test procedure.

- Electrical panels
- PAC
- Pumps
- Adiabatic Dry Cooler
- DG Sets

3 Design of Data Centre

The proposed designs and indicative drawings enclosed in the RFP document are for reference and for the purpose of bidding. The vendor so finalized would be required to make the necessary shop drawings within the layouts so as to arrive at a final scheme in line with the requirements and in accordance with the requirements of Indian standards, IEC, IS, IEEE, NBC etc. However, no change whatsoever in the price schedules would be allowed after the award of the work and the price shall remain firm throughout the project and the entire works are to be executed within the quoted price schedules.

The shop drawings during execution should include the following, but is not limited to

a) Floor plan with design layout and detailed drawings

b) Layout of raised floor and false ceiling layout

c) Electrical diagrams (including UPS, SLD, Lighting, Earthing, Equipment Layout, Power Distribution m BUS Bar etc.)

d) Cooling system layout with (P & ID, Piping layout, Equipment Layout, Schematic etc.)

e) Fire detection and suppression plan/ layout

f) Access Control Plan

g) Surveillance camera placement plan

h) Environment monitoring system placement plan

4 Design Inputs

Tables given below are the details of exact load parameters. These values are given to the bidders to come out with appropriate configuration and sizing. The major sub systems of the DC infrastructure are:

a) Adiabatic Dry Cooler, Piping Pumps

b) Raised Flooring and False Ceiling

c) Electrical Panel etc.

d) PAC units and related work

e) I-BMS System

The specifications and requirement of the entire solution is stipulated in the RFP with respect to the design and solution, certain indicative inputs like layout, SLD etc. are provided. Bidder may follow the indicative inputs provided in this RFP or come out with innovative design which is optimal and cost effective without violating any of the specifications given.

4.1 The envisaged IT load for data center: 400 KW max.

Sr. No	Description	Power in Kw/Rack	Qty.

1	Server Rack	55	6
2	Storage Rack	10	2
3	Server Racks	10	2

5 Requirements towards Civil/Interior work

5.1 Civil architecture and preparation of data center :- Interiors of the data centre (including, civil works, foundation work, , raised floor, false ceiling, fire rated paint, fire rated partition etc.)

5.2 METAL GRID CEILING: The drop ceiling shall be provided with Armstrong Lay in (Hot dipped galvanized steel) metal ceiling system 600 x 600 x 5 mm with standard 2.5 mm dia (16% open space) and fleece with NRC of 70 & CAC 36 to be laid on Armstrong grid system. The modular ceiling sheets with necessary fittings should be done up aesthetically to integrate with the lighting.

5.3 Raised flooring: Suitable raised false flooring as per prevailing standards should be provided as per site requirements. The entire Access floor system shall be made from high density cementitious board and provide Class O as per BS 476 PART 6 for Fire propagation index and Class 1 as per BS 476 Part 7. Fire Ratings tested as per CIRC 91/61 or BS 476 Part 6 & 7 fire resistance up to 60 min as per NFPA. System should have antistatic property and air leakage resistance. The system shall be able to withstand a minimum UDL of 2500 kg. Per sqmt. and a point load of minimum 500 kg. The pedestal shall withstand Axial Load of minimum 2200 kg

5.4 Panel should meet the below requirements: The panel shall be coated with epoxy coating on the exposed surface. Have an infill of light weight cementitious material. Insulated against heat and noise transfer. Panels shall be finished with High Performance Anti-Static Laminate. The bottom of the panel shall be of 0.05 mm Aluminium foil to create a fire and humidity barrier and this should provide floor's electrical continuity. Panels will remain flat through and stable unaffected by humidity or fluctuation in temperature throughout its normal working life. Panels will provide for impact resistance top surfaces minimal deflection, corrosion resistance properties and shall not be combustible or aid surface spread of flame. Panels will be insulated against heat and noise transfer. Panels will be 600 x 600mm x 30 mm height fully interchangeable with each other within the range of a specified layout. Panels shall rest on the grid formed by the stringers which are bolted on to the pedestals. Panels shall be finished with anti-static 0.9 mm Laminate and 0.45 mm thick plastic edge material that is self-extinguishing and will be PVC free. Panel should withstand a Concentrated Load of minimum 450 Kg applied on area 25mm x 25mm in the centre of the panel which is placed on four steel blocks without deflecting more than 2.5mm and without setting permanently more than 0.20mm

5.4.1 Pedestal installed to support the panel will be suitable to achieve a finished floor height of 600mm. Pedestal design will confirm speedy assembly and removal for relocation and maintenance. Pedestal base to be permanently secured to position on the sub-floor. Pedestal assembly will provide for easy adjustment of levelling and accurately align panels to ensure lateral restrain. Pedestals will support an axial load of minimum 1500 Kgs, without permanent deflection and an ultimate load of 3000 Kgs. Pedestal head will be designed to avoid any rattle or squeaks. Pedestal should have GI Base plate of suitable dimensions, GI Pipe, check nut for level adjustment, threaded stud with GI pedestal head, all screws etc. Pedestal design shall confirm speedy assembly and removal for relocation and maintenance. Pedestal base is required to be permanently secured to position on the sub floor. Pedestal assembly shall provide for easy adjustment of levelling and accurately align panels to ensure lateral restrain.

5.4.2 Under structure (US) system consists of stringers of size 525 x 30x 25 x 0.8 mm thick to form a grid of 600 x 600mm. These stringers are locked into the pedestal head and run both ways. The US system will provide adequate solid, rigid and quiet support for access floor panels. The US system will provide a minimum clear, uninterrupted height of 600 mm between the bottom of the floor and bottom of the access floor for electrical conducting and wiring The stringer shall be hot dipped galvanized steel cold roll construction specially designed to stabilize lateral stability and to support the panels on all sides for alignment. The channels shall have counter sunk holes at both ends to accommodate bolting of the same to the pedestal head assembly. Earthing point connections are to be part of standard design. Stringer system is composed of a special frame, made of pressed galvanized steel plate and with a section 25mm wide, 30 mm high and 0.8 mm thick. The longitudinal ribs and flaps in the lower part should be designed to increase flexion resistance. The grid formed by the pedestal and stringer assembly will receive the floor panel.

5.4.3 Vendor to consider providing 2 nos. 2-point panel remover, lead, lift, steps for 600mm raised floor etc.

5.5 Fire Rated Steel Door- Two hours fire rated double skin steel door constructed from 1.25mm thick galvanized steel sheet formed to provide a 46mm thick fully flush door shell with lock seam joints at stile edges and the internal construction of the door should be specially designed Honey Comb structure with reinforcements at top, bottom and stile surround. The door frames and door shutters should be primed with Zinc-Phosphate Staving Primer and finished with Polyurethane Aliphatic grade or epoxy paint as per approved manufacturer specifications. This Door is required to be with Panic bar. The Fire Doors are to be fully insulated and shall be tested as per IS: 3809-1979, ISO: 834-1975, IS: 3614 (PART-II)- 1992 and BS 476 (PART- 20 & 22)- 1987 under live fire conditions, The wired glass is to comply with both BS 476: PART 22 and BS 6206 relating to fire resistant and impact performance.

5.6 Fire rated Partition/ Walls: Partition walls within the data centers should have 2-hour fire rated. Suitable smoke seals should be used. Fire line boards should conform to IS:2095 – 1996-Part-I. Providing and fixing minimum 132MM thick FIRE RATED gypsum board partitions with 2 Nos. x 15mm thick fire line board on both sides of 72mm GI floor channel and 70mm Square MS Pipe stud as per specifications, including cost of chasing for electrical conduits. This Item includes all tools, tackles, material, labour, fixture adhesives sealants etc. for the complete work.

5.7 Opening for the Cables or other utility services which are coming inside the building needs to be sealed by Fire resistance board system, water soluble fire retardant solutions, fire expanding foam etc. having minimum of 2 hours' fire rating when tested in accordance with BS 476 part 20 and UL 1479 for horizontal and vertical openings in RCC slabs, Beams, walls, Brick masonry or Gypsum partitions for passing service shafts. The service lines could be of various types like electrical cables, cable trays or metal pipes etc. The foam shall have Acoustic property as per DIN 4109 and Smoke and Air Seal. The Foam should have the feature of Re penetrability for future maintenance or repair activities. Fire soluble cable coating Should be suitable for protecting against spread of flame on timber panels and tested as per IEC 332 part 3 standard for reduced spread of flame & tested as per FM Class 3971. It should have no derating effect on cables, free from fibre, asbestos, odder less and solvent free, flexible when dry after application.

5.8 Room Signage and fire evacuation map. Providing & fixing Aluminium Modular Signage using Aluminium Alloy 6063 extrusion with Anodising (The thickness of the anodization is typically 30 microns. The integrity of the anodize coating is tested to meet the international specifications ISO 2143-1981.) With lifetime Warranty in normal working condition.

5.9 Civil foundation work for DG Sets, Adiabatic Dry Cooler , Pumps, water storage tanks, chemical dosing plant etc.

5.10 Fencing for Adiabatic Dry cooler yard.

5.11 INSULATION ON ROOF AND FLOOR SLAB: Supply and installation of external thermal insulation class-"O", closed cell elastomeric nitrile rubber insulation with adhesives recommended as per the approved shop drawings/ specifications. Minimum 13 mm thick for floor and ceiling insulation is required.

5.12 FIRE RATED GALSS PARTITIONS: 12mm tick, Providing and fixing 120 minutes fire rated and partially insulated (W>120 minutes) fully glazed non-load bearing fixed partition system. The glass should be Saint-Gobain or equivalent Contra flam Lite => 14 mm clear 120 min rated (E 120) and partially insulated (W> 120 minutes).

5.13 PAINTING& POP: WALL PUNNING: All wall to be punnied using gyp plaster of India Gypsum / equivalent make for an average thickness of 15-20mm made of universal plaster . The punning shall be finished uniform and wave free on both sides. The cost to include providing grooves at junctions wherever required as per the instructions. Price shall be inclusive of any chipping & re plastering if required. (Columns included). To prepare & finish the wall with fire rating paint of approved quality & shade by sand papering the surface, applying one coat of primer, prepare the surface with two coats of full putty, sand papering again, repeating a coat of primer, applying one coat of paint, touching up with putty & applying two final roller coats of fire rated paint, to internal wall/roof slab /partition masonry concrete surfaces incl. preparing the surface by cleaning scrapping, smooth filling crevices, scaffolding etc. (columns in data center included)

5.14 HOUSE KEEPING: The vendor is responsible for keeping the site clean and deep cleaning by removing all the debris etc. everyday, by using adequate covering/tarpaulin sheets etc to cover entire areas (client property etc) by using cleaning equipment's.

5.15 Steel structure needs to be consider for the platform of the equipment's to install ODU unit, PAC, Panels etc.

5.16 Bidder to consider aluminum partition with half potation transparent with glass at BMS room and system admin room.

6 Requirements towards Electrical Work

6.1 For IT load, UPS should be of N +1 configuration. Battery back up to be provided for 10 minutes for IT and 15 minutes backup for NON IT UPS. Provide and commission UPS along with batteries for IT and NON IT load. 415 V,3 phase 4 wire plus ground without internal isolation transformer. Design of UPS should be Insulated-gate bipolar transistor (IGBT) rectifier and 3/ 4 level 4 quadrant IGBT inverter with double conversion and capable of operating in ECO mode as per Class-1 classification of IEC 62040-3. Each UPS should have phase sequence correction kit without switching in battery mode as a default feature. Steady state voltage regulations will be within 1% of nominal output voltage, Linear load harmonics distortion should be less than 3% and non-liner load harmonics distortion should be less than 5%. UPS should be capable of 100% unbalanced load. Efficiency of UPS should not be less than 94% at full load condition in double conversion mode. Noise generated by UPS under normal steady state condition should not be more than 85 DB as per ISO 7779. UPS should be able to test in self-loading mode without any external dummy load. UPS should be ROHS complied product. Cable termination will be from front only. No back or side access is required. All serviceable components to be from front. UPS display should show the battery monitoring, UPS mode, Alarm (Audio and visible), Events etc. The UPS communication capability should be able to integrate into any industry standard Building Management System (BMS). Adequate protections for UPS for rectifier, bypass, battery, battery against overload, short circuit, battery over charging, battery over discharging, transients, surges (as per IEEE 587) etc. needs to be considered as

per IEC 62040-1. A Battery system shall be furnished for the UPS with sufficient backup capacity to maintain UPS output at the UPS rated capacity for duration of 10 minutes. The type of battery shall be Sealed Maintenance-free (SMF) type. Each UPS should have separate battery bank. Battery protection shall be provided by thermal-magnetic molded-case DC circuit breakers in each battery rack.

Sr. No.	Description	Qty	Location
1	UPS for IT Load with SMF batteries for 10 minutes back up time of rating 200 KVA	3	UPS and Panel Room
2	UPS for NON IT Load – Utiliy Load with SMF batteries for 15 minutes back up time of rating 30 KVA	2	UPS and Panel Room

6.2 Supply, installation and commissioning of Diesel Generator Set with acoustics enclosure and the other necessary systems include power cum synchronization panel if required, exhaust system, earthing system, battery and battery charger along with Civil foundations for successful erection, completion of the Data centre. DG sets should be of prime rating and should be capable of operating continuously on an unbalanced system within limit described in section 6 of IEC 60034.1. Genset should be with Auto start, synchronization, auto stop controller. DG set should be with Auto Mains Failure (AMF) panel. Synchronization is to be with Auto as well as manual wherever required. DG set should be load dependent start and stop arrangement. Height of the exhaust stack has to be as per Central Pollution Control Board (CPCB) norms. Genset should be supplied with day tank with 990 liters fuel storage capacity.. Fuel tank capacity will be as per Petroleum and Explosives Safety Organization (PESO) fuel storage guideline. Alternator insulation should be of Class H and temperature raise limit to Class H. Entire Genset to be provided with necessary engine protection system, alternator protection system and reverse active protection system etc. Selection of LT switchgear will be as per IEC 60947 and Genset will be as per ISO 8528 part1 to 10. Alternator should be with Resistance Temperature Detectors (RTD) and Bearing temperature detector (BTD). Electrical performance of the alternator will be as per IS 4722. DG system should come automatically ON LINE in less than 40 sec. First fill of oil is part of scope of the bidder.

6.3 AC wiring circuit: Main circuit Point wiring should be surface or concealed conduit system. Conduit wiring shall be as per IS-732. Conduits and conduit accessories shall be galvanized and shall conform to IS-2667, 1988. Conduit ends shall be free from sharp edges or burrs. The ends of all conduits shall be reamed and neatly bushed with Bakelite bushings. In order to minimize condensation or sweating inside the conduit system, all outlets shall be properly drained and ventilated in such manner so as to prevent entry of insects. Conduit pipes shall be fixed by 22 gauge ribbed G.I. saddles on 25 x 3 mm G.I. (Galvanized Iron) saddle bars in an approved manner at intervals of

not more than 50 cms. Saddle shall be fixed on either side of couplers, bends or similar fittings, at a distance of 30 mm from the centre of such fittings. – Refer Lighting Layout Drawing.

