



**Indian Institute of Science (IISc)
Bangalore - 560012**

Supercomputer Education and Research Centre (SERC)
IISc

Notice Inviting Tender (NIT) in ***E-TENDER mode only*** through
Central Public Procurement Portal (CPPP) of Government of India under
Two-Cover Bid System

for

**Supply and Installation of Infrastructure for
Data Centre Room in
Supercomputer Education and Research Centre (SERC)
Indian Institute of Science, Bangalore
[Local Tender]**

Tender No.: [IISc/Purchase/SERC/2023/DataCenter/1](#)

Date: [July 12, 2023](#)

Chair

Supercomputer Education and Research Centre (SERC)

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CPPP Website for e-Tender Submission

<https://eprocure.gov.in/eprocure/ap>

Contents

1. Preamble	3
2. Schedule of Requirements	3
3. Bidder's Eligibility Criteria	4
4. Technical Details	5
4.1 Room Layout	5
4.2 Chiller with PAHU (Precision Air Handling Unit) System.....	10
4.3 Hot Aisle Containment.....	12
4.4 Server Racks	12
4.5 Electrical and Sensor Works.....	13
4.6 Civil Works.....	14
4.6.1 Summary of requirements:.....	14
4.6.2 Removal of existing cubicles, glass walls and doors, false ceiling and duct	14
4.6.3 Installation of Vinyl Flooring	16
4.6.4 Installation of New False Ceiling with LED Lighting	16
4.6.5 Installation of New Glass Doors (2 Nos.), New Glass Walls on the periphery of the data center, New Fire-resistant Acoustic Partition inside the data center.....	17
4.6.6 Painting	18
4.7 BMS/DCIM.....	18
4.8 Warranty and AMC	19
4.9 Optional Items / Budgetary Considerations	20
5. Bid Evaluation Process	20
6. Technical Details / BoQ Compliance Sheet (to be submitted with Technical Bid)	24
7. Acceptance Criteria.....	26
8. Organization of the Technical Bid	27
9. Earnest Money Deposit (EMD).....	28
10. Performance Security or Performance Bank Guarantee (PBG)	28
11. General Terms and Conditions.....	29
12. Technical Bid – Terms and Conditions	29
13. Commercial Bid – Terms and Conditions.....	29
14. Payment Terms	30
15. Important Dates	31
16. Annexure A – Undertaking in Lieu of EMD for MSMEs.....	32
17. Annexure B – Certificate from Bidder related to Make in India Orders	33
18. Annexure C – List of Recommended Makes	35
19. Annexure D - Bidder's Technical Inputs	36
20. Annexure E - Format for Performance Security.....	38

1. Preamble

Indian Institute of Science (IISc), Bangalore is India's leading institution of advanced education and research in the sciences and in engineering. The Supercomputer Education and Research Centre (SERC) in Indian Institute of Science (IISc) is a leading supercomputing centre in the country, possessing state-of-the-art computing facilities, catering to the ever-increasing demands of high performance computing for scientific and engineering research. The Centre houses state-of-the-art computing systems with sophisticated software packages. The center maintains and upgrades infrastructure for its supercomputing systems including creation of data center facilities with adequate cooling.

It is planned to create a HPC data center room in SERC, with adequate cooling, power, server racks and BMS components. This data center will be used for hosting the lab/department/divisional clusters in the Institute.

2. Schedule of Requirements

This tender is for a turnkey solution for creating a HPC data center with adequate cooling facilities with fire safety and other BMS-related systems for hosting HPC (High Performance Computing) systems.

Following is the list of requirements.

1. Chiller with **PAHU** (Precision Air Handling Unit) based cooling system for a total IT load of 475 KW without redundancy. Requirement is only for the PAHU units. These units need to be integrated with existing water chillers in SERC, IISc.
2. Pressurized **expansion tank and air separator** to be provided for the existing chillers.
3. **Racks** of dimension, 42 U, 600 X 1200 mm arranged in **hot aisle containment**. Each rack density is maximum 15 KW.
4. **Electrical and Sensor Works:** Cabling from UPS and AC panels to the racks and PAHU units, respectively, LED ceiling lighting, two emergency heavy duty exhaust fans, an emergency heavy duty fresh-air motorized damper, two nos. of sensors (1 No temperature and 1 No temperature & humidity sensors for the data centre racks to be provided).
5. **Civil works:** Removal of existing cubicles, glass walls and doors, false ceiling and duct. Installation of Vinyl flooring, new false ceiling, new fire rated glass doors-and fire rated walls, fire-resistant acoustic partition, fire retardant painting.
6. **BMS/DCIM:** Aspiration system for smoke detection, fire detection and alarm system, fire suppression system, video surveillance system, rodent repellent system, water leak detection system, BMS/DCIM for monitoring rack PDUs, PAHUs, energy meters, temperature and humidity.
7. **Warranty** for 3 years **and AMC** for 2 years.

Technical details of the above components are mentioned in the subsequent pages. The bidders must clearly understand the existing support infrastructure available and propose accordingly. The solution proposed by the bidders is expected to be a total turnkey solution operated by a single bidder meeting all the stipulated requirements. Design, Supply, installation and commissioning along with on-site comprehensive warranty services for a period of three years, and AMC for two years. The solution quoted by the bidder for meeting the above stated

requirement may require best in class point products/systems from multiple OEMs in order to ensure that all the stipulated requirements are met, and the solution is optimal and cost-effective.

The bidders fulfilling the criteria as per this tender document are invited to submit their bid in **e-tender mode only** through Central Public Procurement Portal (CPPP) of Govt of India, for which website address is as follows:

<https://eprocure.gov.in/eprocure/app>

The bidders will be required to register themselves with the CPPP, in order to participate in the bidding, for which above website may please be consulted.

3. Bidder's Eligibility Criteria

1. The bidder must have installed and commissioned at least two HPC data center cooling system solutions of IT load 250 KW each during the period July 1, 2020 – June 30, 2023 in reputable educational or research Institutions. If the bidder happens to be a system integrator either the bidder or the cooling system OEM that the bidder has indicated for the current bid should meet this condition; **Supporting Documents Needed:** 1. A copy of the P.O., 2. Completion certificate from the customer indicating the start and end date of installation and commissioning corresponding to the P.O.
2. The bidder must have a proven record of maintaining and managing at least one HPC data center cooling system of IT load 250 KW for a period of three years, as warranty or AMC services, any time between January 1, 2018 and June 30, 2023. **Supporting Document Needed:** 1. Copy of the P.O. or any other documentary evidence mentioning the maintenance 2. A letter from the customer site stating clearly the details of the maintenance/management responsibilities, the specific period and the performance of the bidder. IISc may independently obtain inputs from the provided referees before arriving at a final decision.
3. The bidder is expected to be a company with an annual turn-over of at least Rs. 25 Crores in data center projects in each of the last 3 financial years. **Supporting Document Needed:** Annual audited balance sheet for 3 years, Purchase orders with completion report showing the turnover amount from data center projects.
4. The bidder must comply with the provisions of Office Memorandum F/No/6/18/2019-PPD dated 23rd July 2020, issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, GoI.
5. The solution offered must comply with the provisions of Public Procurement (Preference to Make in India) Order No P-45021/2/2017-PP (BE-II) dated 15th June 2017 (PPP MII Order) and further revised vide Order dated 28th May 2018, 29th May 2019, 04th June 2020 and 16th September 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI. The minimum local content, the margin of purchase preference and the procedure for preference to Make in India for this tender are as per the mentioned Public Procurement (Preference to Make in India) Order.
6. PAHU, Racks, RPDU & monitoring software are preferably from same OEM or OEM partner to have seamless integration and monitoring.

4. Technical Details

The **bidder must visit the site** to inspect the facilities in SERC before quoting for the tender for the below requirements. The bidder must send an email to the mentioned email id (tender.serc@iisc.ac.in) to schedule the visit.

It is proposed to build a data center with adequate cooling and power to support rack-mountable HPC clusters and servers. The total load across all the racks is 475 KW. The cooling solution should be based on chilled water with PAHUs (Precision Air Handling Units) with utilizing existing chillers. A room in the first floor of the four-storeyed SERC building has been identified for the data center. The room has dimensions 54 ft 4in (l) x 26 ft 9 in (w) x 11 ft 10 in (h). The layout of the room is given in Figures 1-5.

The details of the components of the turnkey solutions are given in the following sections.

List of Recommended Makes / Models of the major components/ equipment is given in **Annexure C**. However, bidder may offer equipments of any suitable make and model that complies with the tender specifications and conditions.