6.4 Lighting fixtures:- Lighting wiring between JB(Junction Box) and lighting fixtures shall be done by PVC insulated 3-core (phase neutral and earth) unarmoured cable. All joints of conductors in Switch boards / JB's / Fittings shall be made only by means of approved Mechanical connectors (nylon / PVC connectors). Bare or twist joints are not permitted anywhere in the wiring system. Fixtures shall be firmly supported from the structures, support clamps etc. They may be bolted or welded to the steel work or metal inserts. In case of concrete structures, where metal inserts are not available, fixtures will be fixed to or supported from concrete surfaces with the help of anchor fastener, in such cases special care shall be taken to see that anchoring is firm. All LED fixtures shall be with high power factor, low harmonic (THD< 10%) (THD= Total Harmonics Distortion) and minimum 100 lumens/watt.

6.5 Earthing and Earthing Pits: All Electrical Equipment must be efficiently double earthed in accordance with the requirement of IS-3043/IEEE 80 and relevant regulations of Electrical. The earth pits shall be as per IS with proper arrangement for testing. Maintenance free earth pits to be used. All Earthing conductors shall be hot dip galvanized / electrolytic grade base copper conductor. The main earthing rings shall be done as per practice laid in Indian Standard. All electrical equipment shall be connected to the earth bus at two points except the lighting fittings and junction boxes. All hardware for bolted joints shall be galvanized and the size of the bolt shall not be more than quarter of the size of earth conductor. Tinned copper lugs shall be provided where round earthing conductors are used. The 415V neutral shall be solidly earthed by means of two separate and distinct connections to earth. The earth pits shall be interconnected between themselves and the main earthing grid to form an earthing ring. All joints in the main earthing conductors shall be welded. Terminal joints on the equipment shall be bolted. Removable test links shall be provided near the earth pits to facilitate testing of earth pits. Where the earthing terminal diameter provided on equipment is larger than quarter of the size of the earth conductor, connection shall be made using a wider flag welded to the conductor. The equipment to be earthed shall be connected to a common earth grid of power system. The number of earth pits will depend upon soil resistivity and the voltage of the system. The earth pit together with the electrode shall be constructed as per IS-3043-1987. The potential difference between neutral and earth should be less than 1 V. A bolted assembly link shall be provided in the connection between earth electrode and the main earth conductor.

6.6 LT Panels (Low Tension/voltage Panels): Design, Supply, installation, testing and commissioning of all LT panels. Panels will be as per IEC 61439. Panels feeders should have rated capacity of Load manager with RS 485 communication port. This should compactable for BMS system to know the energy consumption. Bidder to submit License certificate of LT panels as per IEC 61439. Selection of switchgear should be as per IEC 60947 and bidder to submit the Discrimination chart for all the feeders. All the panels should be with Transient Voltage Surge Suppressor (TVSS) having Response

time <0.5ns,Let-through Voltage 600V-800V. Auto transfer switch should be as per UL 1008 and NFPA 110 – Emergency and Standby Power. Minimum 30% spare feeders in each panel to be considered.

6.7 Cable Tray:- All cable Trays shall be perforated type for indoor applications & above 300mm ladder type trays shall be used for outdoor purpose. The Trays shall be pre-fabricated hot-dipped galvanised. The Trays shall have suitable provision for clamping at an interval of 500 mm. The Earthing Strip for the earthing ring shall be run along the side of the Tray. The connection between individual equipment to the ring shall be by bracing or with lugs. Supports to the cable trays to be considered. The bending of trays shall be smooth and the curvature sufficient for each bending of cables in it. Pre-fabricated accessories such as Tees, bends, risers, couplers, reducers, etc. shall be used at all junction & branches. Cutting & welding of trays at site is not permissible. Similarly, the trays shall not be welded on the supports but bolted only.

Stainless steal (SS) cable to be considered above each row of the Rack if required Cable tray Grid above the rack to be provided.

6.8 Each DLC rack will requires 3 nos 63 Amps inputs from top of the rack. Bidder need to consider IEC male/female socket and location of these socket should be above false ceiling in the cable tray.

6.9 IT UPS output panel should be with isolation transformer with Copper winding. (K4 or K13 rating).

7 Requirements towards Heating, ventilation, and air conditioning work

7.1 All cooling equipment selection to be done based on American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standard. The cooling systems should perform efficiently at variable load conditions. The overall cooling solution should be designed to achieve better cooling and low operating cost.. The room air temperature should be maintained at 22 +/- 2 Deg. C and humidity as per ASHRAE guidelines. The cooling system in the server rack area should be designed as per layout design provided in Layout Drawings.. Heating and humidifier (if necessary) to maintain correct operating environment throughout the data centre needs to be considered. The overall cooling solution should follow ASHRAE 2011 thermal guidelines.

7.2 Adiabatic Dry Cooler: Supply, installation, testing and commissioning of a dry cooler with adiabatic cooling pads. The finned coil heat exchangers shall consist of copper phosphorus deoxidised (Cu-DHP) tubes, having copper content 99.9%, made to EN 12735 parts 1 & 2, ASTM B280/b68/b743 specifications. Aluminium fins shall be with advanced rippled-corrugated fin design to create a state of continuous turbulence, with full drawn collars to maintain fin spacing and provide a continuous surface cover over the entire tube. The tubes shall be mechanically expanded into the fin collars to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates. Headers shall be made of copper tubes

having steel-flanged connections as standard. The adiabatic cooling system shall consist of controls, Spray pump, adiabatic cooling pads, SS basin, touch screen, electrical interface, VFD pumps, VFD fans. The controls shall cause the adiabatic water distribution system to operate when the ambient outdoor dry-bulb temperature does not provide sufficient cooling to maintain the desired leaving water temperature. The air movement package shall combine premium aerodynamic and acoustic performance to offer compact fan and motor as an integrated product. Increased energy savings shall be achieved by using EC (electronically commutated) motors with permanent-magnet rotors. The fans selected shall be labelled as 'soft commutation'. This must involve a combination of commutation strategy and motor design. It should result in low-noise operation, without structure-borne noise. The noise level shall be limited to 75 dBA at a distance of 1.8 m. With the fans selected, there must be no motor noise variation across the entire speed range. When demand for cooling is low, very low operating speeds must be selected; resulting to extremely reduced absorbed power. Fan shall be Axial type aero foil design with Direct Drive. Fan motors should be TEFC with degree of protection IP – 54. Fan motors to be VFD Driven. The Adiabatic dry cooler shall have a control system that senses the outdoor ambient dry and the leaving water temperature; selects between dry and adiabatic cooling and varies the speed of the fans to meet the heat rejection needs of the system. The cooling pad section on each air-inlet side shall serve as an adiabatic saturator to cool the incoming air. It shall consist of specially integrated cellulose paper sheets with flute angles that have been bonded together. The impregnation procedure shall also ensure a strong self-supporting product, with high absorbance, protected against decomposition and rotting. An inlet-air edge coating shall be provided to prevent the pad surface from extreme environment such as dirt, sand storm, and risk of bacterial and algae growth. The water flow through the pads shall be initially regulated by a special metering device, which throttles the correct flow rate. The unit shall have a water tray to collect the not-evaporated water and to allow a recirculation of it by means onboard pumps, there should be a water filtration system along with strainer for recirculation of water. The unit shall be equipped with two copper tubes that spray water at a low pressure (2 to 3 bar) over the adiabatic pads to keep them wet. A water distributor shall be placed above wet pads to provide a homogeneous distribution of the water on all the pads length. Two fixed speed pumps shall be onboard the unit and they shall be used to recirculate the water from the water tray to the distribution pipes over the adiabatic pads. An ultrasonic sensor shall be placed on the water tray to monitor the water level. Once the water level is above a certain threshold, the unit shall turn on the pumps to recirculate the water. If the water level continues to increase, the sensor will force the unit controller to empty the tray in case of an obstruction. When the water level is below the default value, the unit shall turn off the pumps to avoid excessive pump wear. These units shall be featured by large air-side coils made of aluminium fins and copper tubes mechanically expanded, to obtain optimum metallic contact for maximum exchange efficiency between water and external air.

7.2.1 Logic of operation of Adiabatic Dry Cooler will be as- The dedicated temperature sensor will sense the ambient air temperature continuously. As long as the ambient temperature is less than or equal to the "set point temperature", the control system will facilitate the unit to run in "dry mode".

Only at times (if any) the ambient temperature increases beyond the “set point” temperature, the control system enables the unit to transition to “wet mode” operation. During “wet mode”, the water system will be instigated to facilitate pre-cooling of the incoming hot ambient air before entering the heat exchanger coil section. In addition, the control system must also be able to optimize the fan power consumption continuously depending on the ambient temperature and heat load variations. Make provision on HMI to change set points as required. The process water side RTD (PT100) with temperature output signal will have to be fitted at the main water outlet header of the Adiabatic cooler. This temperature sensor will sense the outlet water temperature and accordingly give a signal to your VFD to increase / reduce the speed of fans. At the set temperature the fans will be running at full speed and as soon as it drops then the fan speed will be reduced resulting in saving of power

7.2.2 Water Piping and accessories: Water pipe should be heavy duty Mild steel (MS) (Black steel) with all necessary fittings like bends, elbows, tees, flanges, reducers, vibration isolators, hanger, supports, PUF Gatti and fitting like flanges, bellows, union, etc. MS 'C' class chilled water piping, cut to required length and installed with welded joints (USE RECTIFIER), including all necessary fittings such as elbows, tees etc. The above piping shall be provided with thermal insulation of ‘O class’ Nitrile insulation with protective coating on water piping with min 26G of Aluminium cladding. Minimum Insulation thickness of 25mm for pipe having diameter 0-80 mm. All pipe joints shall be welded or provided with necessary fittings. Pipe flanges shall conform to IS:1536 whereas the threads shall conform to IS:554. All piping shall be tested to hydrostatic test pressure of at least 1 ½ times the maximum operating pressure but not less than 7 Kg/Sqm for a period of not less than 24 hours. Noiseless circulation of water in the circuit should be achieved. After completion of the installation, the pipe lines are to be flushed thoroughly to blow out the entire dirt and muck. Commissioning strainers shall be used before all equipment’s. The system then shall be balanced to deliver the water quantities. Direction of flow shall be marked on pipelines in bold markings.

7.2.3 PRESSURE GUAGES & THERMOMETERS

Bourdon type pressure gauges with aluminium casing with a minimum 100 mm dial and appropriate range complete with needle valves shall be provided at the inlet and outlets of heat exchangers, and pump sets. Thermometers shall be of dial type mounted on a board with separable copper well. The case shall be of cast aluminium, weather & water proof type. Thermo well shall be provided at the inlet and outlet of all heat exchangers.

7.2.4 Minimum I/O Summery for Adiabatic Dry Cooler will be as below

Inputs	**Description**

I0.0	FAN 1 RUN feedback
	FAN 1 fault feedback
	FAN 2 RUN feedback
	FAN 2 fault feedback
	FAN 3 RUN feedback
	FAN 3 fault feedback
	pump 1 RUN feedback
	pump 1 fault feedback
	pump 2 RUN feedback
	pump 2 fault feedback
	Adiabatic pump RUN feedback
	Adiabatic pump fault feedback
	Make up pump RUN feedback
	make up pump fault feedback
	make up line LS1 low level
	spray pump pressure switch
	FAN 2 SPEED FEEDBACK
	FAN 3 SPEED FEEDBACK
	FLOW TRANSMITTER OUTLET
	PRESSURE TRANSMITTER INLET
	PRESSURE TRANSMITTER OUTLET
	RTD 1 UNIT OUTLET
	RTD 2 ADIABATIC PAD
	RTD 3 PROCESS INLET
Outputs	
O0.0	FAN 1,2,3 start / stop command
O0.1	FAN 3 start / stop command
	closed loop pump 1 start / stop command
	closed loop pump 2 start / stop command
	spray pump start / stop command
	make up pump start/stop command
	Hooter
	FAN 1 TRIP
	FAN 2 TRIP
	FAN 3 TRIP
	Alarm signal to DCS
	LS1 to DCS

7.3 Computer room Precision air System (PAC): Supply, installation, testing and commissioning of self-contained direct expansion type Precision air conditioning units suitable for operation on R410a/R407C refrigerant & should have advanced microprocessor and electronically communicated. Modular construction Precision air conditioning unit suitable for operation on R-410a / R407C refrigerant with bottom discharge arrangement consisting of inlet filter, draw through direct drive Electronically commutated Motors and Backward curved Plug fans, fan motor assembly to deliver desired air quantity, Scroll twin Compressor (At least one Compressor should be inverter base), Direct Expansion Cooling Coil, Heater banks to

maintain humidity inside the space, condensate drain pan of stainless steel construction, Microprocessor panel, programmable control complete with display. The unit shall be suitable for operation on 415 V, 50 Hz, AC supply. The controller unit should also be capable of starting the standby other DX base unit. in case the temperature is not able to achieve with the working units.For Basis of Design Bidder to consider site ambient data along with following parameters.

7.3.1 Equipment Parameters

Equipment air inlet (Input to server rack): 22DegC +/- 2 Deg & 50% RH

Machine configuration : Bottom discharge

Actual Capacity : As provided

Flow Direction : Bottom discharge

Machine Capacity control: Return Air

Compressor type : Scroll Compressor (At least one to be inverter)

Evaporator Fan : Backward curve blades with Electronically commutated (EC) motor

Humidification & De-humidification: In built feature of humidification & dehumidification

Filters : Filter to be provided on the Package unit, having 95% efficiency down to 5 Microns (Minimum 150 mm thick filters)

Outdoor unit : 1per dedicated circuit / PAC, with copper tubes & aluminium fins with fan speed controller & anti-corrosive coating.

7.3.2 Base panel shall be constructed out of sandwich panels of galvanized steel and painted with epoxy powder coated (Insulation on all 4 sides). All four side panels shall be insulated. The panels shall be insulated on the inside with minimum 32 Kg/ cum glass wool / 15 mm PU sheet, for fire insulation class A0/A1. Unit shall be complete with space for refrigeration equipment, fans, cooling coils, liquid receiver, Liquid line solenoid Valve, NRV and multistage strip heaters and modulating Humidifiers. Unit shall be provided with welded tubular steel floor stand with adjustable legs and requisite vibration isolation pads. The units should be equipped with direct driven backward curved EC radial fans with electronically commutated brushless motors; the technology employed by these motors allows straightforward control of fan speed by means of the electronic controller in order to obtain adjustment of air flow rate and static pressure to ensure correct distribution of the treated air. The motor's high efficiency should make for less energy absorption, especially at partial loads and during starting (lowering of peak current), which means a reduction in power consumption of approximately 30%

compared to AC motor. The motor shall have minimum IP54 Protection. The filter chamber shall be an integral part of the system and withdraw able from the front of the unit. Filtration shall be provided by deep V form G4 performance dry disposable media to AS1324. The thickness of Filters shall be minimum 150 mm. The filter frame material shall made of GI / AL. Low airflow and clogged filter alarm sensors consisting of two pressure switches for controlling the operating conditions of the fans and the build-up of dirt on the air filters inside the unit. Evaporator Coil Precision packaged unit shall comprise of cooling coil of copper tubes expanded into aluminium fins with corrugated profile and hydrophilic treatment. Face and surface areas shall be such as to assure rated capacity and the air velocity across the coil and Filter shall not exceed 2.5 m/s. The cooling coil shall be minimum of 3/4 rows deep and the fin spacing shall not exceed 1.8 mm. Coil selection to be suitable for SHF > 0.95 and provided with hydrophilic coating to minimize / eliminate water carry over into the airflow stream. Complete Coil should flat and should be fully accessible from front and V or A shape type of coil not acceptable. Drain pan shall be made of stainless steel with nitrile rubber insulation

7.3.3 Scroll Compressor The compressor shall be of the high efficiency scroll design operating with R410A / R407C refrigerant and 415V/3~/50 Hz supply. The compressors should be “scroll type” operating with R410A /R407C and power supply of 400-460V/3ph/50 Hz. The compressors are provided with integrated thermal overload protection. The compressor motor control driver is provided with integral electronic protection against over temperature, over current, over or under-voltage with absence of one or more phases. Compressors, the humidifier shall be isolated from the air flow in the version with downward flow machines. The compressor shall be charged with mineral oil and designed for operation on environment friendly refrigerantR410a /R407C.The machine should be inbuilt with the liquid receiver & pressure relief valve, Liquid line solenoid Valve, NRV for better performance of the machine.- The refrigeration system shall be of the Single/ Multiple circuit direct expansion type and incorporate hermetic scroll compressors, complete with crankcase heaters. The refrigerant circuit comprises:

- Liquid receiver inbuilt in the indoor unit
- Electronically- controlled expansion valve (EEV)
- Solenoid valve for shutting off the refrigerant liquid
- Refrigerant liquid flow indicator
- Solid cartridge freon filter
- Safety valve
- High pressure safety pressure switch with manual reset
- Low pressure switch with automatic reset
- Copper refrigerant pipes with anti-condensation insulation on the suction line
- Pipe taps on suction and delivery side and charging valve on liquid side.