4.1 Room Layout

Figure 1
Room Layout
Inside the Room
View from the Ceiling – (Length x Width) View

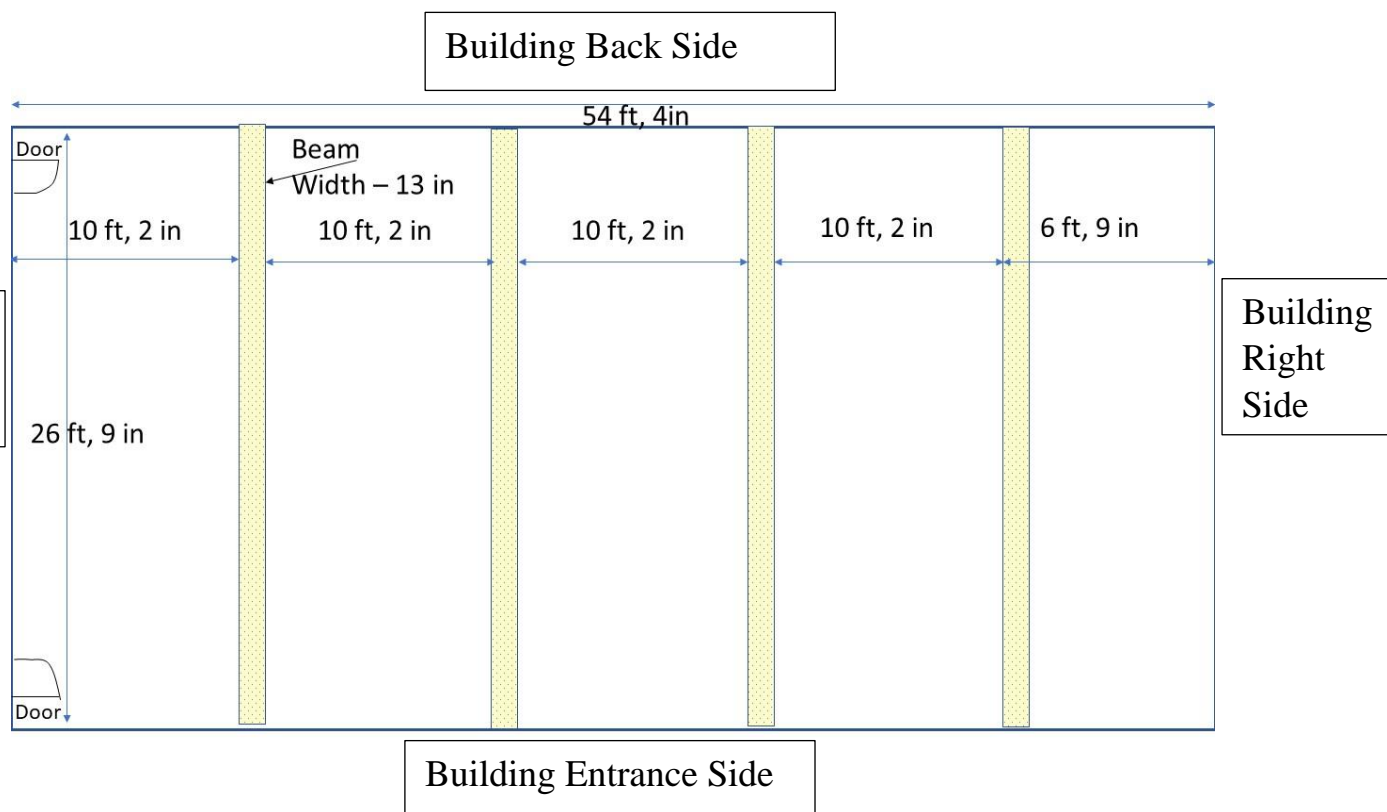
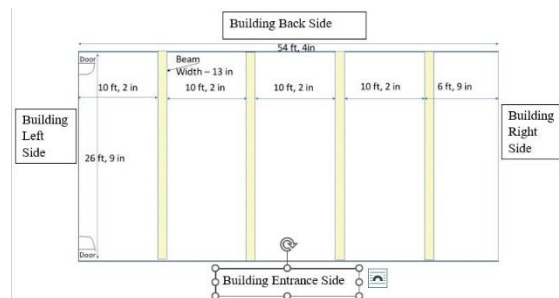
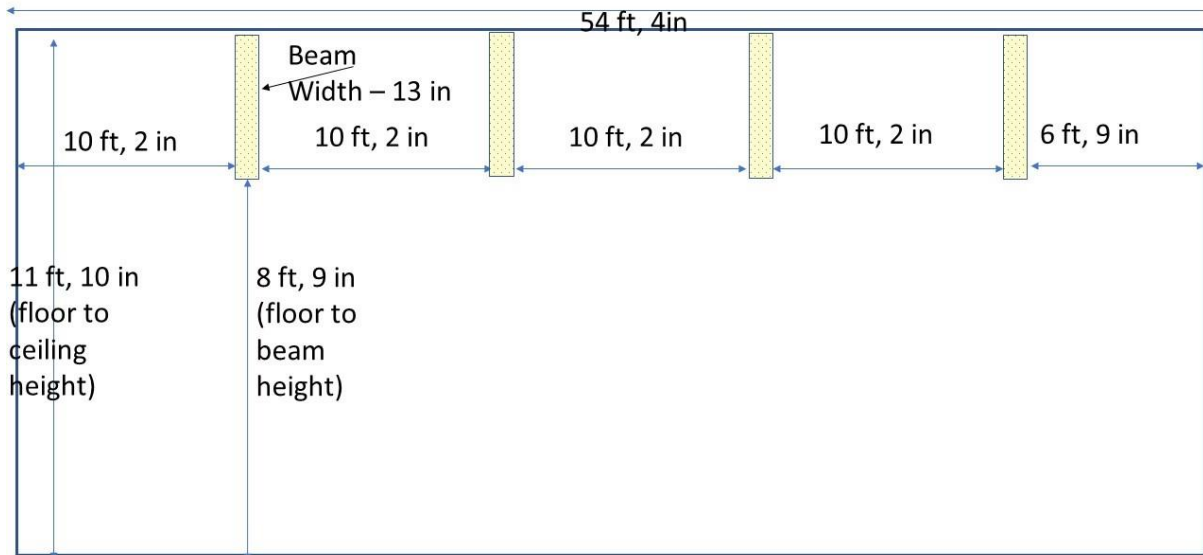
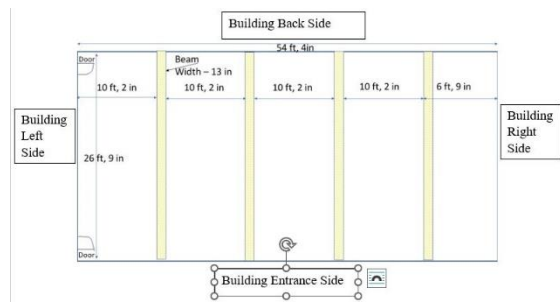
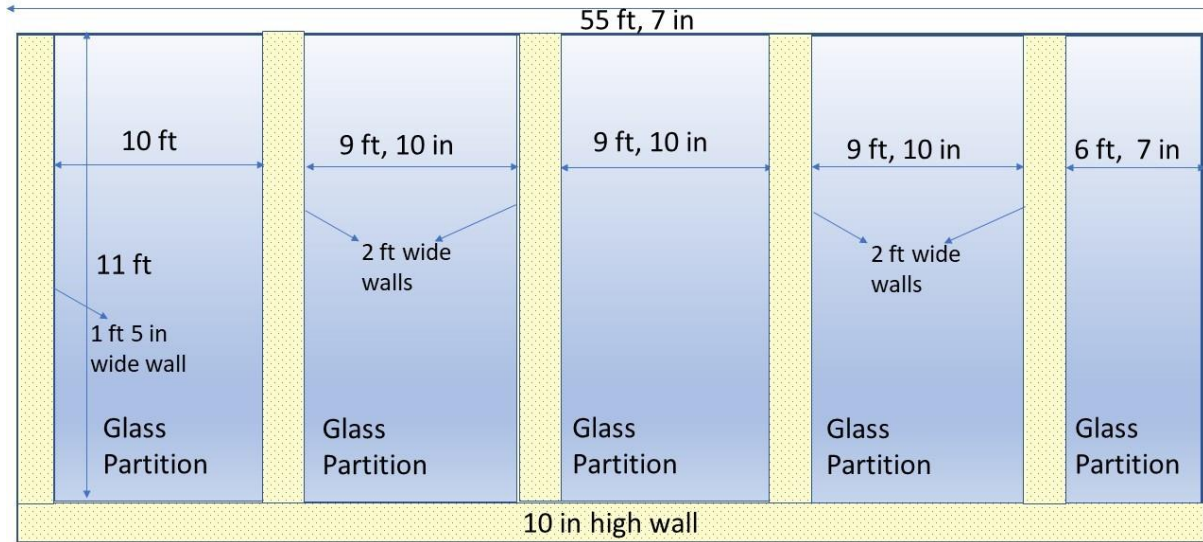


Figure 2
Room Layout
Inside the Room
View from the Building Entrance Side – (Length x Height) View



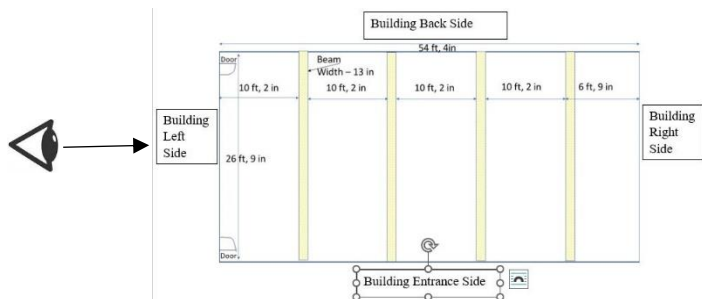
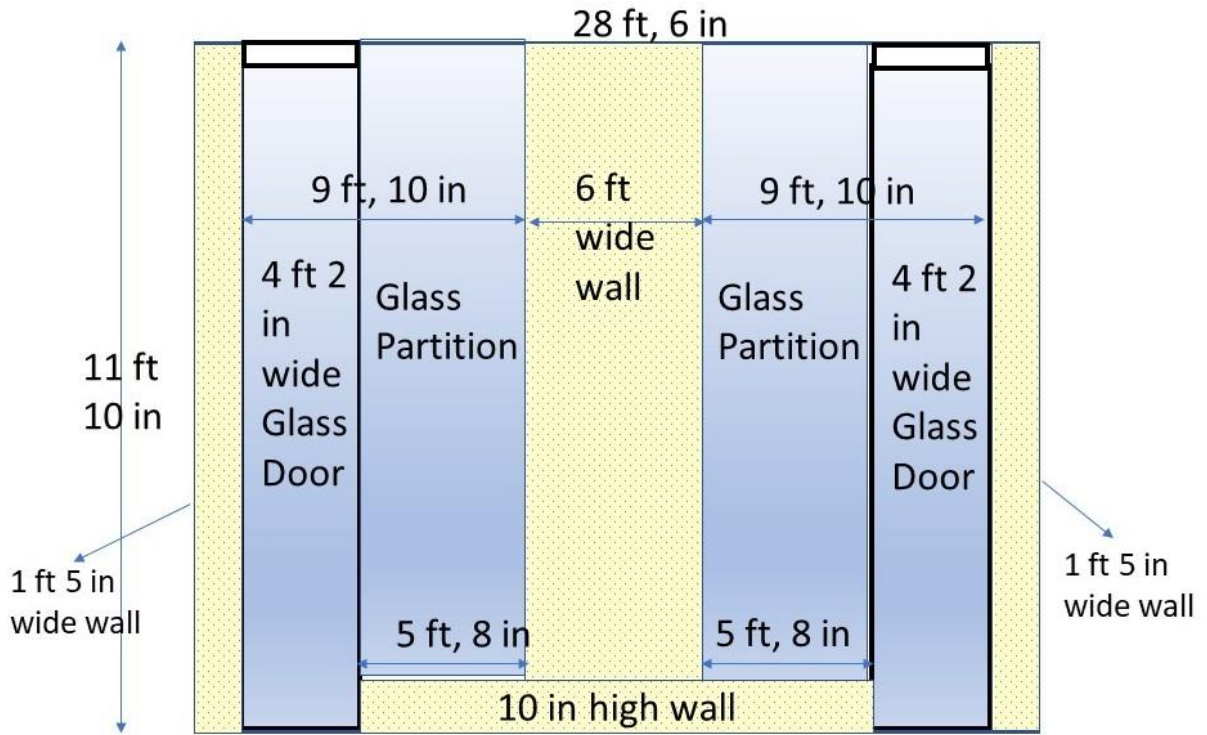
Reference with respect to Figure 1