- Each Compressor / refrigerant circuit to have its own independent Evaporator coil and Condenser coil.

7.3.4 Electronic Expansion Valve (EEV) The unit should have Electronic Expansion Valve and should be capable of responding to the varying load conditions.. It should be able to provide following advantages:

- Fast, high precision adjustment of refrigerant flow;
- Fast arrival of the unit at steady-state conditions;
- Superheating value remains constant in variable thermal load conditions;
- Efficient operating conditions of the compressor, especially in the presence of low room temperatures;
- Wide working range with consequent extension of the unit's operating limits. These properties result in enhanced performance of the unit and make it possible to obtain very significant energy savings.

7.3.5 Condenser shall be air-cooled type, suitable for outdoor installation and shall be suitable for operating at high ambient of 45 deg C db and at low ambient of upto 0 deg C db temperatures. Condenser shall be in copper tube & aluminium fins construction. Condenser coil shall be of maximum 4 rows deep and the fin spacing shall not exceed 2.1 mm. The condenser fan/s shall be of axial type with max 1000 RPM variable voltage electric motor complete with IP-54 protection. Motor shall be speed controlled to ensure a stable operation for varying ambient; by a factory fitted direct acting head pressure activated stepless variable speed drive. The condenser shall be complete with provisions for refrigerant piping connections, shut off valves and any other standard accessories necessary with the equipment supplied. Each Circuit to have its independent set of condenser coil.. The condenser should be equipped with fan speed controller for the speed variation based on the condensing temperature & the speed variation should be steeples. Location of condenser unit will be at third floor terrace and Data Center location will be at first floor, Bidder to calculate the length of piping.

7.3.6 Electric heaters-Each packaged unit shall be provided with multi stage heating elements constructed from aluminium with 12-15 kw minimum capacity. Electric heaters shall be of the low temperature totally enclosed strip type fitted with radiation fins and suitable for operating at black heat. If overheating occurs, a safety thermostat should cuts off the voltage supply to the heaters and triggers an alarm.

7.3.7 Humidifier-Boiling water in a polypropylene steam generator shall provide humidification. The humidifier shall be capable of providing continuous auto modulation in steam generation from 30-100% as per the steam requirement per hour. The humidifier shall be fully serviceable with replaceable electrodes. Waste water shall be flushed from the humidifier by initiation of water supply valve via U-trap. The microprocessor should be able to display the current drawn and actual steam output in the microprocessor.

7.3.8 De-humidification cycle shall operate by keeping the airflow constant but with the help of EEV to reduce the ADP of the coil.. The system shall be provided with relevant water detection kit which shall have sensors with wire of minimum 1.5mtrs and each of the sensor must be capable to detect individually any water below the false floor near the unit, the sensor must be connected to the unit microprocessor thus enabling the controller to give an alarm incase of wet floor. - A microprocessor shall continuously monitor operation of each Server room air-conditioning unit continuously digitally display room temperature and room relative humidity, alarm on system malfunction and simultaneously display problem. When more than one malfunction occurs, flash fault in sequence with room temperature, remember alarm even when malfunction cleared, and continue to flash fault until reset. Microprocessor to control the following functions:

- Room Temp temperature
- Humidity (HH versions)
- Speed of the delivery fans
- Timing of compressors with automatic rotation
- Alarm signal on two levels
- Controlled automatic reset of high and low pressure alarms
- The machine should be programmable to set the rotation time between the working & standby units as per client requirement.

NOTE – Minimum Ratings, location of PAC along ODU unit are provided in the drawings,

7.4 Differential Pressure Transmitters: Differential pressure transmitters shall be field mounted and shall transmit an isolated 4-20mA DC signal indicative of process variable to the pump logic controller via standard three wire 24 DC system with Emission/Immunity confirming to EN61000-6-2/3. Unit shall have stainless steel wetted parts with two 7/16" process connections. It shall be protected against radio frequency interference and shall have water tight, IP 55 electrical enclosure. Sensor should be capable of withstanding a burst pressure of 25 bar. Accuracy shall be within 2.5% BFSL (Best Fit Straight Line).

7.5 Supply, installation, testing & commissioning of Horizontal Centrifugal Pumps of Mono block type. The total head capacity curve shall preferably be continuously rising towards the shut off. In case of unstable (drooping) characteristic the duty point shall be well away from the unstable region. The shut off head shall be at least 110% of the total head. Pumps shall run smooth without undue noise and vibration. The noise level shall be limited to 75 dBA at a distance of 1.8 M. Vibration shall limited to class II C of BS 4675 Part –I. Pumps of a particular category shall be identical and shall be suitable for parallel operation with equal load division. Components of identical pumps shall be interchangeable. Pump should include TEFC three phase motor (EFF-1), Class F insulation & IP 55 protection of suitable rating. The motor shall be compatible with VFD drive. Flexible bellows at pump inlet and pump outlet as per suction and delivery sizes to be considered.

Body of the pump should be Cast Iron (IS 210 FG260), Impeller -Bronze (IS 318 Grade LTB2), Shaft: SS 410, Shaft Sleeve: SS 410 etc. Bidder can consider inbuild FI with inbuild DP switch and flow mater.

7.6 Variable Frequency Drive(VFD): The variable frequency drive(s) shall be pulse width modulation (PWM) type, microprocessor controlled design. VFD, including all factory-installed options, is tested to conform to UL standard 508. VFD shall also meet UL and be CE marked and built to ISO 9001:2000 standards. VFD shall comply EMC directives as per IEC 61800-3:2004, category C1 with 50-meter motor cable (for power less than or equal to 90 Kw) & category C2 with 50 meter motor cable (for power more than 90 Kw). VFD shall be housed in enclosures for indoor applications. Wall mounted/VFDs with plastic enclosures shall not be acceptable. For outdoor applications, VFDs shall be housed in IP 54 enclosure. VFD shall employ an advanced sine wave approximation and voltage vector control to allow operation at rated motor shaft output speed with no deration. This voltage vector control shall minimize harmonics to the motor to increase motor efficiency and life. Power factor shall be near unity regardless of speed or load. VFD shall have balanced DC link chokes to minimize power line harmonics. VFDs without a DC link choke shall provide a 3% impedance line reactor. VFD shall be compatible for ModBUS/any open standard protocol.

7.7 Gate and globe valves: Gate and globe valves up to 50 mm size shall be gun metal construction. Valves above 50 mm diameter shall have cast iron body and bronze/gun metal spindle valve seat. The valves shall have non rising spindle.

7.8 Butterfly valves: The butterfly valve shall be supplied along with flow control lever. The valves shall be compact in size and shall conform to BS 5155, MSS SP 67 and API 609. The valves shall be light in weight and easy to install. The body shall of close grain cast iron conforming to IS:210 and the seating shall be of Resilient black, Nitrile rubber / EPDM moulded on to the body. The disk shall be of SG iron nylon coated, whereas the shaft shall be of stainless steel A ISI 431 treated permanently for lubrication. The shaft seals shall be of Nitrile 'O' rings and rubber seals. Valves shall be suitable for a working pressure of 16.5 KSC. Care should be taken during installation to see that the disk is not damaged during installation due to the flanges being incorrectly spaced. Provide gear operated valves for sizes having 300 mm and above. For smaller sizes such as 40 mm and below diaphragm type valves are acceptable. The butterfly valve shall be supplied along with flow control lever.

7.9 Ball valves: Ball Valves shall have body of carbon steel. The ball and the shaft shall be of stainless steel. The seat shall be of PTFE. The valve shall be complete with socket weld ends.

7.10 Check Valves: Check valves for smaller sizes shall be of swing type of gun metal construction. Lift type check valves shall be used for horizontal lines. Wafer type plate check valves shall be used for bigger sizes. The check valves shall be suitable for 10.5 KSC test pressure

7.11 Auto Balancing Valve: Balancing valve shall be installed in branch pipe. These valves shall be factory calibrated. Each valve shall limit flow rates within ±5% accuracy, regardless of system pressure fluctuations. Sufficient number of flanges and unions shall be provided as required to facilities maintenance work once the piping is installed. Piping shall be properly supported on or suspended from stands, clamps, roller hangers, etc. as required. The contractor shall adequately design all brackets, saddles, clamps and hangers and shall be responsible for their structural integrity. Each support shall be isolated from the support by means of anti-vibration springs or durable liner of neoprene rubber. Pipe supports shall be of steel and shall be painted with rust preventive paint and finish coated with synthetic enamel paint of approved colour. Only factory made supports with Galvanized fully threaded rods with bands are acceptable. The chilled water pipes shall be isolated from the bands by a rubber sheet.

7.12 Expansion Tank: Closed Expansion Tank with Expansion Vessel and pressurizing Pumps. Expansion tank to be of MS with Armaflex / K- Flex Insulation minimum 32 mm thick & minimum 26 Gage Aluminum Cladding with diamond finish with related piping, isolating valves, safety valves, drains, overflow. Tank Shall have Anticorrosive Coating. Close expansion tank should be provided with water capacity to suffice the capacity of volume of water contraction & expansion during operation & rest state of the cooling system. Tank should be a closed vessel with rubber bladder/diaphragm to maintain the operating pressure inside the pipelines. Standby and working booster pump should be provided with selector switch for pump starting, pressure differential transmitter , pressure gauge & non return valve at discharge outlet of the pump.

7.13 Double Deflection Grilles: Grills shall be in Aluminium construction. Aluminium double deflection grilles for supply air shall be provided with vertical and horizontal adjustable bars and an approved blade damper adjustable from the front face of the grille. The finish of the grilles will be powder coated in a shade to be approved.

7.14 STRAINERS -Strainers shall be preferably of approved ‘Y’ type or pot type as specified in the tender schedule with GI or fabricated steel bodies. Strainers up to 50 mm shall be of gun metal type. Strainers shall have a removable bronze screen with 3 mm perforations and permanent magnet. Strainers shall be provided with flanges. They shall be designed so as to enable blowing out accumulated dirt and facilitate removal and replacement of all screen without disconnection from the main pipe. Strainers shall be provided with isolating valves so that they may be cleaned without draining the entire system.

7.15 Chemical dosing plant with dosing pumps suitable for the requirement for flushing and treating the water. This should include make up water storage tank, first charge of Dosing chemicals for the commissioning of the system, chemicals for the operation for next 12 months. Treated water tank should be of adequate capacity. Entire system should include interconnecting piping, accessories, float and valves complete in all respect. Chemical Dosing System (Sodium Hypochloride) shall be provided for chilled water network primary as well secondary loop.

7.16 Air Separators: Air separator working on basic centrifugal force and low velocity flow, complete with 14" diameter inlet and outlet connections, high capacity float type air vent, pressure reducing valve, cold water fill connection, drain valve, flanged connections etc. The air separator shall be suitable for 2400 USGPM water flow. The pressure rating shall be 16 Kg/cm2.

7.17 Server Rack 42U having dimensions of 800 X 1200 mm, The Rack unit supported by Plinth/ Casters/ Leveller should support a static load not less than 1000 kg, total installed equipment weight. Flame Retardant blanking panels for empty 25% blank space to be provided. Rack should conform to DIN 41494 Standard, all enclosure components i.e. frame and door should be bonded together and to rack ground point. Rack should be constructed with extruded aluminum frame to provide stability and load bearing capacity. The Rack should be provided hexagonal perforated single front door with high security electronics locks. Rack should have all built-in accessories to manage cables and other devices. All the mounting hardware should be provided with rack. Rack is powder coated with Nano ceramic pre-treatment process. The Powder coating process is ROHS compliant. Powder coating thickness shall be 80 to 100 microns. Each Racks should be provided with 32A, 3 Phase, high density PDU x 02 nos with 21 Nos of C-13 Socket and 3 nos of C-19 sockets.

The bidder is required to do NSM Branding on the front door and side panel of racks as per the specification (Specifications / drawings will be provided by C-DAC). Bidder to consider supply and installation of 4 nos. racks as per above specifications and also consider branding for another 6 RACK's. i.e. The Banding needs to be considered for total 10 Racks (for front door and side panel).

8 Requirements towards IBMS work

8.1 Supply and implement physical security (access controls including biometric), Motion sensors etc.
The basic function of access door control is as below.

8.1.1 Access control system (ACS) is to be deployed to allow entry for the authorized personnel only and restrict unauthorized people from entering nominated areas of premises. Access privileges to be configured as per the access data stored in Access Door Controllers (ADC). These privileges define the right of access card holder to enter the predefined area upon presenting the card at readers.

8.1.2 It shall support distributed architecture with central monitoring and control. If communication to the central control fails, the ACS shall continue providing access based on the predefined security configuration. Until communication is restored, all event logs and alarms shall be stored locally for minimum six months (based on ADC capacity). These events shall be sent to the central control when the communication is regained.

8.1.3 It shall have multiple supervised inputs. The dynamic status of each input shall be continuously monitored and each change should be reported immediately.

8.1.4 It shall provide programmable inputs, i.e. the ability to apply a variety of conditions to the way in which these inputs are monitored. These conditions shall be expressed in definite terms. It shall be able to produce and communicate various types of outputs (Audible sirens, relay switching etc.) based on the above definition. These outputs shall be standard in terms and shall be interfaced as inputs to other Building Management System. ACS communications should support RS232/ RS485/ TCP/IP. All data over the network between the ADC and the Server end shall be encrypted. All ACS software/firmware upgrades shall be downloadable through the network to the ADC.

8.2 Supply and implement environmental Controls (Air conditioners, humidity controls, fire detection and suppression, control panel, etc.)

8.2.1 Humidity Sensor: The humidity sensor shall be in an independent housing or be combined with the room /duct type temperature sensor in the common housing as per application requirement. The sensor should be electronic type with capacitive sensing element. Relative Humidity (RH) sensors shall be of standard 0-10 VDC or 4-20 mA type, well protected against solid and liquid contaminants with a permeable coating. Range of 0-100% RH. Accuracy: +/- 3%Operating temperature range of 0 to 50 °C. Stainless steel sheath construction complete with integral shroud to enable specified operation in air streams of up to 10 m/sec. Maintenance of Sensor to be by a simple field method such as solvent or mild detergent solution washing, to remove anticipated airborne contaminants. Maximum sensor non-linearity of ±3% RH with defined curve.

8.2.2 Water Flow Meters: It shall be axial turbine style flow meters which translate liquid motion into electronic output signals proportional to the flow sensed. Flow sensing turbine rotors shall be non-metallic and not impaired by magnetic drag. Flow meters shall be 'insertion' type complete with 'hot-tap' isolation valves to enable sensor removal without water supply system shutdown. Accuracy shall be + 2% of actual reading from 0.4 to 20 feet per second flow velocities.

8.2.3 Monitoring of Water Quality –This is used for real-time measurement of water quality. This is used to optimize treatment processes, detect water contamination incidents etc.

a. Electrolytic Conductivity sensor and monitoring- Conductivity measurements are carried out to obtain information on total ionic concentrations (e.g. dissolved compounds) in in clean, noncorrosive solutions. The measuring system consists of an appropriate inline sensor directly inserted, a cable connected to a transmitter converting the received signals to a measurement result (Controller/Display Unit) and to a BMS system. The sensors have concentric titanium electrodes separated by insulator. Sensor body should be with SS316. The sensor shall have an integral platinum RTD for temperature measurement. Conductivity measurement range will be 0 to 2,000,000 microS/cm.

b. pH Sensor and monitoring - The pH of a solution indicates how acidic or basic (alkaline) .pH sensor should have measurement range from 0-14.

c. Turbidity sensor: Turbidity has indicated the degree at which the water loses its transparency.

d. Temperature sensor:

e. Dissolve Oxygen sensor-

8.3 BMS System: - Architecture of BMS system shall be of:
Management Level (BMS Servers/Software)

Control Level (DDC Controllers)

Field Level (Field Sensors)

BMS should have capability to show real time PUE, trends and record historical data of PUE.BMS should generate event notifications over emails, data for events based on which uptime and downtime will be calculated.

There should be real-time reporting of

- Component wise and aggregate power consumption
- Temperature and relative humidity in the data centre and UPS room.
- Instantaneous PUE, hourly PUE, daily PUE, monthly PUE and annual PUE.
- Alarm indicators for component failures.
- GUI with SLD ,P *ID, Equipment's visuals etc.

There should be real-time monitoring and logging of all parameters of the data centre as per ASHRAE/TGG 2009 Real time energy consumption measurements in data centres guidelines (best practical). There should be facilities for periodic reports (including uptime reports) of all aspects of the data centre.All the required hardware and software eco-system which store at least two months of historical data (High end PC, 32" LCD HD Monitor, Key Board, Mouse etc.) has to be supplied by the bidder.

8.4 The BMS components shall be certified to IEC 62443-4-1. The Integrated Control Platform shall support encrypted password authentication for all web services whether serving or consuming. Supply and Implement fire alarm system –

The system and its components shall be Underwriters Laboratories, Inc. listed, and FM APPROVED under the appropriate testing standard, for fire alarm systems and the installation shall be in compliance with the UL 10th Edition listing. The fire alarm system shall comply with requirements of NFPA 72 (National Fire Alarm and Signaling Code). The system shall be electrically supervised and monitor the integrity of all conductors.

When a fire alarm condition is detected and reported by one of the system indicating the affected devices, the following functions shall immediately occur:

- The System Alarm LED to be flashed.
- Built in Agent release circuit with release / Abort module of same make.
- System output programs assigned via control-by-event interlock programming to be activated by the particular point in alarm should be executed, and the associated system outputs (notification appliances and/or relays) to be activated.
- The audio portion of the system should sound the proper audio signal (consisting of tone, voice, or tone and voice) to the appropriate zones.
- Zone identification should be available on BMS system.

The publications listed below are part of this specification.

National Fire Protection Association (NFPA) - USA:

No. 70	National Electric Code (NEC)
No. 72-1996	National Fire Alarm Code
No. 90A	Air Conditioning Systems
No. 92A	Smoke Control Systems
No. 92B	Smoke Management Systems in Malls, Atria, Large Areas
No. 101	Life Safety Code

8.5 Supply and Implement Video Surveillance systems:

The surveillance system shall be designed and developed to the following standards: ISO 9001 (2000), ISO/IEC 15504 Level 3 or higher
The NVR based system shall include Data storage of 4 months and any other required software, hardware etc. CCTV should cover all internal area in the server room, UPS, Panel room, full area of server room and external utility area full view.

8.6 Supply and implement Very Early Smoke detection system (VESDA):

Provide an air sampling smoke detection system (Very Early Smoke Detection Apparatus) for each server area. Provide a Laser Focus air sampling smoke detection

system for areas as per site condition including but not limited to utility area, server area etc. in accordance with manufacturer's recommendations.

The air sampling smoke detection system shall consist of highly sensitive smoke detectors with aspirating fans, air sampling pipe network, filters, networked controllers and a high-level interface to the building Fire Alarm System, as required.

The air sampling detectors shall provide a nominal obscuration level range from .0015 to 6% /ft., adjustable through the system operator control interface.

In Passage Area as well as in UPS and Battery Room –Future –Vesda System need not to be considered.

Approval – UL & FM

18000 Event logs required.

Output signal – 5 Relay contact for Fault / Alarm & one analogue output for smoke density

Large flow rate fan (Max. shutoff pressure: at least 350Pa and max. flow rate: at least 170L.min

8.7 Supply and implement Rodent Repellent System:

The objective is to protect the entire premises viz. server area, utility area etc., all the voids against rodents. The purpose is to keep the rodents away from the floor by generating very variable high frequency sound waves which are not audible to human ear but irritate rodents. The objective is to protect all the cables below floor, above ceiling & room void from damage caused by rodents. The system proposed is to protect all the equipment's, areas with relevant type of high frequency sound producing device called satellites or transducers. Once powered up these transducers produce very high frequency variable sound waves continuously which irritate the rodents and are forced to evacuate the place. The devices can be tested periodically by means of a test switch provided on Main console.

8.8 Supply and implementing Water Leak Detection system:

It should include electronic alarm modules, water sensing cable, graphic display map, and auxiliary equipment. The system has to be capable of automatically detecting the presence of water at any point across the length of sensing cable. The system should alarm and locate the point of liquid contact on the digital display. This system should capable of communicating to BMS.

8.9 Supply and implementing NOVEC 1230:

Supply, install, test and commission NOVEC 1230 (Fluro Ketone FK-5-1-12) based fire suppression system. The fire suppression system shall include and not be limited to gas release control panel, CCOE approved seamless cylinders, discharge valve (with

solenoid or pneumatic actuator) as the case may be, discharge pipe, check valve and all other accessories required to make a complete operation system meeting applicable requirements of NFPA 2011 standards and installed in compliance with all applicable requirements of the local codes and standards. Bidder to consider metallic shed above the NOVEC cylinders along with cage constructed in MS.

9 Indicative Design Schematic -

Minimum rating of components at site ambient conditions (considering deration factors, taking in to account utilization of 90% under peak load) along with rating is as shown in below table.

Sr. No.	Name of Components	Rating for each unit	Qty.	Redundancy
1	Adiabatic Dry Cooler system along with Pump, Tank, Piping ,Control Panel, VFD,PID controller, Instrumentation as per P & ID etc.	400KW	1	
2	DX based PAC in Data Center Area	25 TR (Dual) Compressor	3	2+1
3	DX based PAC in UPS Area	20 TR (Dual) Compressor	2	1+1
4	200 KVA UPS with 10 minutes SMF battery back for IT load with 2 W + 1 SB	200 KVA	3	2+1
5	30 KVA UPS with 15 minutes SMF battery back for IT load with 1 W + 1 SB	30 KVA	2	1+1
6	DG set	750 KVA	1	

Below is the list of minimum components/systems (BOQ) bidder should consider in the offering.

Sr. No.	Description
1	**Civil**
1.1	Supply, Installation, Testing and Commissioning of Raised Flooring System as per specification and drawings give in this document. Bidder to refer the layout for calculating the quantity
1.2	Supply, Installation, Testing and Commissioning of False Ceiling System as per specification and drawings given in this document. Bidder to refer the layout for calculating the quantity
1.3	Supply, Installation, Testing and Commissioning of fire rated walls in fire rated partitions material as shown in the layout drawings.
1.4	Supply, Installation, Testing and Commissioning of fire rated Doors .
1.5	Supply, Installation, Testing and Commissioning of fire rated expandable foam , water soluble cable coating etc.
1.6	Supply, Installation, Testing and Commissioning of GLASS PARTATION in between system

	admin room and data center area. Supply, Installation, Testing and Commissioning of complete glass partition along with glass door at entrance of Data Center and this entire fitting should be air tight. Entrance should be double door arrangement.
1.7	Any other missing civil components that's includes but not limited to opening , cut out and re closure, steal structure for Equipment's foundations and base frame, Adiabatic Dry Cooler, Water storage tank etc.,
1.8	Painting as per Data Center Standards.
1.9	Supply , Installation, Testing and Commissioning of INSULATION ON ROOF AND FLOOR SLAB,.
2.01	Supply and Installation of Room Signage and fire evacuation map.
2.02	Supply and Installation of fire resistance solutions etc.
2.03	Supply, Installation, Testing and Commissioning of fire rated fire rated glass (VISION WINDOW)etc.
2.04	Supply , fabrication , installation of Steal for equipment platform, equipment base stand , maintenance stand , pipe railing , maintenance platform , etc.
2.05	Supply , installation of Aluminium glass partition with half potion in glass at BMS room and System Admin room
2	**Electrical System**
2.1	Supply , Installation, Testing and Commissioning of DC LT panel, lighting DBs, Raw Power DBs, Dry Cooler Panels, Soft Starter Panel, UPS out Put Panel for IT and NON IT etc.
2.2	Supply , Installation, Testing and Commissioning of Early Streamer type lightning arrestors along with down conductor, earthing pits etc.
2.3	Supply, Installation, Testing and Commissioning of internal illumination system and external illumination Dry Cooler and Dg area. Internal Lux level to be 400-500 lux.
2.4	Supply, Installation, Testing and Commissioning cables and End terminations.
2.5	Supply, Installation, Testing and Commissioning of perforated type Cable Trays along with Cover and supporting hangers as per Standard Engineering Practices.
2.6	Supply, Installation, Testing and Commissioning EARTH ELECTRODES AND EARTH STRIPS
2.7	Supply , Installation of First Aid Box, Shock treatment Chart, Emergency Fire evacuation Map, Shock Treatment Chart, Rubber Mat etc.
2.8	Supply, Installation, Testing and Commissioning of Rack PDUs as per rating provided in SLD with C13 and C19 sockets.
2.9	Supply, Installation, Testing and Commissioning of 3 X 200 KVA UPS along with DC and AC Cabling and individual battery bank for back up time of 10 minutes. The type of battery shall be Sealed Maintenance-free (SMF) type. Each UPS should have separate battery bank. Battery protection shall be provided by thermal-magnetic molded-case circuit breakers in each battery rack
3.01	Supply, Installation, Testing and Commissioning of 2 X 30 KVA UPS along with DC and AC Cabling and individual battery bank for back up time of 15 minutes. The type of battery shall be Sealed Maintenance-free (SMF) type. Each UPS should have separate battery bank. Battery protection shall be provided by thermal magnetic molded-case circuit breakers in each battery rack.
3.02	Supply, Installation, Testing and Commissioning of 1 X 750 KVA Prime rated DG sets

	along with Day fuel storage tank , with AMF panel as per SLD provided
3	**Cooling System**
3.1	Supply, Installation, Testing and Commissioning of complete Adiabatic Dry Cooler System as per P & ID and Specifications including VFD –Pumps, Piping, Valves, Instrumentations, Electrical Panel, PLC, Fans with VFD etc. Location will be at terrace floor bidder to calculate the length .
3.2	Supply, Installation, Testing and Commissioning of PAC system along with ODU unit and associated piping and valves and as per specifications given. . As per Layout drawing.
3.3	Supply, Installation, Testing and Commissioning of 42 U rack as per specification provided.
3.4	Supply, Installation, Testing and Commissioning of adequate rating of split a/c unit in System Admin Room and in BMS room along with ODU unit and associated piping .
3.5	Supply Installation and testing and commissioning of complete pump sets. The pumps shall be vertical multistage, in-line design which enables installation in a horizontal one pipe system where the suction and discharge ports are in the same horizontal level and have the same pipe dimensions. This design provides a more compact pump design and pipework. The pump, electric motor, coupling and coupling guard shall be factory assembled at the pump manufacturer's facility. Pump shall be fitted with a 3-phase, fan-cooled, permanent-magnet, synchronous motor. Motor shall Include a frequency converter and PI controller in the either motor terminal box or external . The combined motor and frequency converter efficiency shall be to higher than the IE4 level defined for fixed-speed motors in IEC 60034-30-2. Pump and motor shall be of integrated and user-friendly compact design. Sound pressure level of pumps shall be less than 73 dBA according to EN ISO 3743.
	IBMS
4	**IBMS –** Integrated building management system should cover but not limited to, NOVEC Gas base fire suppression system, Fire alarm, Access control, Water leak Detector, Rodent Repellent, CCTV, VESDA System etc., various types of sensors etc., software, communication protocol, field Devices along with Direct digital control (DDC) , etc.
4.1	Supply, Installation, Testing and Commissioning of Intelligent Addressable Fire Alarm System (FM Approved/ UL Listed) which includes Intelligent Addressable Fire Alarm Panel, FM approved Analogue Addressable Heat Type Smoke Detector, Analogue Addressable Multi Criteria Type Smoke Detector with In-built Isolator Base, Addressable Manual Call Point, Sounder (85 Db), Response Indicator (For False Floor Areas), Addressable Control module for activating sounder , NOVEC Activation. , Access Control De-Activation , Cooling Unit, Short Circuit Isolator Module, Addressable Monitor Modules, 2 core x 1.5 sq.mm twisted pair shielded multi strand Armored FRLS cable etc.
4.2	Supply, Installation, Testing and Commissioning of Access control system which includes software, card and biometric reader, electromagnetic lock, exit push button , FRLS Cables etc.
4.3	Supply, Installation, Testing and Commissioning of CCTV system along with indoor, outdoor camera, Network Video Recorder for minimum16 Channel with is a full-featured high-performance H.265 NVR Equipped with a 2U 64-Channel 8 Bay Rackmount network appliance and H.264 ,Video codec, Multiple Fisheye Dewarp Support, Multiple Video Search Modes,hard-drive bay design provides for a storage capacity of minimum

	24TBs,Support HDMI, Display Port, VGA and DVI Simultaneous Output, Graphics Decoder,USB support ,Audio Jack,Network interface-10/100/1000Mbps Ethernet (RJ-45) x2,Protocols IPv4,TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP, SMTP, FTP, DHCP, NTP, DNS, DDNS, IP Filter, Redundant PowerPC, LVD, FCC, VCCI, C-Tick. NVR Should store Data for 4 Months. Vendors to give their Calculation. software, client work station Processor - Intel Core i-7 OS - Genuine Windows 10Prof RAM - 16 GB SDRAM Memory - 500 GB HDD Graphic Card - 1GB NVIDIA Quadro 600 Graphics capability: VGA, with at least 32k colors Network: 100/1000 Mb Ethernet network card Resolution. 32" inch LCD HD Monitor
4.4	Supply, Installation, Testing and Commissioning of VESDA system with aspiration detectors, nozzles, capillary tubes etc.
4.5	Supply, Installation, Testing and Commissioning of Rodendent Repellant System
4.6	Supply, Installation, Testing and Commissioning of Water Leak System
4.7	Supply, Installation, Testing and Commissioning of BMS System which includes Main Building Automation Graphic Software, BMS Machine, DDC Controllers with necessary Panels and internal wiring for Data center Parameters and Electrical Parameters, Field Sensors, Third Party Integrations as PAC , Load Manager etc,
4.8	Supply, Installation, Testing and Commissioning Fire Suppression System (Novec 1230 Based - For Server Room, Electrical Room and Battery Room) this should include Cylinder and valve assembly with solenoid actuator and Accessories, NOVEC Gas, manifold, valves, piping's, Nozzles, Abort switch, manual release switch etc. Bidders to submit the Gas concentration considered along with details calculation of volume calculation as ceiling void, floor void etc. Modular NOVAC systems are not accepted.
4.9	Detail Layout along with sensors positioning and control of all the supplied equipment needs to available on BMS GUI.