Figure 3
Room Layout
Outside the Room
View from the Building Entrance Side – (Length x Height) View



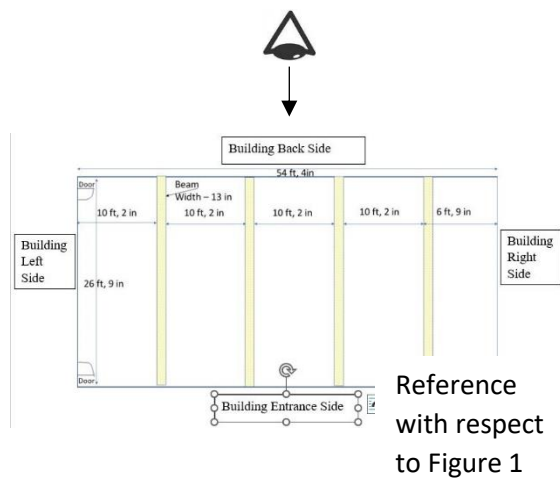
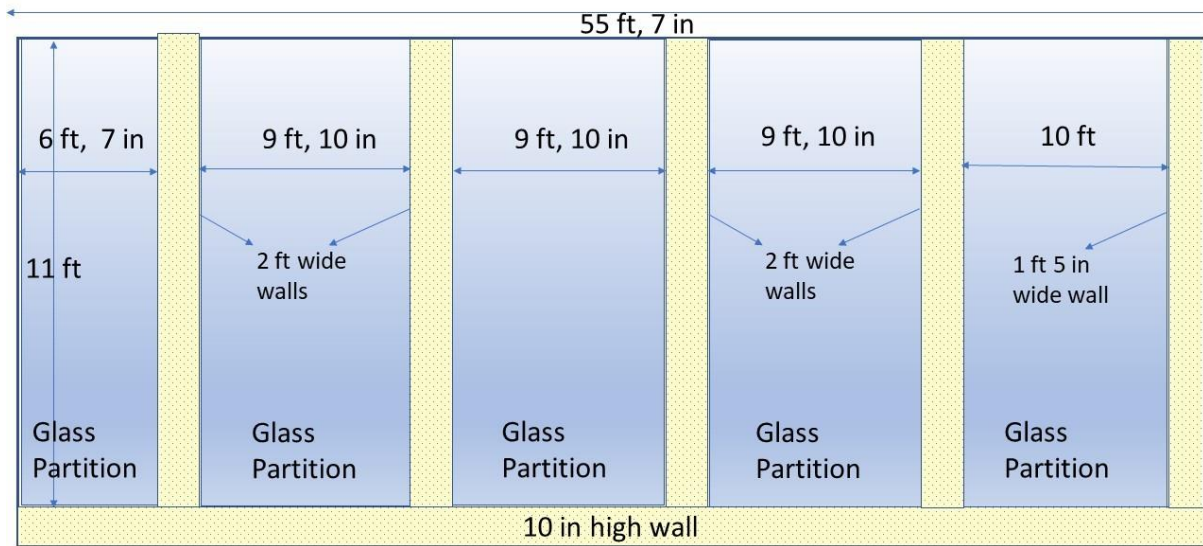
Reference with respect to Figure 1

Figure 4
Room Layout
Outside the Room
View from the Left Side– (Width x Height) View



Reference
with respect
to Figure 1

Figure 5
Room Layout
Outside the Room
View from the Back Side – (Length x Height) View



4.2 Chiller with PAHU (Precision Air Handling Unit) System

The cooling solution should be chilled water based PAHU (Precision Air Handling Unit) system. The required water supply for the PAHUs will be provided by SERC, IISc from its 3x100 TR water chillers located at the terrace. Chilled water pipes, both supply and return, of diameter six inches are connected to these chillers. The bidders should provide piping to tap from the nearest supply and return pipes to the PAHU units in the data center. Adequate number and capacity of the PAHUs should be provided for the total load of 475 KW across all the racks. All the PAHUs should be homogeneous with the exact same configuration and capacity.

The capacity and the number of the PAHUs should be **only** for this total rack load of 475 KW, i.e, **no redundancy** is required. However, the successful bidder may be called upon any time during the warranty period to provide the appropriate redundancy configuration with the provided units based on the load conditions. In such cases of redundancy, the PLC in the PAHUs should have a provision to switch between the units to provide the required redundancy in a pre-programmed manner by the user or on cooling need basis when there is need for extra cooling or in the case of high return air temperatures. OEM design is also acceptable.

1. The room air temperature in the cold aisle regions should be maintained at 21 +/- 1 Deg C. The return air temperature should be a maximum of 35 Deg C. The relative humidity to be maintained in the data center should be as per ASHRAE TC 9.9. The cooling coil should be designed for 12-17 Deg . Centigrade (supply and return) chilled water system.
2. Each PAHU unit shall be suitable for operation on 415 V, 50 Hz AC supply.
3. Each PAHU should deliver a nominal airflow of 150 CFM/KW to 160 CFM/KW or higher, with modulation. The unit shall modulate cooling capacity and airflow based on requirements.
4. NVH level of each PAHU should be a maximum of 70 dB (air noise) at 2 m from the PAHU at rated speed corresponding to 50 Hz operation and at peak heat load. The rear and the fans section panels should be double-skinned, with 15 mm Class 'O' (A1 EU) fireproof insulation sandwiched between the skins to reduce noise emission and heat loss.
5. Electronically Comutated (EC) motors with backward vane composite low-noise fans preferably DC voltage driven. The unit should also be equipped with in-built heater and humidifier.
6. PAHU units with the appropriate kind of discharge (top throw, bottom throw etc.) suitable for the provided solution, and consisting of inlet filter, drawn through direct driven Backward curved EC or axial fans made of composite material with Electronically commutated (EC) Motors, Chilled water Cooling Coil with Pressure Independent, Balancing and Modulating valve, Multistage Heater banks & Variable Capacity Electrode type Humidifier to maintain humidity inside the space, Microprocessor panel, and programmable control complete with LCD display. Fan power should not be more than 0.125 kW/TR.
7. Heat exchanger (evaporator coil) shall be designed with an ample front surface area in order to ensure a low air flow velocity through the exchanger so as to prevent the entrainment of droplets of condensation, reduce the air's load losses and ensure a more efficient heat exchange during both the cooling and the dehumidifying processes.
8. The exchanger should be composed of copper tubes mechanically expanded on aluminum fins, complete with a hydrophilic treatment to reduce the surface tension between the water and the metal surface, thus favoring film-wise condensation. The

exchanger should be situated upstream/downstream from the fans to ensure unhindered air distribution.

9. The filter cells should be made of MERV8 following ASHRAE 52.2 (45% by ASHRAE 52.1) or G4 following EN779 with minimum 100 mm thick filters located within the cabinet, and accessible from the front of the unit.
10. Each packaged unit shall be provided with multistage electric heaters with heating elements constructed from aluminium. If overheating occurs, a safety thermostat should cut off the voltage supply to the heaters and trigger an alarm.
11. Each unit should be provided with a drip tray for condensate collection. Provisions should be made for draining out the condensate to the nearest drain location using a drain pump. The solution should fit within the specified space earmarked for the PAHU unit.
12. Motorized Damper with Actuator over the units to avoid short cycling. Damper to be powder coated matching with the color of the units based on the design requirement. Stand shall be constructed out of MS steel and painted with epoxy powder coating. Unit shall be provided with requisite vibration isolation pads.
13. The system shall be provided with relevant water detection kit and each of the sensor must be capable to detect individually any water near the unit, the sensor must be connected to the unit microprocessor thus enabling the controller to give an alarm in case of wet floor.
14. The unit should have microprocessor with digital display. The Display panel shall display date, time, actual & set values, operating conditions, signal faults, collective faults limiting values.
15. The PLC in the PAHU should be fully equipped to log all data pertaining to the operation of the PAHU unit such as alarms, fan speed, air inlet and outlet temperatures, humidity etc. It should allow remote monitoring and login facility in addition to sending alarms anomalies via email/SMS etc. Vendor has to install digital energy meter at the power input at each PAHU.
16. The PAC should have necessary Hardware & Software for BMS integration. The BMS integration card should be compatible with third party BMS system through Modbus/TCP-IP protocol and Unit should be capable of receiving signal from fire alarm panel and trip the unit under emergency.

Operation of Existing Air-cooled Chillers

SERC, IISc has 3x100 TR chillers at its terrace with the following parameters.

1. Closed-water circuit with existing main supply and return pipe diameter of 6 inches.
2. The chiller is able to operate at 12 degC supply and 17 degC return.

Bidder to provide for the following while integrating the PAHUs with the chillers.

1. Bidder to verify the complete piping system and should provision for additional components and accessories, including piping between these main lines and the PAHU units in the data centre.
2. An **air separator** of 150 mm diameter should be provided for this existing chiller as part of the bid.
3. A suitable **pressurized expansion tank** should be provided for this existing chiller as part of the bid.
4. Suitable chemical dosing to be introduced in the system.

The bidder is required to visit the site for the actual measurements needed for piping connections to the chilled water pipes.

The PAHUs, and associated components must be given certification of performance to meet the tender specifications at the site after installation and acceptance tests, and before commissioning and the beginning of the comprehensive warranty.

4.3 Hot Aisle Containment

1. Hot aisle containment CRCA fabricated with no leakage of return air to outside of the containment.
2. The hot aisle region between the racks should be at least 6 feet wide.
3. The containment should have motorized sliding doors on both sides. Provision should be made to allow automatic opening of hot aisle doors in the event of power failure or any unanticipated temperature rise in case of cooling failure.
4. The hot aisle containment doors should automatically close once normal operation is restored. All safety precautions pertaining to automatic opening and closing of containment doors should be exercised by use of appropriate sensors and control system. Preferably, these sensors should be wired to the PLC.
5. Provision for mounting network trays in the hot aisle should be provided with adequate sealing of the air passage to prevent leakage of hot air through the network cable bays and openings.
6. Adequate sealing between racks and gaps in the hot aisle should be ensured by use of high-density foam or other suitable demountable material to facilitate service of rack and servers.
7. Aisle containment doors with CRCA fabrication must be provided at appropriate locations corresponding to the provided solution. Gaps at all parts of the containment must be sealed with appropriate materials to prevent mixing of hot and cold air. The materials for ceiling should have good fire rating and should be able to withstand air pressure. These parameters should be explained in the technical bid.

The scope also includes complete low side piping work for the PAHUs, chillers, connections and hot-aisle containment solution.

4.4 Server Racks

The containment unit should accommodate standard 42U racks in rows that are multiples of two. Each pair of rows of racks should be separated by hot aisle containment. The number of racks that can be accommodated should be maximized by the solution provided by the bidder, with a minimum requirement of 32 racks. Each rack density will be between 10-15 KW.

1. The racks in the containment unit should be of dimension, 42 U, 600 X 1200 mm with front and rear perforated sheet steel doors.
2. Each rack should be provided with 32A, 3 Phase, high density PDU x 02 nos with each PDU consisting of 18 Nos of C-13 sockets and 6 nos of C-19 sockets. The PDUs should be metered-by-outlet, i.e., metering of power consumption should be enabled at each socket. This metered power consumption values should be logged and integrated with BMS/DCIM for remote access and monitoring.
3. 2U Closed Hinged Type Cable Manager should be provided in each rack. Each rack should have 2 Nos vertical cable manger for managing and securing cabling.

4. The racks supplied should be equipped with blanking panels to where servers are not installed to prevent mixing of hot and cold air. Each rack should have 42 1U blanking panels.
5. Two of the racks will be network racks for accommodating networking components.
6. The enclosure shall both protect the user from mechanical hazards and meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in UL/IEC 60950-1
7. Load bearing capacity – 1200 kgs

4.5 Electrical and Sensor Works

Electrical low-side works cabling and lighting, two heavy-duty exhaust fans, one damper and other electrical units.

IISc will provide UPS power distribution panels for source 1 and source 2 to the two PDUs of each rack, of the required capacity for the specified number of racks. IISc will also provide AC panel of the required capacity for the provided PAHU units and other electrical units. The input cabling to these panels, e.g., from a UPS source to the UPS panel and raw power to the AC panel, is also in the scope of IISc. Thus, the panels and the cabling to these panels are in the scope of IISc. Cabling distribution from these panels to the racks and PAHU units are in the scope of the bidder.

1. Cabling distribution from the UPS panel to the racks, and cabling from the AC panels to the PAC units. Power Cable entry in each rack will be from Top. Distribution from the UPS panel to the rack should be in the form of bus bar (BBT) with the tap-off boxes of suitable rating. The rating of each rack is 15 KW.
2. All electrical and cabling should be of industrial grade and be rated for at least 15 kW load per rack under normal operations.
3. Additional network cable trays of basket type should be mounted to provide connectivity to all racks, Care should be taken to avoid interference between electrical cabling and network cabling that will run on on these trays.
4. LED ceiling lighting along the aisles and open spaces. Additional self-contained battery powered emergency lighting in case of power failure needs to be provided. 400 Lux level need to be maintained inside the Data Center facility in IT & Equipment area.
5. Two emergency heavy duty exhaust fans, each of 4000 CFM with static pressure of 10-30mm of water column, and should be fire-rated. The exhaust fans should be provided with a switch outside the room for manual operation. In addition, the exhaust fan should also be controllable through the BMS.
6. An emergency heavy duty fresh-air motorized damper with filter, of 4000 CFM. The damper should also be provided with a switch outside the room for manual operation. In addition, the damper should also be controllable through the BMS.
7. The bidder should indicate the panels in the room in the CFD drawing.
8. Two nos. of temperature and humidity sensors should also be provided for each rack.

4.6 Civil Works

4.6.1 Summary of requirements:

- Removal of existing cubicles, glass walls and doors, false ceiling and duct
- Installation of
 - Vinyl flooring
 - New False ceiling with LED lighting
 - New fire-rated glass doors (2 Nos), new fire-rated glass walls, one fire-resistant acoustic partition inside the data center
 - Fire-retardant Painting

4.6.2 Removal of existing cubicles, glass walls and doors, false ceiling and duct

The room identified for the data center currently has cubicles, as shown in Figures 6 and 7. It is in the bidder's scope to dismantle the cubicles and clear the space for the data center. Existing glass walls and glass doors at the periphery of the room to be removed by the bidder. Existing false ceiling, including tiles and frame, in the area to be removed by the bidder. There are also supply and return air ducts to an AHU that existed earlier. These ducts traverse the room at the ceiling level. These ducts should also be removed by the bidder.

All these dismantled items, debris and structures should be placed in a space provided and identified by IISc.

Figure 6: Overall view of the room with cubicles



Figure 7: One of the cubicles



4.6.3 Installation of Vinyl Flooring

The total floor area marked for the project is 54 feet, 4 inches (length) x 26 feet, 9 inches (width) as shown in Figure 1. Anti-static anti-skid fire resistant vinyl flooring should be provided for this area. Caution tape should be used to highlight the boundary between usable rack/equipment space and pathways that should remain unrestricted.

4.6.4 Installation of New False Ceiling with LED Lighting

New false ceiling frame and tiles to be installed by the bidder in the same area.

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. The ceiling tiles should be fire, heat and humidity resistant for use in the data center. Ceiling panels should be secured to the frame to avoid displacement during fire suppression. LED lighting that is being installed should be placed within the ceiling frames. Proper cooling insulation in any gaps that are present should be provided to avoid leakages. **INSULATION ON ROOF 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. Proper cooling insulation in any gaps that are present should be provided to avoid leakages.

4.6.5 Installation of New Glass Doors (2 Nos.), New Glass Walls on the periphery of the data center, New Fire-resistant Acoustic Partition inside the data center

New fire-resistant glass walls and two new fire-resistant glass doors to be installed by the bidder at the periphery. The two glass doors should be installed at suitable locations in the periphery aligning with the overall provided solution for cooling and hot aisle containment. One of the two doors is an entry door, should be a two-leaf door with a combined width of 1200 mm (600+600) and height 2400 mm, and should have access control based on biometric for entry, with fingerprint, PIN and RDIF card access from the outside. The other door is an emergency exit door with a panic bar, and should be of 1000 mm width and 2400 mm height. The doors should provide auto-closing and locking of the doors; buttons on the inside for releasing the door lock; emergency manual override using key from outside the room; and emergency operation using UPS/Battery power upon a power outage. For any dismantling of the concrete structure needed for the installation of the glass doors or partitions, only the 10 metre high walls between the higher walls (11 feet plus walls) should be considered for dismantling. The higher walls (11 feet plus walls) should not be dismantled. Any dismantled concrete debris should be placed in a space provided by IISc. The overall integrated periphery with glass walls, doors and concrete structures should present an air-tight, air-leak-proof structure surrounding the data centre.

Specifications for Glass Doors and Walls: Providing and fixing of tested 120 minutes fire rated - integrity and radiation control and partial insulation (EW120) - fully glazed non-load bearing fixed glass walls system with symmetrical (Bi-Directional) fire protection. The glass should be Contraflam Lite or equivalent 14 mm clear 120 min fire rated and partially insulated (EW120), Non Wired Toughened Interlayered glass having a sound reduction of minimum 30 dB and compliant to class 1(B)1 category of Impact Resistance as per EN 12600. The glass shall be able to withstand fire attack from both sides. The glass should be manufactured in UL & TUV audited Facility and including UL Certification. The profiles are manufactured from 1.6 mm galvanized steel sheet pressed and formed to a required profile of the dimension. These specifications are applicable for fire rated glass walls and fire rated glass doors.

The glass doors and walls should have sealing/beading to prevent leakage and mixing of air from the server room and the outside. The glass doors and sealing should also provide adequate noise mitigation from within the server room to the outside corridors.

Fire-resistant Acoustic Partition

An acoustic partition has to be provided at the end of the data center on the **east side**. The partition 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 a minimum 132MM thick FIRE RATED gypsum wall partition 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.