10 Reference drawings

The following reference drawings - uploaded separately.

- Data Center Layout
- DC Site Layout
- Cooling P&ID
- Electrical SLD

11 Applicable Standards but Not Limited to

Installation and materials shall also confirm to latest amendments of

a. Indian Electricity Rules

b. Indian Factories Act

c. National Electric Code

d. Petroleum rules

e. Quality and Safety Standards

Sr. No.	Code Number	Description
1	IS 2309	Protection of buildings and allied structures against lightning.
2	IS 3043 /IEEE 80	Code of practice for earthing.
3	IS 5216	Safety procedure and practices in Electrical work.
4	IS 3106	Code of practice for selection, installation and maintenance of fuses (Voltage not
5	IS 1646	Code of practice for fire safety of buildings (general) Electrical installation.
6	IS 9921	Alternating Current Dis connectors above 1000 V.
7	IS 2551	Danger notice plates.
8	IS 1248	Electrical indicating instruments.
9	IS 722	AC Electric meters.
10	IS 3156	Voltage transformers.
11	IS 10118	Installation and maintenance of switchgear.
12	IS 398 /IEC 1089-1991	ACSR conductors
13	IS 7098	Cross linked polyethylene insulated PVC sheathed cables up to 33 KV
14	IS 12943	Brass glands for PVC cables
15	IEC 99-4	Gapless Surge Arrestors
16	IS-900	Code of practice for Installation and Maintenance of Induction Motors
17	IS-1255 -1983	Codes of practice for Installation and Maintenance of Power Cables up to and including 33 KV Rating.
18	IS-732 1989	Code of practice for Electrical Wiring Installation. (System Voltage not exceeding660 Volt).
19	IS-1913	General and Safety Requirements for Luminaries.
20	IS-1646	Code of Practice for Fire Safety of Building (General) Electrical Installation.
21	IS-2713	Specification for Tubular Poles for Overhead Power lines.
22	IS-6792	Method for determination of Electric Strength of Insulating Oils.
23	IS-2667	Specification for Fittings for Rigid Steel Conduits for Electrical Wiring.

24	IS 3615	Glossary of terms used in Refrigeration and Air-conditioning.
25	IS 325	Three phase induction motor.
26	IS 1239	Mild steel tubes, tubular and other wrought steel fittings.
27	IS 639	Steel pipe flanges.
28	IS 277	Galvanized sheet steel.
29	IS 737	Wrought aluminum and aluminum alloy sheet and strip for general engineering purpose
30	IS 655	Metal air ducts.
31	IS 732	Code of practice for electrical wiring and fittings for buildings.
32	IS 900	Code of practice for installation and maintenance of induction motors.
33	IS 1248	Direct acting electrical indicating instruments.
34	IS 6392	Steel pipe flanges.
35	IS 1367	Technical supply conditions for threaded steel fasteners.
36	IS 3588	Axial flow fans electric.
37	IS 4894	Centrifugal fan.
38	IS 2074	Ready mixed paint.
39	IS 2208	HRC cartridge fuse links up to 650 V.
40	IS 1554	PVC insulated (heavy duty) electrical cables for working voltages up to and including 1100 V.
41	IS 659	Air-conditioning safety code.
42	IS 616	Mechanical refrigeration safety code.
43	IS: 1554 -	PVC insulated (heavy duty) electric (Part I) Cables - Part I for working voltages up to and including 1100V.
44	IS: 1753 -	Aluminum conductors for insulated cables.
45	IS: 3961 -	Recommended current ratings for (Part II) cables: Part-II PVC insulated and PVC sheathed heavy-duty cables.
46	IS: 3975 -	Mild steel wires, formed wires and tapes for armouring of cables
47	IS: 5831 -	PVC insulation and sheath of electrical cables.
48	IEEE 519:1992	Harmonics
49	IS 277	Galvanized Steel Sheet (Plain and corrugated).
50	IS 655	Metal Air Ducts.

51	IS 737	Wrought Aluminum and Aluminum Alloy sheet and strip for general engineering purposes.
52	UL 181	Factory – Made Air ducts and connectors.
53	UL 555	Fire Dampers.
54	ASHRAE 70	Method of testing for rating the performance of Air Outlets and inlets.
55	BS 649	Diesel Engines for general purpose.
56	BS 2613	Rotating Electrical Machinery.
57	IS 4722	Electrical performance of rotating electrical machinery.
58	IS 4728	Terminal markings for rotating electrical machines.
59	IS 4729	Measurement of vibrations of rotating electrical machines.
60	IEC60034	Rotating Electrical Machines
61	IEC60034.1	Rotating Electrical Machines Part1: Rating and Performance
62	IEC60947	Low Voltage Switchgear and Control Gear
63	ISO 8528 Part 1 to 10:	Reciprocating Internal Combustion engine Driven Alternating current Generating Sets
64	IS-375	Marking and arrangement for switchgear bus bars, main connection and auxiliary wiring.
65	IS-722 Part – I	AC Electricity Meters
66		Part - I General requirements and tests
67	IS-1248	Direct acting indicating analogue electrical measuring instruments and their accessories.
68	IS-1822	AC Motor starters, of voltage not exceeding 1000 volts.
69	IS-2147 IS-2208	Degrees of protection provided by enclosures for low voltage switchgear and control gear.
70		HRC cartridge fuse links for voltage above 650V.
71	IS-2419	Dimensions for panel mounting indicating and recording electrical instruments.
72	IS-2516	Circuit Breakers - Requirements and Test voltages not exceeding 1000V AC or 1200V DC.
73	IS-2607	Air break isolators for voltages not exceeding 1000 volts.
74	IS-2959	Contactors for voltages not exceeding 1000V AC or 1200V DC
75	IS-3072	Code of practice for installation and maintenance of switchgear.

76	IS-3106	Code of practice for selection, installation, maintenance of fuses (voltage not exceeding 650V).
77	IS-3156, Part - I	Voltage Transformer - General Requirements.
78	Part – II	Voltage Transformer - Measuring Voltage Transformers.
79	Part – III	Voltage Transformer - Protective Voltage Transformers.
80	IS-3231	Electrical Relays for Power System Protection.
81	IS-3914	Code of practice for selection of AC Induction Motor Starters (Voltage not exceeding 1000V)
82	IS-4047	Heavy-duty air-break switches and composite units of air-break switches and fuses for voltages not exceeding 1000 Volts.
83	IS-4064	Air break switches, air break disconnections, air break switch disconnections and fuse combination units for voltages not exceeding 1000V AC or 1200V DC.
84	Part – I	Part I - General Requirements.
85	IS-4146	Application guide for Voltage Transformers.
86	IS-4201	Application guide for Current Transformers.
87	IS-4237	General Requirements for Switchgear and Control Gear for Voltages not exceeding 1000V AC or 1200V DC.
88	IS-4483	Preferred panel cut-out dimensions for electrical relays - flush mounting IDMTL relays.
89	IS-4794, Part- I	Push Button Switches - General Requirement and Tests.
90	IS-5082	Wrought aluminum & aluminum alloy bars, rode, tubes and sections for electrical purposes.
91	IS-5987	Code of practice for selection of switches (Voltage not exceeding 1000V).
92	IS-6236	Direct recording electrical measuring instruments.
93	IS-6875	Control switches (switching devices for control and auxiliary circuits including contactor relays) for voltages up to and including 1000V AC and 1200V DC.
94	IS-8623	Factory built assemblies of switchgear and control gear for voltages up to and including 1000V AC and 1200V DC.
95	IEC 62040-3	(International Electro technical Commission) – Uninterruptible power systems (UPS) – Part 3: Method of specifying the performance and test requirements.

96	IEEE 587 (ANSI C62.41)	Category A & B (International Electrical and Electronics Engineers) – Recommended practices on surge voltages in low voltage power circuits.
97	ANSI B 31.5	Code for Refrigeration Piping
98	ASHRAE 30	Methods of Testing Liquid Chilling Packages
99	ASHRAE 15	Safety Code for Mechanical Refrigeration

Bidder is required to submit compliance sheet in the tabular format for the selected products against above applicable code provision.

12 Recommended Makes:

List of Recommended Makes / Models of the major components/ equipment's is given in **Annexure – D**. Bidders should use the makes and models having successful deployments in Data Centre applications in India.

13 Safety Regulations

The contractor shall at his own expense, arrange for the safety provisions as per the codes of Indian Standard Institution, Indian Electricity Act / Rule and such other Rules, Regulations and Laws as may be applicable in respect of all labour, directly or indirectly employed in the work for performance of the Contractor's part of this agreement. While the Indian Electricity Rules 1956, as amended up to date, are to be followed in entirety, any installation or portion of the installation that does not comply with these Rules, should be rectified immediately.

The contractor shall be responsible for and indemnify the buyer against all injury to persons – both his own workmen and others and for all damage to structural and / or decorative part of the buyer's property during erection and commissioning of the equipment. The contractor shall repair / reinstate all such damage at his own cost.

It shall be ensured that the control switches and distribution boards are duly marked, the distribution diagrams of substations are prominently displayed, and the substation premises, main switch rooms and D.B. enclosures are kept clean. Particular care should be taken to prevent the substation being used as store for inflammable materials, broken furniture, waste materials etc.

No inflammable materials shall be stored in places other than the rooms specially constructed for this purpose in accordance with the provisions of the Indian Explosives Act. If such storage is unavoidable, it should be allowed only for short period and in addition, special precautions such as cutting off supply such places at normal times, storing materials away from wiring and switch boards, giving electric supply for a temporary period with due permission of engineer- in charge shall be taken.

Protective and safety equipment such as rubber gloves, earthing rods, line men's belt, portable respiration apparatus, necessary number of caution boards such as " Man on Line", "Don't switch on" etc. should be provided in easily identifiable locations. Where electric welding or such other nature of work is undertaken, goggles shall be provided.

Rubber or insulating mats should be available in front of the main switchboards or any other control equipments of medium voltage or above.

Standard first Aid boxes containing materials as prescribed by Indian red cross should be provided in easily identifiable locations and should be easily available.

Periodical examination of the first aid facilities and protective and safety equipment provided should be undertaken and proper records shall be maintained for their adequacy and effectiveness.

Charts (one in English and one in regional language) displaying methods of giving artificial respiration to a recipient of electrical shock shall be prominently displayed at appropriate places.

A chart containing the names, addresses and telephone numbers of nearest authorized medical practitioners, hospitals, fire brigade and also officers in charge shall be displayed prominently along with the first Aid box.

Steps to train supervisory staff and authorized persons of the engineering staff in the first Aid practices, including various methods of artificial respiration with the help of local authorities such as fire brigade, St. John's Ambulance Brigade, Indian Red Cross or other recognized institutions equipped to impart such training shall be taken, as prompt rendering of artificial respiration can save life at the time of electric shock.

Electrical wiring and control switches should be periodically inspected and any defective wiring switches which will expose live parts should be replaced immediately to make installation safe.

No work on live L.T. bus bars or pedestal switch boards should handled by a person below the rank of a wire man and such a work should preferably be done in the presence of the Engineer in charge of the work.

- When working on or near live installation, suitable insulated tools should be used, and special care should be taken to see that these tools accidentally do not drop on live terminals causing shock or dead short.
- The electrical switchgear and distribution boards should be clearly marked to indicate the area being controlled by them.
- Before starting any work the existing installation, it should be ensured that the electric supply to that portion in which the work is undertaken is preferably cut off. Precautions like displaying "Men at Work" caution boards on the controlling switches, removing fuse carrier from these switches and these fuse carriers being kept with the person working on the installation, etc., should be taken against

accidental energization. “Permit to Work” should be obtained from the Engineer-in-charge. No work on H.T. main should be undertaken unless it is made dead and discharged to earth with an earthing lead of appropriate size. The discharge operation shall be repeated several times and the installation connected to earth positively before any work is taken up.

- Before energizing any installation after the work is completed, it should be ensured that all the tools have been removed and accounted and no person is present inside any enclosure of the switchboard. Any earthing connection made for carrying out the work should be removed. "Permit to work” should be received back duly signed by the person to whom it was issued in token of having completed the work and the installation being ready for energisation and “Men at Work” caution Boards removed.

- In case of electrical accidents and shock, the electrical installation on which the accident occurred should be switched off immediately and the affected person should be immediately removed from live installation by pulling him with the help of coat, shirt, and wooden material or with any other dry cloth. He should be removed from the place of accident to a nearby safe place and artificial respiration continuously given as contained in BIS code and standard prescribed by St John Ambulance Brigade or Fire Brigade.

- While artificial respiration on the affected person is started immediately, help of Fire Brigade and Medical Practitioner should be called for an artificial respiration should be continued uninterrupted until such help arrived.

- These instructions should be explained in Hindi / local language to those staff who does not understand English.

The contractor shall ensure that all portable power tools used by the workman are rated 230 volts, double insulated and have to taken through 100 mA Earth Leakage Circuit Breaker (ELCB). Also all temporary lighting shall be supplied through 30 mA ELCB. Inserting wire into the sockets without the plug tops is not allowed. The length of the extension cord for portable tools should not be more than 5 feet. Temporary cables and flexible wires of short length should be bunched up and supported at inaccessible height. Temporary lamps should be mounted at inaccessible height. If lamps are incandescent, they should be protected by wire-mesh.

All power supply / Distribution Boards shall have canopy for protection against weather if located outdoors.

While carrying out work in Vessels / AC ducts or any other confined place, hand lamps with metallic guard suitable for 24 Volts AC supply shall be used All non-current carrying metallic parts of electrical system and equipment shall be earthed with two separate earthing wires of adequate capacity.

13.1 GENERAL RESPONSIBILITY

The contractor shall obtain a "Work Permit" from the Site Engineer / Client before starting any work at site. The work permits are issued to prevent any one working in unauthorized areas and they are valid for specific period.

The contractor shall produce test certificates from Government approved certifying authorities for all the lifting gear & hoists (slings, chains, hooks, chain pulley blocks, winches, cranes etc.) before starting the work. The contractor's supervisor for subsequent spot checks shall retain the certificates.