The partition should have sealing/beading to prevent leakage and mixing of air from the server room and the adjacent room. It should also significantly dampen the noise produced by the racks, servers and cooling units present in the room from the adjacent office rooms on the east side. Suitable noise mitigating seals should be provided.

4.6.6 Painting

The concrete walls at the periphery of the data center should be painted with fire-retardant painting on the inside and plastic emulsion painting on the outside of the data center.

HOUSE KEEPING: The vendor is responsible for keeping the site clean and deep cleaning by removing all the debris etc. everyday, using adequate covering/tarpaulin sheets etc to cover the any areas required (client property etc.). All cleaning equipment's like heavy duty vacuum cleaners etc to be according to the approval.

4.7 BMS/DCIM

Note: The centre does not have a BMS system. The components asked below are only for the concerned room. The vendor should provide a BMS software all the below-mentioned BMS systems along with the DCIM.

- a. **Aspiration system for smoke detection, e.g., VESDA:** The system shall provide 3 field-selectable levels of alarm status: Alert Level 1 (.04% obscuration/ft.), pre-Alarm Level 2 (1.06 % obscuration/ft.) and Alarm Level 3 (2.6% obscuration/ft.). Actual sensitivity levels will be determined in the field and programmed during system commissioning. Alarm Levels 1 and 2 will initiate a Supervisory Condition on the Fire Alarm System, and Alarm Level 3 will initiate the building-wide evacuation sequence.
- b. **Fire detection and alarm system**
- c. **NOVEC 1230 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.
- d. **Video Surveillance system:** The NVR based surveillance system with one IP based PTZ camera shall be designed and developed to the following standards: ISO 9001 (2000), ISO/IEC 15504 Level 3 or higher. NVR has to be provided by the bidder. The video backup should be for minimum thirty days.
- e. **Temperature and Humidity Sensors:** 6 nos. of ceiling mounted ambient temperature and humidity sensors distributed throughout the room, which also communicate their readings with the BMS. A local monitor or LCD display should be present in the room reporting the current readings.
- f. **Rodent Repellent System**
- g. **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.

Sockets and electrical cabling for the BMS-related components should be provided by the bidder.

DCIM:

The BMS/DCIM should be able to monitor the following components.

1. PDUs in the racks
2. PAHUs
3. Energy meters at the UPS and raw panels
4. Temperature and humidity for each of the racks.
5. Temperature and humidity for the data centre at 6 different locations separated at equal intervals.

IISc will provide 3-5 static IPs. with a switch. Rest of the interconnecting private LAN to be provided by the vendor to connect to the PDUs of the racks, PAHUs, IBMSs, energy meters, temperature and humidity monitoring of each racks. Rest of the extension switches to be provided by the vendors. The network cables with basket tray should be in the scope of the bidder. The cables for the above-mentioned components should be preferably pink colored.

4.8 Warranty and AMC

The components provided in the solution and the whole system should include comprehensive **warranty** services for a period of **3 years** from the date of installation of the equipment. In addition, the bidder should provide prices for comprehensive **AMC** services for a period of **2 years**, i.e., for the 4th and 5th years. During the warranty and AMC periods, the bidder shall attend to all the hardware problems on site and shall replace the defective parts at no extra cost to the purchaser. The comprehensive warranty includes replacement of spares/labour/consumables that may be required.

1. The bidder must ensure that the solution proposed, as a total turnkey solution operated by a single bidder, to meet the stated requirements, delivers an uptime guarantee of 95% of the entire system, measured on a monthly basis.
2. In the event of a failure of any of the sub-systems or components of the proposed solution, the bidder must ensure that the defects are rectified before end of the next working day.
3. Failure to meet the above requirement will result in extension of the warranty or AMC services by 3 days for delay of each day during the warranty period.
4. Therefore, the bidder along with the OEMs must put systems and processes in place to address the above during the period of the contract

4.9 Optional Items / Budgetary Considerations

While the successful bidder will be selected based on the overall requirements, it may be decided by the committee and competent authority to procure lesser number of items than provided in the solution from the successful bidder based on the available budget. This will be as follows.

1. Lesser number of PAHUs
2. Lesser number of server racks
3. Not procuring aspiration system for smoke detection, rodent repellent system and water leak detection system.
4. Plastic emulsion painting instead of fire-retardant painting on the inside of the data center.

5. Bid Evaluation Process

The objective of the evaluation process is to evaluate the bids to select an effective and best fit solution in a fair and transparent manner and IISc would be guided by this in carrying out the evaluation of bids. The decision of the IISc shall be considered final.

The bid evaluation will be conducted using a QCBS (Quality cum Cost-Based Selection) method, where both the quality and cost of the solution will be considered for selection of the successful bidder. Techno-commercial score of (30:70) will be used where technical score will carry a weight of 30 percent and financial score will carry a weight of 70 percent. For each bid, a technical score out of 100 will be given based on the technical evaluation of the solution, and a financial score out of 100 will be given based on the cost provided in the commercial bid. The technical and financial scores will be used to calculate a final score, based on the weightage of 30% for technical score and 70% for financial score. The bidder with the highest final score out of 100 will be declared as the successful bidder.

For the purpose of the evaluation and selection of Bidder, a two-stage evaluation process will be followed. If a Bidder does not meet the eligibility criteria, the Bidder will be disqualified. For the Bidders who satisfy the eligibility criteria, a Total Technical Score (TS) will be calculated by evaluating the technical bid, as given below. In order to be shortlisted for opening of Commercial bid, it is mandatory for a bidder to obtain a TS of at least 70 out of 100 in Technical evaluation. Bidders who do not achieve this cut-off score will be disqualified from the bidding process and their commercial bids will not be opened.

Technical Score, TS

The technical score will be arrived at by the technical committee based on technical evaluation of various parameters of the solution, including

Terms used in the following technical score table.

- TEC – Technical Evaluation Committee
- Min – Minimum
- Max - Maximum

SNo.	Evaluation Item	Evaluation Methodology and Remark	Min or Cut-off score*	Max Score
1	Organization of the technical bid as in Section 8.	To be evaluated by the TEC	1	3
2	<p>Technical compliance in terms of the following</p> <p>2.1 Has the bidder visited the site?</p> <p>2.2 Does the solution provide Chiller-based PAHU units?</p> <p>2.3 Is the tonnage provided by the PAHU units sufficient for the IT load of the racks provided?</p> <p>2.4 Does the solution consider the room dimension and internal structures?</p> <p>2.5 Is the nominal airflow of each PAHU 150 to 160 CFM/KW?</p> <p>2.6 Is the number of rack provided at least 32?</p> <p>2.7 Are the racks of the specified dimensions?</p> <p>2.8 Does each rack provide 2 Nos. PDUs?</p> <p>2.9 Do the PDUs in the racks have C-13 and C-19 sockets?</p> <p>2.10 Does the solution provide hot aisle containment for all the racks?</p> <p>2.11 Is the hot aisle containment at least 6 feet wide?</p> <p>2.12 Is the BMS with DCIM considered?</p> <p>2.13 Does the solution include detailed instrumentation for monitoring the complete system performance in terms of key parameters and real-time calculation of Power Usage Effectiveness (PUE)?</p>	<p>‘No’ for any of the questions in this section will result in 0 marks.</p> <p>‘Yes’ for all the questions in this section will result in 17 marks</p>	17	17

3	Experience in high-density installations during July 1, 2020 – June 30, 2023, in terms of total KW load across all the data centers installed in India during this period by the bidder. Only data centers with a minimum of 250 KW load should be considered.	Higher values will lead to higher scores. Will be calculated as $\frac{\text{Value in the evaluated bid}}{\text{Max value load across all bids}} \times 10$ rounded off to the nearest integer	4	10
4	Understanding of the project based on the technical documents and drawings submitted	To be evaluated by the TEC	2	5
5	Innovativeness – Any value-added innovations without changes in the specifications	To be evaluated by the TEC	0	5
6	Noise level in dB of PAHUs at 2m distance at rated speed corresponding to 50 Hz operation and at peak heat load	Lower values will lead to higher scores. Will be calculated as $\frac{\text{Min value across all bids}}{\text{Value in the evaluated bid}} \times 3$ rounded off to the nearest integer	1	3
7	Amount/extent of configurations/support in the PAHU unit to cater to varying load requirements in the data centre, e.g., multiple compressors with ability to operate at lesser number of compressors, reducing power consumption of the unit etc.	To be evaluated by the TEC	1	2
8	Expected lifetime in years of the PAHU units	Higher values will lead to higher scores. Will be calculated as $\frac{\text{Value in the evaluated bid}}{\text{Max value across all bids}} \times 2$ rounded off to the nearest integer	1	2
9	Redundancy within the PAHU units to handle failures	To be evaluated by the TEC	1	2
10	Power consumption in KWatts by the PAHU units	Lower values will lead to higher scores. Will be calculated as $\frac{\text{Min value across all bids}}{\text{Value in the evaluated bid}} \times 10$ rounded off to the nearest integer	6	10

11	Is piping of sufficient length provided between the PAHU units and the nearest tapping points from the main chiller lines?	'Yes' will lead to 3 marks. 'No' will lead to 0 marks.	3	3
12	Number of racks provided in the solution	Higher values will lead to higher scores. Will be calculated as $\frac{\text{Value in the evaluated bid}}{\text{Max value of racks across all bids}} \times 10$ rounded off to the nearest integer	7	10
13	Free Space in square feet in the cold aisle region, excluding space provisioned for the electrical panels, BMS components and other components not available for movement	Higher values will lead to higher scores. Will be calculated as $\frac{\text{Value in the evaluated bid}}{\text{Max value of racks across all bids}} \times 5$ rounded off to the nearest integer	3	5
14	Are the PDUs metered-by-outlet, i.e., metering of power consumption enabled at each socket?	'Yes' will lead to 3 marks. 'No' will lead to 0 marks	3	3
15	Targeted maximum Data centre PUE for 100% IT load	Lower values will lead to higher scores. Will be calculated as $\frac{\text{Min value across all bids}}{\text{Value in the evaluated bid}} \times 10$ rounded off to the nearest integer	6	10
16	Number of OEMs involved in the manufacture of the following key components: PAHUs, Racks, Power panels, BMS/DCIM, False ceiling, Glass doors	Lower values will lead to higher scores. Will be calculated as $\frac{\text{Min value across all bids}}{\text{Value in the evaluated bid}} \times 5$ rounded off to the nearest integer	1	5
17	Presentation score considering the quality of the presentation, bidder's demonstration of the understanding of the project, clarity of explanation of the technical details, and ability to answer questions	To be evaluated by the TEC	3	5
	Total Technical Score (TS)			100

* Bids that obtain less than Minimum or Cut-off scores in more than 5 out of the 17 evaluation items given above will be disqualified.