The gas cylinders should be used in safe manner. They should not be dropped from heights. Acetylene cylinder should be kept upright position. Oxygen cylinders should not be kept near inflammable materials like oil etc.

The contractor is to remove all waste materials from and around the work site and leave the work spot spick and span.

Works like Gas cutting, welding etc.

Before carrying out any work like gas cutting, welding etc. the contractor shall contact the site-in -charge to ascertain about the safety of the area for welding work.

The contractor shall produce certificates for his welding sets checked by the site in charge before starting the work. The certificates shall have to be renewed every two months. A copy of the current certificate shall be displayed on the welding sets.

Only cables in good condition and insulated holders are to be used. The length of the supply cable shall not exceed 25 feet and the welding set body shall be properly earthed. Under no circumstance building structure pipeline should be used as a return path of the current.

A charged fire extinguisher of CO2 type is to be carried with each welding set.

The welder is to wear good quality insulated welding gloves, shoes & goggles while at work.

Tarpaulins are not be used in the vicinity of welding / gas cutting jobs.

13.2 EXCAVATION

In the event of an excavation being made, it is the responsibility of the contractor to see that any opening, sump or pit caused by them is securely fenced as required by the Factory Act.

13.3 WORKING AT HEIGHT

For carrying out work at heights exceeding 6 feet or over and near the opening in floors, roofs, etc the following precaution to be taken.

The written permission of the Departmental Manager is to be taken before carrying out any work. Adequate safety precautions like use of safety belts, crawling ladders etc are to be taken.

All personnel engaged on overhead work shall be men experienced in such work.

Whenever possible timber staging or platform shall be erected with planks of minimum thickness 2 inches and minimum width 12 inches when the nature of work demands staging of a greater width than plank provided then additional planks shall be added and lashed securely.

Staging shall be provided with simple safety rails or ropes throughout its length, at waist height and on each open side.

Staging supports shall be of standard steel scaffolding safely secured and supported on firm level footings or slung from overhead beams. The supports shall be situated at a maximum distance of 8 feet apart and staging shall be secured to each support.

In case the site or nature of work is unsuitable for erection of proper staging all workers shall wear safety belts around their waists and secure their lifelines to strong scaffolding or structural members.

Wherever it is not possible to put up staging and / or use safety belts, safety nets or sheets shall be slung beneath the place of work.

When working in open process vessels or tanks, safety belts or safety nets shall always be used whether or not staging and scaffolding is provided.

Safe access to all points of work should be provided in the form of suitable ladders, stairways etc.

Contractor's employee of at least status of a foreman shall examine all arrangements before starting such work is commenced and shall satisfy himself that all reasonable safety precautions have been taken.

13.4 FIRE INSTRUCTIONS

Before carrying out any gas cutting, welding etc, the contractor shall contact the site-in -charge to ascertain about the safety of the area for welding work.

Smoking is strictly prohibited in premises. Severe action will be taken if any of the contractor's workmen is found smoking at the work site area.

In case fire is discovered, dispatch additional force & site Engineer. Wherever possible switch off any electrical and gas apparatus near the fire.

Check the nature of fire, pick up appropriate fire extinguisher and try to put out fire. For Electrical fire use carbon dioxide fire extinguisher.

13.5 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment should be worn wherever necessary.

13.6 REVIEW MEETINGS

Periodic safety review meeting shall be conducted to review safety and for better coordination with other agencies.

Periodically safety review will be held with Site Engineer and issues will be discussed and action points shall be monitored and recorded in a separate safety Register / File.

13.7 WORK AFTER NORMAL WORKING HOURS

Extra care need to be taken for jobs being carried out after normal working hours with due revalidated work permit.

13.8 ACCIDENTS

In case of injury or serious illness, the department should be informed immediately. All injuries are to be reported by filling in the “injury report” form, which will be available with the respective department / site engineer.

These safety conditions should not be regarded as exhaustive. These have been issued for the guidance of the contractor and will not in any way absolve the contractor from any obligations or liabilities that might incur or transfer such obligations on liabilities to the company.

(End of Section- IV)

SECTION V –TECHNICAL B.O.M. / B.O.Q.(IN DETAILS)

Name of Bidder:

Detail Address: (for release of INR order):

Contact Person with email id:

Mobile No:

DETAILED BILL OF MATERIALS WITH item wise listing and quantities required to complete the `Turn-key' project, as per the Section-IV

Detailed technical BOM/BOQ - Bid MUST be submitted in below format.

Sr. No.	Description of Item and Specification	HSN / SAC code	Qty. in Units	Applicable GST %	Remarks (Make/Model No. offered)
1	Civil and allied works				
1.1					
1.2					
1.x					
2	UPS 3*200 KVA along with Batteries				
2.1					
2.2					
2.x					
3	UPS 2*30KVA along with Batteries				
3.1					
3.2					
3.x					
4	DG Set with AMF panel and associated items				
4.1					
5	LV Electrical Components, cables, panels, Earthing, lightning arrestor, DBs etc.				
5.1					
5.x					
6	Internal and external illumination system alongwith DBs.				

6.x					
7	Cooling sub Systems - PAC and associated work				
7.1					
7.x					
8	Adiabatic Dry Cooler and associated piping, instrumentation, pumps etc.				
8.1					
8.x					
9	IBMS Entire/all systems				
9.1					
9.2					
9.x					
10	Server Rack – 42U alongwith Duel PDU, Cable manager & blanking plates etc.				
10.1					
10.2					
10.x					
11	Any other item, material required to complete the entire solutions				
11.1					
11.2					
12	Labour Charges, charges towards installation and commissioning pertaining to items as above				
12.1					
12.x					
13	Operation and Maintenance – Year-1				
14	Operation and Maintenance – Year-2				
15					

Bidder may add rows for the items required to cover the entire scope as per the Schedule of Requirements & complete the job on `Turnkey Basis'.

NOTES:

(END OF SECTION – V)

SECTION VI –UNPRICED / PRICE BID SUMMARY.

Summary Format- Supply, Installation, Testing and Commissioning along with Loading, Unloading, Transport, Transit Insurance etc.

Sr. No.	Particulars	Quantity	Supply Price Rs.	GST Rs.	Installation Price Rs	GST Rs.	Total Price Rs.
	Bidders to calculate the quantity as per Drawing Layout, SLD,P & ID and Site visit						
1	Civil and allied works	1 lot					
2	UPS 3 X 200 KVA	1 set					
3	Batteries for 3 X 200 KVA along with Battery Stand, Isolator, DC cabling etc.	1 set					
4	UPS 2 X 30 KVA	1 set					
5	Batteries for 2 X 30 KVA along with Battery Stand, Isolator, DC cabling etc.	1 set					
6	DG set with AMF and Synchronization controller	1 set					
7	DG LT panel	1 set					
8	Other Accessories as Power and Control Cabling, Terminations, Exhaust Stack, approvals, earthing etc.	1 lot					
9	LV Electrical Components , LT Panels, DBs, UPS output panel along with isolation transformer etc.	1 lot					
10	All LT Cabling –Power and Control, Earthing, Lighting Arrestors, Cable Trays, Supports, Cable terminations, Glands and other accessories etc.	1 lot					
11	Internal and external Illumination System along with DBs	1 lot					
12	Precision Air Conditioning Unit	1 lot					

	(PAC/CRAC), Cu piping and other accessories etc in **Server Area**.						
13	Precision Air Conditioning Unit (PAC/CRAC), Cu piping and other accessories etc in UPS Area.	1 lot					
14	Adiabatic Dry Cooler along with associated accessories	1 set					
15	Dry Cooler Pumping along with associated accessories, VFD/FI drive and Panel.	1 lot					
16	Pipes of all sizes ,Bends, valves, actuators, joints, end flanges and other hardware including accessories etc.	1 lot					
17	Instrumentation and Control for entire Cooling System	1 lot					
18	Fire Alarm system including Detectors, panels, cabling and associated accessories etc.	1 lot					
19	Fire Suppression system for Data Center area including Gas release panel, cylinder, Manifold, piping and associated accessories etc.	1 set					
20	NOVEC Gas for Data center area	1 lot					
21	Fire Suppression system for Utility Area including Gas release panel, cylinder, NOVEC, Gas, Manifold, piping and associated accessories etc	1 set					
22	NOVEC Gas for Utility area	1 lot					
23	CCTV system including camera, switch, NVR, Cables, monitors etc.	1 set					
24	IBMS software including system (Computer ,Monitor) integration of third party devices, I/O modules, all control and communication cabling etc.	1 set					

25	Other IBMS including Water leak detectors, Rodent Repellent, Vesda etc. system	1 set					
26	Server Rack -42 U along with Duel PDU ,cable manager and blanking plates	1 set					
27	Any other item, material required to complete the solution	1 lot					
28	Operation and Maintenance –Year-1	1 no					
29	Operation and Maintenance –Year-2	1 no					
	Sub - Total Rs.						
	Grand Total Rs.						

Optional Items (These items will not be considered for computing L1)

Sr. No.	Particulars	Quantity	Quoted Price Rs.	GST Rs.	Total Price Rs.
1	Comprehensive Annual Maintenance Contract -Year-3	1 no			
2	Comprehensive Annual Maintenance Contract -Year-4	1 no			
3	Comprehensive Annual Maintenance Contract -Year-5	1 no			
4	Operation and Maintenance –Year-3	1 no			
5	Operation and Maintenance –Year-4	1 no			
6	Operation and Maintenance –Year-5	1 no			

Note: The AMC charges should not exceed more than 7% of the cost of all the capital equipment's, which includes but not limited to DG set, All LT panels, Adiabatic Dry Cooler, Pumps, Water Storage Tank, PAC units, UPS. Batteries are not considered under AMC.

Detailed Commercial Bid is to be submitted in the format as appearing on www.eprocure.gov.in/eprocure/app.

Notes:

1. Prices for individual line items of the BoQ should be mandatorily submitted. C-DAC reserves the right to reject the bid in case bidder fails to quote all the required items.
2. The prices quoted should include the charges towards testing of equipment, installations from local electricity board, PWD, electrical/ civil engineering authority, pollution control board - as applicable. The official charges required for the required testing, certification, NOC etc. are to be paid by the bidder. The certifications, NOC etc. shall be in the name of C-DAC .
3. The invoice can be raised in compliance with GST requirements.

(End of Section- VI)

ANNEXURE A – COVERING LETTER

Date:

To:
Director General,
Centre for Development of Advanced Computing(C-DAC)
S.P. Pune University Campus,
Pune – 411007.

Subject: Submission of the Technical bid for Supply of Data Centre Solutions

Dear Sir,

We, the undersigned, offer to supply Data Centre Solutions and allied services in response to your Tender No. CDACP/NSM-DC-ROORKEE/20-21/325. We are hereby submitting our proposal for same, which includes this Technical bid and the Financial Bid through www.eprocure.gov.in/eprocure/app portal.

We hereby declare that all the information and statements made in this Technical bid are true and we accept that any misinterpretation contained in it, may lead to our disqualification.

We undertake, if our proposal is accepted, to submit a Security Deposit of 3 % of the contract / order value, as per terms stipulated in the tender.

We confirm that the deliveries, installation will be done within 4 months (16 weeks), if the order is placed.

We hereby certify that my/ our firm has not been disqualified and / or blacklisted by any Office/ Department/ Undertaking of the State Government / Central Govt. of India, PSU/ Autonomous Body of Government of India, as on the date/time of submission of this bid.

We undertake, if our proposal is accepted, to initiate the Implementation activities towards supply of material and services, as stipulated in the referred RFP.
We hereby accept the applicable protocols while delivery, installation, implementation, commissioning of the entire `Turn-key' job with regards to `COVID-19' conditions at the Institution/site. (The same will be informed in the supply/work order(s) placed, if any).
We agree to abide by all the terms and conditions of the RFP document, including corrigenda. We would hold the terms of our bid valid for 120 days as stipulated in the RFP document.
We understand you are not bound to accept any Proposal you receive.
The undersigned is authorized to sign this bid document. The authority letter to this effect is enclosed.

Yours sincerely,
Authorized Signatory:
Name and Title of Signatory:
e-mail:
Mobile No:

ANNEXURE B – AUTHORITY LETTER

Date:

To:

Director General,
Centre for Development of Advanced Computing(C-DAC)
S.P. Pune University Campus,
Pune – 411007.

Subject: Authority Letter

Reference: CDACP/NSM-DC-ROORKEE/20-21/325

Dear Sir,

We, M/s _____ (Name of the bidder) having registered office at _____ (address of the bidder) herewith submit our bid against the said RFP document.

Mr./Ms. _____ (Name and designation of the signatory), whose signature is appended below, is authorized to sign and submit the bid documents on our behalf against said RFP

Specimen Signature:

The undersigned is authorised to issue such authorisation on behalf of us.

For M/s _____ (Name of the bidder)

Signature and company seal

Name

Designation

Email

Mobile No.

ANNEXURE C – UNDERTAKING BY PRINCIPAL MANUFACTURER

(To be submitted in Original on Letterhead- for all major equipments/devises/products – separately.)

Date:

Director General,
Centre for Development of Advanced Computing(C-DAC)
Innovation Park, Panchavati, Pashan,
Pune – 411008.

Subject: **Undertaking by Principal Manufacturer against tender no. CDACP/NSM-DC-ROORKEE/20-21/3xx for setting up of Data Centre- Supply, Installation & Commissioning of Data Centre Solutions.**

Dear Sir,

We, M/s _____ (Name of the manufacturer) having registered office at _____ (address of the manufacturer) by virtue of being manufacturer for _____ (Name of the product/s), hereby authorise M/s _____ (Name of the bidder) having their office at _____ (Address of bidder) to submit quote, supply, install and provide after sales support for our range of products quoted by them to meet the above mentioned tender requirements.

M/s _____ (Name of the manufacturer) within the scope of requirement as per the tender mentioned above undertake to provide technical & other support towards fulfilling the requirements of installation, commissioning, acceptance criteria and product warranty services of the Data Centre Solutions to be supplied and installed at site(s) by our authorised representative M/s (Name of bidder) against said tender.

The undersigned is authorised to issue such authorisation on behalf of M/s _____ (Name of the manufacturer).

For M/s _____ (Name of the manufacturer)

Signature & company seal

Name

Designation

Email

Mobile No.