Bids with total technical score (TS) of less than 70 out of 100 will be disqualified.

Financial Score, FS

Financial score, **FS**, for a bid, B, will be calculated as follows.

$$CS = \frac{C_{low}}{C_{bid}} \times 100$$

where

C_{low} is the lowest cost among all the bids, i.e., quoted value of L1 bidder, and

C_{bid} is the cost of the bid, B.

Total/Final Score, FS

$$FS = (TS \times 30\%) + (CS \times 70\%)$$

The bidder achieving the highest final score, FS, will be invited for discussions for awarding the contract. In case of a tie where two or more bidders achieve the same highest overall score, the bidder with the higher commercial score will be invited.

IISc's decision to adhere to evaluation methodology will be final and binding and no claims whatsoever in this respect will be entertained.

6. Technical Details / BoQ Compliance Sheet (to be submitted with Technical Bid)

Note: DO NOT MENTION THE PRICES IN THIS BoQ COMPLIANCE SHEET. THIS WILL LEAD TO AUTOMATIC DISQUALIFICATION OF THE BIDS.

SNo	Item Description	[Only answer YES/NO in this column. DO NOT MENTION THE PRICE]	Remark by the bidder, if any
1. Cooling System			
1.1	Precision Air Handling Units (PAHUs)		
1.2	Pressurized expansion tank for the existing chillers		
1.3	Air separator for the existing chiller connections		
1.4	Piping connections between the PAHUs and the nearest tapping points of the chiller main pipes		
1.5	Other low side works and other costs, if any, related to the cooling system		
2. Server Racks			

2.1	Server racks		
2.2	Blanking panels for the racks		
3. Hot Aisle Containment			
3.1	Hot aisle containment		
3.2	Other low side works and other costs, if any, related to the hot aisle containment		
4. Electrical and Sensor Works			
4.1	Cabling from the UPS panels to the server racks with Bus Bar Trunking (BBT)		
4.2	Cabling from the AC panel to the PAHU units		
4.3	LED ceiling lighting, battery powered emergency lighting		
4.4	Two emergency heavy duty exhaust fans		
4.5	An emergency heavy duty fresh-air motorized damper		
4.6	Two nos. of temperature and humidity sensors for each rack		
4.7	Other low side works and other costs, if any, related to the electrical and sensor works		
5. Civil Works			
5.1	Removal of existing cubicles, glass walls and doors, false ceiling and duct		
5.2	Installation of Vinyl flooring		
5.3	Installation of new false ceiling with provisions for LED lighting		
5.4	Installation of new glass doors (2 Nos.) and new glass walls, a fire-resistant acoustic partition		
5.5	Painting		
5.6	Other low side works and other costs, if any, related to the civil works		
6. BMS/DCIM			
6.1	Aspiration system for smoke detection		
6.2	Fire detection and alarm system		
6.3	Fire suppression system		
6.4	Video surveillance system		
6.5	Rodent repellent system		
6.6	Water leak detection system		

6.7	Temperature and humidity sensors in the data centre		
6.8	BMS/DCIM for monitoring rack PDUs, PAHUs, energy meters, temperature and humidity in racks		
6.9	Other low side works and other costs, if any, related to the BMS/DCIM		
7. Warranty and AMC			
7.1	Warranty costs for the first three years		
7.2	2-year AMC costs for the 4 th and 5 th years		

7. Acceptance Criteria

1. The bidder must demonstrate the following at the time of acceptance of the installation and commissioning.
 - a. PAHUs and cooling solution: The capacity measurement in TR, Supply or return air temperature, NVH level of each PAC using standard measurements, measurement of CFM with a flow grid or a flow hood at the time of commissioning, working of drain pump, logging capacity of PLC, switching capacity in PLC and other relevant parameters as specified in the bid, pressurized expansion tank and air separator for the chillers.
 - b. Server racks with the specified PDUs and related operations as specified in the tender.
 - c. Hot aisle containment operations as specified in the tender.
 - d. Complete operations of electrical cabling connections, lighting, exhaust fans and dampeners, temperature and humidity sensors and other operations as specified in the tender.
 - e. Satisfactory completion of all civil works as specified in the tender - Firmly seated, defect-free condition and noise-free operation of the glass walls, Noise-free and smooth functioning of the glass doors, Noise-free operation of the gypsum partition, Proper sealing of walls, doors and partition to prevent leakage of data center cool air with ambient, Emergency door release/unlock in case of power failure.
 - f. Integrated operations of BMS/DCIM components as specified in the tender - Integrated operations of smoke detection, fire alarm and fire suppression systems, Water leak detection system, Proper working of the video surveillance system, Proper working of temperature and humidity sensors and their display, Access to the monitoring and control of the BMS from a computer over the network.
2. It is to be noted that maximum of two weeks will be available (after Installation & Commissioning) to the bidder to conform to this acceptance test criterion set out.
3. Any delay in commissioning or conformance to the acceptance beyond the stipulated time will result in extending the warranty: each day of delay would result in 3 additional days of warranty.
4. This penalty clause is only applicable for solutions which are considered as technically meeting the requirements, as evaluated by the technical committee. The clause cannot therefore be used as an argument to qualify any solution, which the technical committee considers as not meeting the requirements.

8. Organization of the Technical Bid

The technical bid should strictly be organized in the following sequence only.

Note: IISc reserves the right to disqualify any bid that does not provide all the required data and not following the organization given below.

1. A cover letter from the bidder. Among other things, the cover letter should certify that all the requirements of the tender are provided and the offered solutions meet and comply with the technical and other specifications of the tender. The cover letter should certify agreeing to all the terms and conditions mentioned in the tender. The cover letter should also certify that the primary bidder will be responsible for offering the total turn-key solution in meeting all the tender specifications.
2. Table of Contents page listing only the items below, i.e., the items 5-15 and their corresponding page numbers in the pdf document.
3. The bidder must not be blacklisted by any Central / State Govt. Organizations of India as on date of submission of the bids. A certificate or undertaking to this effect must be submitted.
4. Proofs for Bidder's Eligibility Criteria as given in Clauses 1 and 2 of Section 3.
5. Technical details/BoQ compliance sheet as in Section 6.
6. A copy of the masked Commercial bid has to be given in the technical offer (unpriced Bill of Material (BoM)).
7. Certificates from bidder, as per format given in **Annexure B**, declaring the country of OEM, country of manufacture, location of local value addition and percentage of local contents for various items provided in the bid, and compliance with the provisions of Public Procurement (Preference to Make in India) order No. P-45021/2/2017-PP (BE-II) dated 15th June 2017 (PPP MII Order) and further revised vide Order dated 28th May 2018, 29th May 2019, 04th June 2020 and 16th September 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI.
8. Design layout CAD diagrams showing placement of PAHUs, racks, hot aisle containment, power panels, electrical cabling, exhaust fans and dampener, piping to the PAHUs, glass doors, walls and acoustic partition, BMS-related components, risk mitigation in terms of power failure and in case of fire.
9. **Annexure D:** Bidder's technical input.
10. Product specification sheet(s) of the following components, where the technical inputs mentioned in Section 4, wherever available are highlighted.
 - a. PAHUs
 - b. Server racks
 - c. BMS components, namely, aspiration system for smoke detection, fire detection and alarm system, fire suppression, video surveillance, rodent repellent and water leak detection systems
11. Software selection sheet of the PAHUs, where the technical inputs mentioned in Section 4.2, wherever available are highlighted.
12. Manufacturer Authorization Forms (MAFs) or letters from the OEMs to the bidder for each of the components.
13. Clear demarcation of the responsibilities between the bidder and the OEMs.
14. Terms and conditions of the offer.
15. Appendix
 - a. Company Profile Documents, if desired by the bidder or OEM (Maximum 2 pages each for the bidder and the OEMS).
 - b. Proof for Bidder's Eligibility Criteria Clause 3: Annual audited balance sheet for 3 years.
 - c. Supporting technical materials including brochures.
 - d. Any other information or documents that the bidder/OEMs deem necessary.

9. Earnest Money Deposit (EMD)

1. The Bidder shall furnish, as part of his tender, earnest money deposit (EMD) of Rs. 15,00,000 (Rupees Fifteen Lakhs only) through RTGS / NEFT only. Necessary Bank details of IISc is enclosed with the tender. Other modes of payment for EMD are not acceptable. The bidder must attach e-receipt of the RTGS / NEFT payment in the technical bid, as proof of payment of EMD .
 - a. The entire EMD amount for the tender has to be paid in a single transaction through NEFT / RTGS.
 - b. Bid received without EMD will be rejected.
2. The EMD of unsuccessful Bidders will be returned to the respective bidder(s) through bank / RTGS transfer without any interest within a period of 60 (sixty) days after placing the order / awarding the contract to the successful bidder.
3. The EMD of successful bidder will be refunded through RTGS transfer without any interest only after receiving Performance Security / Performance Bank Guarantee (PBG) / Security Deposit.
4. The EMD may be forfeited:
 - a. If the Bidder withdraws or amends or modifies or impairs or derogates the bid partly or fully or any condition of it after tender opening, during the period of tender validity (six months from the date of opening of the technical bid);
 - b. If the Successful Bidder fails within the specified time limit to:
 - i. Furnish order acceptance within one week of the order, or
 - ii. Furnish the required Performance Security / Performance Bank Guarantee (PBG) / Security deposit within two weeks from the issue of the Letter of Intent / Purchaser Order, or
 - iii. Fails to deliver/provide the item/installation/service as per the order's terms and conditions within stipulated period
5. Micro, Small and Medium Enterprises (MSMEs) will be exempted from submitting EMD as per GFR 2017 (amended from time to time). Such a Bidder must submit copy of valid certificate with the technical bid, failing which their bid will be declared as a non-responsive bid. In addition, an undertaking has to be given as per **Annexure A**.

10. Performance Security or Performance Bank Guarantee (PBG)

The successful bidder, on whom order will be placed, has to submit a performance security of 10% of the total order value at the earliest as per Purchase Orders (PO) terms within two weeks from the date of PO. The format for PBG is given in **Annexure E**. Performance security has to be submitted in the form of RTGS / NEFT / Bank Guarantee/Demand Draft/FDR from any Nationalized/Scheduled commercial Bank in India (as per RBI list) in favour of the Registrar, IISc, Bangalore. The security deposit must be submitted within two weeks of the issue of the Purchase Order, otherwise EMD may be forfeited and order may be cancelled. IISc will issue a formal purchase order to the successful Bidder upon furnishing of the PBG / Security deposit.

Performance security should remain valid for a period of three months beyond the date of completion of all contractual obligations (including warranty period) of the successful bidder. No interest will be payable by IISc, Bangalore on the Performance Security deposited. In case the contractor fails to provide satisfactory service or supply, the Performance Security submitted by the bidder is liable to be forfeited. The PBG will be forfeited in case of violation of any terms & conditions of the purchase order or agreement done thereof by the successful bidder. An undertaking to this is to be submitted.

11. General Terms and Conditions

1. Offer must be submitted under TWO-BID system i.e. “Techno-commercial (i.e. Technical bid)” and “Price (Financial) bid” in **e-tender mode through CPPP** within the stipulated periods. Bids sent through Email / Fax / hard copies will not be accepted and such bids will be treated as non-responsive bids.
2. The vendors may communicate to the committee through the CPPP and to the email ID provided in the first page, which will be the official email for the purpose of this tender. However, the communications from the committee will be made only in pre-bid clarification meeting and through CPPP including corrigendum and short fall requests. While the committee may consider the emails from the vendor, the committee will respond/communicate by email from only the official email ID only when absolutely necessary including for example, arranging site visits, arranging possible technical presentations and calling the successful bidder for further discussions. In all other circumstances, no responses or communications will be made by the committee via email or any other means.
3. Any clarifications required by the committee will be sought in possible technical presentations that may be held and/or shortfall requests via CPPP. The shortfall requests will precisely point to the tender clauses that are not met by the technical bid. It is the bidder’s responsibility to address the shortfall by submitting an adequate and satisfactory shortfall response via CPPP. No clarifications by email or any other means will be sought or given by the committee.
4. Delayed and/or incomplete tenders are liable to be rejected.
5. The Technical and the Commercial Bids should be duly signed by the authorized representative of the bidder.
6. The bidders are requested to go through the Terms and Conditions detailed in this document, before filling out the tender. Agreeing to the terms and conditions of the tender document (by signing all pages of the copy of a tender document) is a mandatory requirement.
7. A tender, not complying with any of the above conditions is liable to be rejected.
8. IISc reserves the right to cancel the tender at any time without assigning any reason whatsoever.

12. Technical Bid – Terms and Conditions

1. Technical bids should be submitted through **online e-tender mode in the specified format on CPPP**.
2. The technical bid should contain all the information and should have the organization as given in Section 8. Bids without the specific information and organization as in Section 8 will be automatically disqualified.
3. No price information must be mentioned in the technical bid. Bids which include price information in the technical bids will be automatically disqualified.
4. Technical bids will be opened first. IISc may seek clarifications after opening of technical bids.
5. The technical evaluations will be made only based on the technical bids and the shortfall responses submitted by the bidder.

13. Commercial Bid – Terms and Conditions

1. Priced Bill of Quantities should be submitted only through **online e-tender mode in the specified format on CPPP. Any other mode of submission will lead to disqualification of the bids.**

2. Price bids of only technically qualified vendors will be considered. Commercial bid shall be opened for the technically qualified bidders after the technical evaluation.
3. The hardcopy commercial bid of the successful bidder, after the commercial bid opening stage, should contain among other things, unit prices, payment terms, warranty, installation, commissioning etc. as per requirements of IISc mentioned in the tender document. All such conditions must be in line with the tender. In case of any deviation or conditional offer, the bid may be treated as non-responsive and not be considered for evaluation. The Commercial bid should contain details of the prices for each one of the subsystems of the total offer clearly giving the rate and the quantity. Bundling of the prices is not acceptable.
4. This is a **local tender**. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor. Prices should be quoted only in INR (Indian Rupees) and will be with GST only. The order must be on FOR basis. No Custom Duty Exemption Certificate will be provided.
5. The component of tax, and any other statutory levies should be shown separately and not included in the total amount, to enable IISc to avail any exemption.
6. Proposals should contain the name and contact details, viz., phone, fax, and email of the designated person to whom all future communication will be addressed. The contact details should also be mentioned on the overall envelope.
7. Prices should be quoted in detail, for all the subsystems given in the Technical Specifications part of the tender. Further, bid and **price validity should be for three months** from the date of opening of the technical bids.
8. IISc will place the purchase order only on the successful bidder as per the decision of IISc. In this regard, decision of IISc will be final and binding.

14. Payment Terms

1. The total project cost will consist of Equipment supply and installation and comprehensive warranty for three years and AMC for 4th and 5th years from the acceptance and successful installation as decided by IISc.
2. 100% payment shall be released by IISc against delivery, inspection, successful installation, commissioning and acceptance of the equipment at IISc Bangalore in good and functional condition and to the entire satisfaction of the Purchaser (IISc) and on production of unconditional performance bank guarantee of 10% of the total order value valid two months beyond all contractual obligations.
3. Payment will be subject to deduction of TDS as per rules / laws and any other deduction as per PO terms.
4. The total solution as per the agreed bill of materials **must be supplied within 10 weeks** after receiving a firm PO from IISc. The installation and acceptance must be completed within 2-3 weeks after supply of the equipment.
5. Liquidated Damage: As time is of the essence for this procurement, the ordered materials are required to be delivered and installed in all respects within the stipulated period in the purchase order failing which penalty for late delivery and installation will be imposed at the rate of 1% of the total order value per week or part thereof for the delayed period subject to maximum of 10% of the total order value and this liquidated damage will be deducted during the payment of the invoice / bill of the supplier. Earliest / expected delivery period should be clearly indicated in the technical bid.

15. Important Dates

1. Release of tender through CPPP: July 12, 2023, 5 PM.
2. Site visit period: July 16, 2023 to July 19, 2023. Bidders can arrange for site visit by sending email to tender.serc@iisc.ac.in
3. Last date for sending queries: July 20, 2023, 6 PM. Queries may be sent to tender.serc@iisc.ac.in
4. Pre-bid Meeting: July 26, 2023. Potential bidders will be intimated by email about the time, mode/venue of the meeting. Vendors who are considering participating in the tender should intimate by email to tender.serc@iisc.ac.in, the email IDs of the personnel from the organization who may be involved in the bidding process. Email intimation about the pre-bid meeting will be sent only to these intimated email IDs.
5. Release of corrigendum to the tender based on the queries, if necessary, through CPPP: July 29, 2023, 5 PM IST.
6. Start date for submission of the bid: July 30, 2023, 9 AM. Submissions should be made only through the CPPP.
7. Last date for submission of the bid:, August 7, 2023, 6 PM.
8. Opening of the technical bids through CPPP: August 9, 2023, 11 AM.
9. Presentation by bidders or Technical Clarification Meet with the bidders: Will be intimated. If a bidder does not appear for presentation, the corresponding bid will be treated as non-responsive and will not be considered for further process. EMD will not be refunded, if bidder does not present for presentation as per the schedule given by IISc.
10. Requesting for shortfall through CPPP: August 16, 5 PM.
11. Shortfall response by the bidders through CPPP:.. August 19, 2023, 5 PM.
12. Opening of the commercial bids: Will be intimated.

Mailing address:

Chair
Supercomputer Education and Research Centre (SERC)
Indian Institute of Science (IISc)
Bangalore – 560012
India

16. Annexure A – Undertaking in Lieu of EMD for MSMEs

Date:

To:

The Chair
Supercomputer Education and Research Centre
Indian Institute of Science
Bangalore – 560012, 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 SERC, IISc, Bangalore, in response to your Tender No IISc/Purchase/SERC/2023/DataCenter/1. We are hereby submitting our proposal for the same, which includes Technical bid and the Financial Bid. As a part of the eligibility requirement stipulated in the said tender document, we hereby submit a declaration in lieu of Earnest Money Deposit (EMD), as given below:

1. We will not withdraw or amend or modify or impair or derogate the our bid partly or fully or any condition of it after tender opening, during the period of tender validity (six months from the date of opening of the technical bid),
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 the required Performance Security / Performance Bank Guarantee (PBG) /Security deposit within two weeks from the issue of the Letter of Intent / Purchase Order.
4. In case of failure on our part to to deliver/provide the item/installation/service as per the order's terms and conditions within the stipulated period, we are aware that we shall be declared as ineligible for the said tender and /or debarred from any future bidding process of IISc or any Government entity 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:

17. Annexure B – Certificate from Bidder related to Make in India Orders

To:
The Chair
Supercomputer Education and Research Centre
Indian Institute of Science
Bangalore – 560012, India

We hereby certify that the goods being offered by us vide our proposal, comply with the provisions of Public Procurement (Preference to Make in India) Order No P-45021/2/2017-PP (BE-II), dated 15th June 2017 (PPP MII Order) and further revised vide Order dated 28th May 2018, 29th May 2019, 04th June 2020 and 16th September 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI.