ANNEXURE D - LIST OF RECOMMENDED MAKES

Sr. No	Description List of Makes - Electrical	Recommended Makes
1	UPS System	Schneider/Vertiv/Eaton/Numeric/ FUJI /TMEIC/Delta/Socomec/ RellioPCI/
2	SMF Batteries for UPS	Rocket / Amar Raja / HBL /Quanta/Exide
3	LT CABLES	RPG /KEI /FINOLEX/POLYCAB/Ravin/Lapp
4	Multifunction Meter (Digital Type)/Load Manager	Schneider/Socomec/Secure Meter/HPL/Siemens/L&T
5	MS/GI CONDUITS	BEC/BHARAT/AKG/UNIVERCELL
6	PVC CONDUITS	AVON PLAST//Precision/Dimond
7	MODULAR SWITCH SOCKET WITH SWITCH BOXES	ANCHOR/Legrand/Schneider
8	BRASS DOUBLE COPRESSION GLANDS	DOWELLS/COMMET/Siemens/Phoenix
9	MCCB/MCB/ACB	Schneider/L&T/ABB/Siemens/Eaton/Legrand
10	FSU WITH HRC FUSE	L&T/SIEMENS/ Schneider /Eaton/Legrand
11	ELCB/MCB	Siemens/ Schneider / Legrand/Eaton
12	MCB DBS	Siemens/Schneider/Legrand/L&T /Eaton
13	METAL CLAD SOCKET OUTLETS	Legrand/SALZER/HAVELLS/L&T HAGER/Schneider
14	CABLE TRAYS	PROFAB//OVI ENGINEERS/Aslesha/Indiana/OBO Bettermann
15	LUMINAIRIES	PHILLIPS/WIPRO/BAJAJ/HAVELLS/Syska
16	PROTECTIVE RELAYS	Siemens/ABB/L&T/Schneider/Eaton
17	CT's	VOLTAMP/AE/KAPPA
18	SURGE PROTECTION DEVICES	Schneider/Siemens/Legrand/Eaton
19	Auto Transfer Switch (ATS)	Siemens/Socomec/Schneider (ASCO)
20	TVSS	Vertiv APC –Schneider /Eaton/Legrand
21	LT Switchboards	License of IEC 61439 Panel Builder
22	Power Distribution Unit (PDU-	Vertiv/APC-Schneider -

	Inside the Rack)	/Raritan/Eaton/Numeric/enlogic
23	FRLS PVC insulated stranded copper conductor wires	Finolex|Lapp Kabel|Skyline|L&T|National |Echo | Havells|
24	Terminal blocks & cage clamps	Elmexx|Phoenix|Wago
25	**Star Delta starter**	L&T|ABB|Siemens| Schneider/Eaton
26	Soft starters/VFD Drives	ABB|Schneider|L&T/Siemens/Eaton/Danfoss/Grandfoss
27	Single phase preventor	L&T|Minilec|Syntron |Beluk
28	Electric Motors	Siemens|Crompton| ABB |Bharat Bijlee|Alstom
Sr. No.	**Details of Material- Civil and Interior**	
1	Cement	ACC, L&T, Ambuja
2	WALL PUTTY	GOLDSIZE PUTTY BY SHALIMAR PAINTS LTD., J K WALL PUTTY, Birla White
3	STRUCTURAL STEEL	TISCO, SAIL, RINL, JINDAL, ESSAR, Tata Steel
4	ANCHOR FASTNER	HILTI, FISHER
5	ALUMINIUM SECTIONS	INDAL, HINDALCO, JINDAL,
6	DISTEMPER & PAINTS	ICI-Dulux, ASIAN PAINTS, BERGER PAINTS, NEROLAC, British Paint
7	LAMINATES	MERINO, GREEN PLY, CENTURY, ANCHOR,FORMICA, DECOLAM, NEWMIKA, NATIONAL, GREENLAM, SPECTRUM
8	GYPSUM BOARD and Fire Rated partition	INDIA GYPSUM, LAFARGE BORAL, RAMCO LTD
9	ALUMINIUMIUM COMPOSITE PANEL	ALUCOBOND, ALUCOPA, ALOMAX, Euro Bond, ALSTRONG, ALTOBOND, ALUDECOR,
10	GLASS	SAINT GOBAIN, Schott, Pilkington
11	FALSE CEILING	INDIA GYPSUM, ARMSTRONG,AMF
12	Raised/False Flooring	Unitile/Uniflair/ USG/Access Floor Systems
13	Fire Door	Shakti Mat, Radiant, ProMat, Godrej,

14	Insulation	Armaflex/K-FLex
15	Fire Sealants	3M,Hilti,Fischer
Sr. No.	**System / Description-IBMS**	
A	**Intelligent Fire detection System**	
1	Analogue Addressable Fire detection Panel	Tyco , Honeywell Siemens , Schneider, Johnson Control
2	Analogue Addressable Thermal /smoke Detector	Tyco , Honeywell Siemens , Schneider
3	Analogue Addressable Manual Call Point	Tyco , Honeywell, Siemens , Schneider
4	Analogue Addressable Abort cum Gas Release Station	Tyco , Honeywell Siemens , Schneider
5	Analogue Addressable Control / Relay / Isolator Modules	Tyco , Honeywell Siemens , Schneider
6	Building Management Interface	Tyco , Honeywell, Siemens , Schneider
7	Fire Extingusher's	Cease Fire / Minimax
8	Aspiration Smoke Detection System	Xtralis, ICAN, Tyco,Siemens
9	Response Indicators	Daksh, Polixel, Agni
10	Gas Release Modules	Tyco , Honeywell, Siemens , Ravel
11	Fire Detection Cables	Polycab, Excel, LAPP kabel
B	**IP CCTV Surveillance System**	
1	IP Dome Cameras with Varifocal lense	BOSCH, Honeywell, Siemens ,Samsung
2	IP BOX Camera	BOSCH, Honeywell, Siemens
3	IP PTZ Camera	BOSCH, Honeywell, Siemens
4	Video Management, Recording Software	Pelco, BOSCH, Axis, Indigo Vision, Polixel, Milestone
5	32” Monitors	Samsung, LG, Sony

6	Network Switch	Comnet, RuggedCom, Moxa
7	CAT 6 Cable	AMP, Molex, ,Schneider
8	OFC Cables	Finolex, Sterlite, HFCL
9	Power Cables	Polycab, Excel, LAPP kabel
10	MS Conduit	BEC, AKG, Dimond
11	PVC Conduits	BEC, AKG, Precision
12	Storage Device	DELL, HP, IBM
13	Servers / Workstation	DELL, HP, IBM
C	**Access Control System**	
1	Intelligent Access Controller	Siemens, Honeywell, Daccess
2	Time and Access Management Software	Nexwatch, Software House, Siemens, Honeywell, Daccess
3	Biometric Readers	Nexwatch, HID, DDS, Siemens, Honeywell, Daccess
4	Cards	Siemens, Honeywell, Daccess
5	Proximity Readers	Nexwatch, DDS, HID, Siemens, Honeywell, Daccess
6	Electromagnetic Locks	Dafikas,BELL, Trimec, Insyn
7	Network Switch	Comnet, RuggedCom, Moxa
8	Emergency Glass Break Station	KAC
9	CAT 6 Cable	AMP, Molex, Schneider
10	OFC Cables	Finolex, Sterlite, HFCL
11	Servers / Workstation	DELL, HP, IBM
12		
D	**UL Listed Novec 1230 Clean Agent Fire Suppression System**	
1	UL Listed & PESO Approved Seamless Cylinders	Ansul, UTC, Siemens, Tyco
2	Novec 1230	Ansul, UTC, Siemens, Tyco,Siemens
3	Nozzles	Ansul, UTC, Siemens

4	Electronic/ Pneumatic Acutators	Ansul, UTC, Siemens
5	Discharge Valves	Ansul, UTC, Siemens
6	M.S Seamless Pipes	Jindal, Tata
7	Discharge Hose	Ansul, UTC, Siemens
8	Manifold Check Valve	Ansul, UTC, Siemens
9	Warning Sign Boards	Ansul, UTC, Siemens
10	Manual Abort & Release Station.	Daksh, Agni
E	**Building Management System**	
1	Main Control System/DDC Controllers	Honeywell, Schneider, Siemens,Rockwell
2	Temperature, Air humidity Sensors (Duct, Room)	Azbil (Yamatake), ALC, Sauter
3	Building Management Software	Honeywell, Siemens, Schneider ,
4	Differential pressure switch Air flow / Water Flow switch/water Level switch	Azbil (Yamatake), ALC, Sauter, Honeywell
5	Water Flow meter	Invensys/Kele/ Honeywell/ Sontay/Forbes Marshal
6	Water Pressure Transmetter/ Level Transmitter	Invensys/Kele/ Honeywell/ Sontay/Forbes/Marshal
7	Motorized Butterfly valves/ actuators	Rapid Cool/Audco/ Johnson/Siemens/Belimo
8	Current/Voltage/Power Factor/FrequencyKWH Transducers with digital display/Electronic Meter	Situ Electro Instuments Pvt.Ltd./ Secure metres Ltd./ Enercon/L&T
9	Printer	HP/Epson
10	Switching Relays	PLA/OMRON
11	Flame proof level switch	Veksler/Minilec

12	Electromagnetic Lock	Trimec/Dafickas
13	Current Relays	Sitn/Minilec/Sentry
14	Electric Actuators for 2-way ON/OFF valves	Danfoss/ Emtrack/ Johnson/ Honeywell/ Siemens/ Trane/ Cyclon Controls.
15	Transducer	GFR-Germany, SETO
16	CAT 6 Cable	AMP, Molex,Schneider
17	OFC Cables	Finolex, Sterlite, HFCL
18	Servers / Workstation	DELL, HP, IBM
F	**Water Leak Detection System**	
1	Sensing Cables	Tracetek, Liebert, Sontay
2	WLDS Controller	Tracetek, Liebert, Sontay
3	Jumper Cables	Tracetek, Liebert, Sontay
G	**Rodent System**	-
1	Controller	MASER (Torrant Range), C Systems, Verma Craft
2	Sattelites	MASER (Torrant Range), C Systems, Verma Craft
3	GUI Software	MASER (Torrant Range), C Systems, Verma Craft
	Mechanical Components	
1	Variable Speed Pumping system with Pump sets	ITT - Bell & Gossett |Grundfos | Armstrong
2	Variable Speed Pumping system with Pump sets	ITT - Bell & Gossett |Grundfos | Armstrong
3	PAC	Schneider | Blue Box| Vertiev | Rittal,FLAKTWOOD, Climaveneta
4	Fan section-Blower	Kruger| Flaktwood |Nutech|TCF Nadi|
4.1	Variable frequency drives	Vacon |Danfoss |ABB/Eaton
4.2	Pan type Humidifier	Emerald| Rapid cool |KEPL
4.3	VAV Boxes	Caryaire-Titus| Trane| Johnson Control | Belimo
4.4	Racks (42 U IT and BMS)	Schneider, Valrack, Vertiv(Emerson),EFS,Rittal,Netrack

5	Adiabatic Dry Cooler	Thermax| Paharpur | Gem| Baltimore| Thermofin
6	G.I.	Jindal (Hissar)|TATA|GST
7	M.S. upto 300 mm	Jindal (Hissar)| TATA|GST
8	M.S. Above 300 mm	Maharashtra Seamless| TATA|GST
10	**Valves**	
10.1	Butterfly Valves	Audco|Advance |C&R|Oventrop|TA Hydronics|Flowcon
10.2	Valve	Audco|Advance |Leader
10.3	Non Return Valve	Audco|Advance|C&R|Cim
10.4	Balancing Valves	Advance|Oventrop|Flowcon|T&A Hydronics|Honeywell|Danfoss
10.5	Ball ,Gate,Globe Valve	Audco | Emerald | Oventrop | Rapidcool |Cim|Zoloto
10.6	Ball Valves with Y Strainer	Rapidcool |Cim|Zoloto
11	**Accessories**	
11.1	Pressure Gauges	H.Guru|Fiebig|WAREE
11.2	Thermometers	Emerald| Fiebig|WAREE
11.3	Flow Switch	Anergy|Honeywell|Siemens|Johnson|Schneider
11.4	Motorized butterfly valve	Siemens|Danfoss|Schneider |Advance|Audco
11.5	Dash Fastners	Hilti|Fischer
11.6	Vibration Isolators (Bellow Type)	Resistoflex |Cori| Easyflex
11.7	Spring Mounts	Emerald| Resistoflex
11.8	Rubber Groumat/ Clamps/ Hangers	Emerald/ Resistoflex/ Kanwal
12	**Air Filters**	
12.1	Filters	Airtech|Purolator|Puromatic|Thermodyne |Spectrum|Dynafilters
13	**Insulation**	
13.1	Glass Wool	Owens Corning |U.P. Twiga|Kimmco
13.2	Mineral Wool	Lloyd Insulation

13.3	Closed Cell Elastomeric Insulation	Armaflex|Aeroflex|Vidoflex|Kflex
13.4	Aluminium Tape	Johnson|Birla 3M
13.5	Aluminium Sheets	TATA|Nippon|Hindalco|Indalco
14	Dynamic Balancing Valve	TA Hydronics | Danfoss |Oventrop| Flowcon

ANNEXURE E – PERFORMANCE BANK GUARANTEE

(on non-judicial paper of appropriate value)

To,

Director General,
Centre for Development of Advanced Computing(C-DAC)
S.P. Pune University Campus,
Pune – 411007.

BANK GUARANTEE NO:

DATE:

Dear Sir(S)

This has reference to the Purchase Order No. _____ Dated _____ been placed by C-DAC on M/s_____ (Name & Address of vendor) for supply, installation, commissioning, warranty of _____ (description of items) at IIT Roorkee.

The conditions of this order provide that the vendor shall,

1. Arrange to deliver the items listed in the said order to the consignee, as per details given in said order, and
2. Arrange to install and commission the items listed in said order at client's site, to the entire satisfaction of C-DAC and
3. Arrange for the comprehensive warranty service support towards the items specified in purchase order.

M/s (Name of Vendor) has accepted the said purchase order with the terms and conditions stipulated therein and have agreed to issue the performance bank guarantee on their part, towards promises and assurance of their contractual obligations vide the Order No. _____ M/s. _____ (name of vendor) holds an account with us and has approached us and at their request and in consideration of the promises, we hereby furnish such guarantees as mentioned hereinafter.

C-DAC shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder to take any other undertaking of security in respect of the suppliers obligations and / or liabilities under or in connection with the said contract or to vary the terms vis-a – vis the supplier or the said contract or to grant time and or indulgence to the supplier or to reduce or to increase or otherwise vary the prices or the total contract value or to forebear from enforcement of all or any of the obligations of the supplier under the said contract and/or the remedies of C-DAC under any security (ies) now, or hereafter held by C-DAC and no such dealing(s) with the supplier or release or forbearance whatsoever

shall have the effect of releasing the bank from its full liability of C-DAC hereunder or of prejudicing right of C-DAC against the bank.

This undertaking guarantee shall be a continuing undertaking guarantee and shall remain valid and irrevocable for all claims of C-DAC and liabilities of the supplier arising up to and until _____ (date)

This undertaking guarantee shall be in addition to any other undertaking or guarantee or security whatsoever the that C-DAC may now or at any time have in relation to its claims or the supplier's obligations/liabilities under and / or in connection with the said contract and C-DAC shall have the full authority to take recourse to or enforce this undertaking guarantee in preference to the other undertaking or security (ies) at its sole discretion and no failure on the part of C-DAC in enforcing or requiring enforcement of any other undertaking or security shall have the effect of releasing the bank from its full liability hereunder.

We _____ (Name of Bank) hereby agree and irrevocably undertake and promise that if in your (C-DAC's) opinion any default is made by M/s _____ (Name of Vendor) in performing any of the terms and /or conditions of the agreement or if in your opinion they commit any breach of the contract or there is any demand by you against M/s _____ (Name of Vendor), then on notice to us by you, we shall on demand and without demur and without reference to M/s _____ (Name of Vendor), pay you, in any manner in which you may direct, the amount of Rs. _____/- (Rupees _____ Only) or such portion thereof as may be demanded by you not exceeding the said sum and as you may from time to time require. Our liability to pay is not dependent or conditional on your proceeding against M/s _____ (Name of Vendor) and we shall be liable & obligated to pay the aforesaid amount as and when demanded by you merely on an intimation being given by you and even before any legal proceedings, if any, are taken against M/s _____ (Name of Vendor)

The Bank hereby waives all rights at any time inconsistent with the terms of this undertaking guarantee and the obligations of the bank in terms hereof shall not be anywise affected or suspended by reason of any dispute or disputes having been raised by the supplier (whether or not pending before any arbitrator, Tribunal or Court) or any denial of liability by the supplier or any order or any order or communication whatsoever by the supplier stopping or preventing or purporting to stop or prevent payment by the Bank to C-DAC hereunder.