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

SNo.	Item Description	Country of Origin of OEM	Country and Location of Manufacture of Item	Location in India at which local value addition is made, if any.	Percentage of Local Content
1	Precision Air Handling Units (PAHUs)				
2	Hot Aisle Containment				
3	Server Racks				
4	Electrical cables, cable trays, exhaust fans, damper, sensors				
5	Vinyl flooring, False ceiling, Glass doors and glass walls, acoustic partition				
6	Aspiration system for smoke detection				
7	Fire detection and alarm system				
8	Fire suppression system				
9	Video surveillance system				
10	Rodent repellent system				
11	Water leak detection system				

Note 1: Please enclose certification from the OEM on the above for their respective item(s) provided in this tender.

Note 2: If a product is manufactured in India under a license from foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content, please enclose the relevant agreement copies.

Self-certification on Compliance to Make-in-India Order:

We hereby declare that

(Bidder Name) is a Class _____ (**FILL as either 'I' or 'II'**) local supplier for the given tender in accordance and manner as specified in Public Procurement (Preference to Make in India) orders mentioned above and OM No. P-45021/102/2019-BE-II-Part(1) (E-50310) dated 04.03.2021 issued by DIPP, Ministry of Commerce and Industries, GoI. We also certify that the percentage of local content of the overall turnkey solution is _____ % (**FILL the percentage of local content of the overall turnkey solution**).

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:

18. Annexure C – List of Recommended Makes

The following list is indicative only. The items offered must comply with the Public Procurement (Preference to Make in India) ORDER NO. P-45021/2/2017-PP (BE-II), dated 16th September, 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI.

SNo	Item	Recommended Makes
1	Precision Air Handling Units with necessary low-side works	Schneider Electric / Vertiv / Stulz / Bluebox / Climaveneta
2	Server racks	APC/Legrand/Vertiv/WQ India/Netrack/Valrack.
3	Glass for doors and walls	SAINT GOBAIN, Schott, Pilkington
4	Fire Resistant Glass Door	Shakti Mat, Radiant, ProMat, Godrej
5	Fire alarm system	Tyco, Honeywell, Siemens, Schneider
6	Aspiration smoke detection system	Xtralis, ICAN, Tyco, Honeywell, Siemens, Securiton
7	Fire suppression system	Ansul, UTC, Tyco, Siemens
8	Video Surveillance system	Honeywell, Hikvision, Samsung, Bosch, Pelco
9	Rodent Repellent System	MASER (Tarrant Range), C Systems, Verma Craft, Star Electronics
10	Water leak detection system	Tracetek, Liebert, Sontay, Star Electronics

19. Annexure D - Bidder's Technical Inputs

Technical data to be furnished by the bidders.

S.No.	DESCRIPTION	UNIT	Bidder's Input
Experience			
1	Listing of high-density installations installed during July 1, 2020 – June 30, 2023 installed in India by the bidder. Only data centers with a minimum of 250 KW load should be considered. In this table, provide only the installation site and the KW load. Proofs in the form of Purchase Orders (POs) should be provided with the technical bid.	--	
Specifications for each PAHU Unit and Piping			
1	Make and Model of Proposed unit	--	
2	OEM for the Proposed Unit	--	
3	Total Cooling Capacity	TR (KW)	
4	Net Sensible Cooling Capacity	TR (KW)	
5	Airflow	CFM	
6	Return air temperature	Deg C	
7	Return air RH	%	
8	Supply air temperature	Deg C	
9	Supply air RH	%	
10	Discharge Type of CRAH	(FRONT /TOP/BOTTOM)	
11	a) Chilled Water Inlet Temperature to CRAH	Deg C	
12	b) Chilled Water Outlet Temperature from CRAH	Deg C	
13	Total Unit Connected Power (Fan Actual Kw +Controller+Actuator)	KW	
14	Specific Power Consumption	ikw / TR	
15	Unit Size		
	Length (L)	mm	
	Depth (D)	mm	
	Height (H)	mm	
16	Noise levels at 2m distance from unit at rated speed corresponding to 50 Hz operation and at peak heat load	dB	
17	Expected lifetime	Years	
18	Total length of pipes (both supply and return) between the PAHU units and the nearest tapping points from the main chiller lines.	metres	
Hot Aisle Containment			

1	OEM for hot aisle containment		
2	Width of the hot aisle	feet	
3	Free Space in square feet in the cold aisle region, excluding space provisioned for the electrical panels, BMS components and other components not available for movement	square feet	
Racks			
1	Make and Model of the racks	--	
2	OEM for the racks	--	
3	Number of racks provided in the solution	--	
4	Load density of each rack	KW	
5	Total IT load of the racks provided in the solution	KW	
6	Number of PDUs in each rack	--	
7	Number of C-13 and C-19 sockets in each PDU	--	
8	Are the PDUs metered-by-outlet, i.e., metering of power consumption enabled at each socket?	Yes/No	
Civil Works			
1	Make and model of false ceiling	--	
2	Make and model of glass doors and walls	--	
BMS			
	Make, Model and OEM of aspiration system for smoke detection		
	Make, Model and OEM of fire detection and alarm system		
	Make, Model and OEM of fire suppression system		
	Make, Model and OEM of video surveillance system		
	Make, Model and OEM of rodent repellent system		
	Make and model of water leak detection system		
Others			
1	Targeted maximum Data centre PUE for 100% IT load	--	

20. Annexure E - Format for Performance Security

FORMAT FOR BANK GUARANTEE FOR PERFORMANCE SECURITY (PERFORMANCE BANK GUARANTEE)

To
The Registrar
Indian Institute of Science (IISc)
Bangalore – 560 012 (Karnataka, India)

Subject: Performance Bank Guarantee (PBG)

Reference: IISc. Purchase Order No. _____
dated _____

Dear Sir,

1. We hereby issue a Bank Guarantee as follows: -

Bank Guarantee No. _____ Date: _____

Amount of Guarantee Rs. _____

Guarantee covers From _____ To _____

Last Date for Lodgement of Claim: _____

2. This deed of Guarantee executed by the (Name of the Bank: _____)

constituted under _____ Act, _____ having its
Central Office at _____

_____ and amongst other
places a branch at _____ (hereinafter
referred to as "The Bank") in favour of The Registrar, Indian Institute of Science,
Bangalore – 560 012 (hereinafter referred to as IISc) for an amount of not
exceeding Rs. _____ (in words:

Rupees. _____ only) at the request of
M/s _____ (hereinafter referred to as the
"Contractor" / "Supplier").

3. In consideration of The Registrar, Indian Institute of Science, Bangalore – 560 012
(hereinafter called IISc) having entered into an agreement vide IISc's Purchase
Order No. _____ dated _____ with M/s
_____ (hereinafter called the Supplier) to carry out the supply and
installation of the _____

_____ <Name of the
equipments/work/Job> at Indian Institute of Science, Bangalore as per their above
order, the Supplier agreed to execute a Bank Guarantee for 10% of the total order
value viz. Rs. _____ (in words: Rupees
_____ only) towards Performance
Security / Performance Guarantee obligation for a period of ___ year(s) /
month(s) from _____ to _____.

4. We, the _____ Bank, _____ Branch (hereinafter referred to as a Guarantor) at the request of the supplier, irrevocably undertake to indemnify and to keep indemnify IISc. without any demur to the extent of Rs. _____ (in words: Rupees _____ only) in the event of the aforesaid Supplier failing to comply the Warranty / contractual Obligations as per the agreed terms to the full satisfaction of the Company as mentioned in the IISc.'s purchase order.
5. NOW THIS BANK HEREBY GUARANTEES that in the event of the said Supplier failing to abide by any of the conditions referred in tender document / purchase order / performance of the equipment / Machinery / service, etc. this Bank shall pay to Indian Institute of Science, Bangalore on demand and without protest or demur Rs (in words: Rupees.....only).
6. We _____ Bank, further agree that the Guarantee herein contained shall remain in full force and affect during the period that would be taken for the performance of the equipment and / or services as stated in the Purchase Order issued by IISc. and that it shall continue to be enforceable till the completion of the period and certified that warranty and contractual obligations have been fully carried out by the supplier and accordingly discharges the Guarantee subject. However, IISc. shall have no right under after the expiry of the Guarantee, i.e. _____(date).
7. We, _____ Bank undertake not to revoke this Guarantee, during its currency except with the previous consent of IISc. in writing.
8. Notwithstanding anything contained herein,
 - (a) Our liability under the Bank Guarantee shall not exceed Rs. _____ (in words: Rupees _____ only).
 - (b) This Bank Guarantee shall be valid up to _____.
 - (c) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if IISc. serve upon us a written claim or demand on or before expiry of date (i.e. _____).
9. NOTWITHSTANDING anything contained herein above, our liability under this Guarantee is restricted to Rs. _____ (in words: Rupees _____ only) our guarantee shall remain in force until. Unless a Demand or claim under the guarantee is made on our Bank in writing on or before _____ all your rights under the said guarantee be forfeited and we shall be relieved and discharged from all liabilities thereunder.
10. This Bank further agrees that the decision of Indian Institute of Science, Bangalore as to whether the said Supplier has committed a breach of any of the conditions referred in tender document / purchase order shall be final and binding.
11. This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at situated at (Address of local branch) as following details:

Name of the Bank	
Branch Name	
Branch Code	
IFSC Code	
E-mail Id	
Phone/Mobile Number	

Seal & Signature of the Bank