The amount stated in any notice of demand addressed by C-DAC to the Bank as claimed by C-DAC from the supplier or as suffered or incurred by C-DAC on the account of any losses or damages or costs, charges and/or expenses shall as between the Bank and C-DAC be conclusive of the amount so claimed or liable to be paid to C-DAC or suffered or incurred by C-DAC, as the case may be and payable by the Bank to C-DAC in terms hereof.

You (C-DAC's) shall full liberty without reference to us and without affecting this guarantee, postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the contact with the said M/s _____ (Name of Vendor) and to enforce or to forbear from endorsing any power or rights or by reason of time being

given to the said M/s _____ (name of Vendor) which under law relating to the sureties would but for the provisions have the effect of releasing us.

You will have full liberty without reference to us and without affecting this guarantee, postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the contract with the said M/s _____ (Name of Vendor) and to enforce or to forbear from endorsing any power or rights or by reason of time being given to the said M/s _____ (Name of Vendor) which under law relating to the sureties would but for the provisions have the effect of releasing us.

Your right to recover the said sum of Rs. _____/- (Rupees _____ only) from us in manner aforesaid will not be affected/ or suspended by reason of the fact that any dispute or disputes have been raised the said M/s _____ (Name of Vendor) and/ or that any dispute or disputes are pending before any officer, tribunal or court or Arbitrator.

The guarantee herein contained shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the said M/s _____ (Name of Vendor) but shall in all respects and for all purposes be binding and operative until payment of all dues to C-DAC in respect of such liability or liabilities.

Our liability under this guarantee is restricted to Rs._____/- (Rupees _____Only). Our guarantee shall remain in force until unless a suit action to enforce a claim under guarantee is filed against us within one month from the date of expiry of guarantee, all your rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.

We have power to issue this guarantee in your favour under Memorandum and Articles of Association of our Bank and the undersigned has full power to do under the power of Attorney dated.

Notwithstanding anything contained herein:

A. Our liability under this guarantee shall not exceed Rs_____ (in words)
B. This bank guarantee shall be valid up to (26 months from date of installation) & unless a suit for action to enforce a claim under guarantee is filed against us within one month from the date of expiry of guarantee, all your rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there after i.e. after one month from the date of expiry of this Bank guarantee
C. We are liable to pay the guaranteed amount or any parts thereof under this bank guarantee only and only if you serve upon us a written claim or demand or before _____
D. The Bank guarantee will expire on _____

Granted by the Bank

Yours faithfully,

For (Name of Bank)
SEAL OF THE BANK
Authorised Signatory

ANNEXURE F – UNDERTAKING

Date:

To:

The Director General,
Centre for Development of Advanced Computing (C-DAC)
Innovation Park, Panchavati, Pashan Road,
Pune - 411008 Maharashtra, INDIA

Subject: Undertaking as per GFR – 2017, Rule 170(iii)

Dear Sir,

We, the undersigned, offer to carry out the `Turn-key' project including **Products/items, components etc.** as per tender at C-DAC, Pune, in response to your Tender No CDACP/NSM-DC-ROORKEE/20-21/325. We are hereby submitting our proposal for same, which includes Technical bid and the Financial Bid through www.eprocure.gov.in. As a part of eligibility requirement stipulated in said tender document, we hereby submit a declaration in lieu of Earnest Money Deposit (EMD), as given below:

1. **Our bid shall remain valid for 120 days from the date of submission and that we will not withdraw or modify our bid during the validity period,**
2. **In case, we are declared as successful bidder and an order is placed on us, we will submit the acceptance in writing within 7 days of placement of order on us.**
3. In case, we are declared as successful bidder and an order is placed on us, we undertake, to submit a Security Deposit of 3 % of the order value, as per terms stipulated in the tender.
4. In case of failure on our part to comply with any of the above said requirements, we are aware that we shall be declared as un-eligible for said tender and /or debarred from any **future bidding process of C-DAC &** Other Govt. Institutes **for a period of minimum one year.**
5. The undersigned is authorized to sign this undertaking.

Yours sincerely,

Authorized Signatory:

Name and Title of Signatory:
e-mail:
Mobile No:

ANNEXURE –G: DOCUMENTS CHECK –LIST

Sr. No.	Documents to be Submitted (IN THE FOLLOWING SEQUENCE ONLY).	Submitted (Yes / No) with page nos.
	e-Packet-1 (Section-I)	
1	**Annexure-G duly filled and neatly arranged in the following sequence only. The bidder must submit all the documents as per Document Checklist – Annexure G, with appropriate page nos for the same. The flow of the submitted documents must be in the same order/sequence.**	
2	Covering Letter as per Annexure - A.	
3	Authority Letter as per **Annexure – B**	
4	Demand Draft no /UTR no – (direct deposit) for Rs. 2000/- towards Tender fees (Non-exempted/non-refundable)	
5	**Annexure F** towards EMD declaration	
	e-Packet-1 (Section-II)	
6	A copy of Certificate of Incorporation, Partnership Deed / Memorandum and Articles of Association / any other equivalent document showing date and place of incorporation, as applicable.	
7	A copy of GST registration certificate.	
8	Copies of at least two purchase orders or contracts and installation reports in the name of bidder from the end client / end user, during last Five years for Data Centre work. Each order must be of minimum value of Rs. 5.0 Cr. And P.O for O&M support as per eligibility criteria	
9	A photo copy of the commercial bid without prices (prices blocked) and copy of commercial terms & conditions (in detail) as included in the commercial bid. C-DAC reserves the right to reject the bid in case of any discrepancy observed in the un-priced commercial bid and the actual commercial bid.	
10	The undertaking(s) from the Principal Manufacturer(s) (OEMs) of products/ items offered as per **Annexure – C.**	
11	Undertaking to the effect that a Security Deposit of 5% of the order	

	value will be submitted in case C- DAC decides to place the Purchase Order.	
12	Undertaking to the effect that the bidder is not black-listed or barred from participation in bidding process by any Central/ State Government, Government Department, Government Undertaking, Public Sector Unit (PSU) or autonomous institution, as on date of submission of bids.	
13	All the necessary documents in support of eligibility criteria stipulated in Eligibility Criteria.	
	e – Packet 1 (Section-III)	
14	The executive summary of the bid submitted (As per Section-V)	
15	Duly filled Technical Bid (covering the details of solution, detailed bill of material, technical specifications, makes and models of items, diagrams, layouts, all drawings etc.)	
16	The details of electrical power consumption, foot-print, ambient temp, temperature range targeted, discrimination curves, short circuit calculations, cable schedule along with voltage drop calculations, battery sizing and back up calculations etc.	
17	Details of diesel consumption & water consumption on various loading conditions.	
18	Design Basic Report along with annual average Power Usage Effectiveness (PUE) calculations for 25%, 50%, 75% and 100 % of IT load.	
19	Design basis and analysis of cooling solution at full and partial load conditions including complete details, assumptions made and the specific references/standards used for the same	
20	Legal / statutory permissions required, if any.	
21	Unpriced Bid as per format given in Section – VI (Masking the prices)	
	e –packet 2 (FINANCIAL BID- B.O.Q.xls format)	
1	Price Bid as per format given in **Section - VI**	

ANNEXURE H – SERVICE LEVEL AGREEMENT (SLA)

The successful bidder will be required to sign a SLA, at the time of issuing the works order for supply, installation and commissioning of Data Centres. The basic service requirements /conditions that would be covered in the SLA are as given below.

1. Scope of Work for Operation and Maintenance

Scope of this SLA covers the satisfactory Operations of DC, Maintenance, warranty and support, as stipulated in the Tender, Works Order, for a period of three years from the date of successful installation and commissioning of the Data Centre.

2. Definitions

"**Uptime**" shall mean the time period for which the specified services / components with specified technical and service standards are available to the state and user departments. Uptime, in percentage, of any component (Non-IT) can be calculated as:

Uptime = {1- [(Downtime) / (Total Time – Scheduled Maintenance Time)]} * 100

"**Downtime**" shall mean the time period for which the specified services / components with specified technical and service standards are not available to the state and user departments and excludes the scheduled outages planned in advance, the link failures and reasons beyond Vendor Control.

"**Incident**" refers to any event / abnormalities in the functioning of the Data Centre Equipment / specified services that may lead to disruption in normal operations of the Data Centre services.

"**Resolution Time**" shall mean the time taken (after the incident has been reported at the helpdesk), in resolving (diagnosing, troubleshooting and fixing)

The following shall be the responsibilities of the successful bidder.

3. Uptime Requirements:

The bidder shall ensure the uptime requirements for various systems, equipments, components as per details given in the following Table.

Sr No	List of Utilities	Criticality	Redundancy	Uptime	Resolution time
1	HVAC and Cooling (Including PAC/PAHU, Drycooler/ Pumps, etc.)	High	N+1	98.5%	6-8 hours for minor complaints and 24-48 hours for major complaints.
2	UPS	High	N+1	98.5%	6-8 hours for minor complaints and 24-

					48 hours for major complaints.
3	Electrical Infrastructure	High	N+1	98.5%	6-8 hours for minor complaints and 24-48 hours for major complaints.
4	DG Sets	High		98.5%	6-8 hours for minor complaints and 24-48 hours for major complaints.
5	Fire detection and alarm systems, VESDA system, Fire suppression system,	High			Within 24 Hours
6	BMS and real-time measurements, CCTV system, Rodent control, Water leak detection system, Access control system	Medium			Within 48 Hours

4. Reporting Methodology

Understand & analyzing the products covered in the Supply, installation and commissioning scope and performance on periodic basis.

Submission of daily, weekly and monthly service performance reports in the agreed format specified as per the requirement of the infrastructure facilities.

Measurement and Monitoring with recording of readings and checking parameters of different facility equipment's.

Analyzing the readings and escalating suitably for abnormalities observed, if any. Supervise installation and maintenance work, whenever new equipment or systems are to be / being installed.

Adequate stock of onsite and offsite spare parts and spare component must be maintained by the successful bidder.

Successful bidder to ensure the commitment towards uptime requirement of the DC.

To provide this service it is important for the M/S …… selected bidder to have back to back arrangement with the OEMs. The selected bidder would be required to provide a copy of the service level agreement signed with the respective OEMs.

Component that is reported to be down on a given date should be either fully repaired within the stipulated time frame. If breakdown is major, bidder to arrange for standby component/equipment on temporary basis (of equivalent configuration) within the time frame. In case the selected bidder fails to meet the above standards of maintenance, there will be a penalty as per clause 9 of section III.

5. DAILY CHECKS:

Access Control System:

- 24x 7 checking of Access System for alert and alarms.
- Monitoring of Status.
- Abnormality of System / errors
- Access Card Activity
- Report of Access to Data Center
- Report of Forceful Access (Invalid Access)
- Generation of Logs / reports and submission to Host Institute for review and necessary action.
- Testing & checking of all Doors, Magnetic locks and Sensors.

CCTV:

- Daily Checking of DVR System & Cameras
- Suspicious Action Report
- Abnormality of System
- Generation of Logs / reports and submission to Host Institute for review and necessary action/s Maintenance of reports

Fire Alarm System, Novec 1230 Gas, VESDA, Water Leak Detection (WLD), Rodent Repelled:

- Daily Checking of FAS Panel
- Immediate Action to Alarm Generated
- Monitoring of MCP
- Generation of Logs / reports and submission to Client for review and necessary action/s Maintenance of reports, Report Generation through IBMS.

Precision AC, PAHU and Comfort AC:

- Monitoring of PAC's Temperature and Humidity every half an hour physically.

- Monitoring of Alarms & Immediate Action to it Comparison of Software readings with Actual Reading.

6. Fire Drill Test

Maintenance Activities will be carried for the System/Devices in Coordination with Host Institute Engineer & Technician

7. Daily Reports

1. Hourly basis monitoring of UPS & PAC & concern System
2. Reports of Energy meter reading of all meters.
3. Readings of main LT panel.
4. Fuel in DG fuel tank.
5. Immediate response to electrical complaints by any Working staff.
6. Following of effective power consumption chart provided by Customer.
7. Maintaining Critical Electrical parts.
8. Generation of Logs / reports and submission to Host Institute for review and necessary action's Maintenance of reports

8. Weekly Reports

1. All Electrical Systems Health Check Report
2. Vendor call tracking until closure
3. UPS & DG: On load Report.
4. Fire Alarm System: Reports of False Alarm.
5. Access System: Data Backup.
6. CCTV: Backup of DVR Status.
7. WLD: Test of Water Leak Detection Sensor Cable.
8. All System Health Report.
9. PAC, and comfort AC

9. Monthly Reports

1. Follow up of schedule regarding preventive maintenance.
2. Presentation of consumption of meter units by Pie diagram.
3. Vendor Performance Reports.
4. Report of pending calls/problems.
5. MIS Report Presentation for Each Month

10. Call Logging Process with OEM/Vendors

The onsite team will get alerts on any issue in the data center. The onsite team will identify the area of problem and define problem severity into minor or major call. Call

severity will be decided on basis of unit under suspect and impact on functions inside data center like - electrical power in DB, racks, cooling efficiency. Based upon this on site team will either manage to close the problem in case of minor alerts/alarms or In case of major alarms the team will raise an alarm over phone and email to OEM/Vendor with information to C-DAC /Host Institute designated team and O&M in-charge. O&M team will follow the Escalation matrix. The site team / OEM will identify problem area and will work towards resolution of problem.

11. Scheduled Maintenance

Bidder to submit the scheduled maintenance time along with frequency for the components.

12. **Bidder has to submit and present the detailed plan of execution for Operation and maintenance activities including manpower deployment along with qualification details of manpower deployed at site.**

ANNEXURE – I: CERTIFICATE FROM BIDDER

To:
Executive Director,
Centre for Development of Advance Computing,
Pune – 411 008

Ref: Tender Ref. No: CDACP/NSM-DC-ROORKEE/20-21/325

We hereby certify that the goods being offered by us vide our proposal, comply with the provisions of order No. Order No P-45021/2/2017-PP (BE-II), dated 4th June 2020 issued by Public Procurement Division, Department of Investment and Internal Trade, Ministry of Commerce, GoI, read with order number W-43/4/2019-IPHW- MeitY, dated 7th September, 2020 issued by IPWH division of MeitY, GoI.

We hereby certify the details pertaining to goods offered by us, as given below:

Sr. No	Item Description	Make & Model No.	Country of origin of OEM	Country of Manufacture of item	Country of Shipment
1					
2					
3					
4					
x					

We also certify that, we are not from a country sharing land border with India as defined in order No. F/No/6/18/2019-PPD dated 23 July 2020 issued by public procurement Division, Dept. of Expenditure, Ministry of Finance, GoI and the goods offered by us comply with the provisions of said order.

For (Name of bidder)

Authorized Signatory
Name & Designation:
Mobile No:

(End of Document)