IISER THIRUVANANTHAPURAM

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM [IISERTVM]**

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GST NO.32AAAJI0299R1ZS

IISER/PUR/1655/SP-P/SP/25-26 04 Mar 2026

CORRIGENDUM

Sub: Supply, installation and commissioning of High Performance Computing (HPC) Cluster: reg

Ref: Tender ID: 2025_IISRT_890435_1

1. Since the quoted price by the L1 exceeds the estimated amount the above mentioned tender is retendered with revised technical specifications at Annexure 1.

2. The due dates will be as follows:-

| | |
|---|---|
| Last Date and Time for Uploading of Bids | 23 Mar 2026 (1500 Hrs) |
| Date and Time of Opening of Technical Bids | 24 Mar 2026 (15.30 Hrs) |

2. All other Terms and Conditions remain the same. Bidders may quote accordingly

Thanking You,

Yours Faithfully

Anwar Sadath
5/3/26

Assistant Registrar (P&S)

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Annexure 1 to corrigendum

## Supply of High-Performance Computational Cluster

IISER Thiruvananthapuram

**Detailed specifications**

- Through this tender, IISER Thiruvananthapuram (IISERTVM) is inviting proposals in a two-cover format from reputed Original Equipment Manufacturers (OEMs) or their dealers, distributors, or agents (collectively referred to as bidders) for the supply, installation, commissioning, and handover of a **HIGH PERFORMANCE COMPUTING (HPC)** cluster with a peak performance of **at least 12 TERAFLOPS (TFLOPS)**.
- In the following, OEM is defined to be an entity that manufactures compute and master nodes, components of the Data Centre infrastructure. The term 'HPL performance' used below is defined to be TFLOPS of 64-bit floating point High Performance LINPAC (HPL) Benchmark (http://www.netlib.org/benchmark/hpl/) performance obtained with turbo mode off.
- The proposed system should be based on an x86-based architecture and have a total compute capability (combining all compute nodes) of a minimum of 12 TFLOPS of peak theoretical performance, referred to as Rpeak from here onwards (the Rpeak should be calculated using the "Marked TDP frequency" or "processor base frequency" in the processor specifications without turbo).
- The solution must be well designed so that the ratio Rmax/Rpeak is equals to or greater than 0.70, where Rmax is the sustained HPL performance, obtained using exactly the same ground rules as given in http://www.top500.org/project/linpack/.
- IISERTVM reserves the right to scale up or down the final purchase order in terms of the total number of computing nodes and/or master node storage hard drives by plus or minus 1 quantity. However, all the bids will be evaluated for a system that meets the stated requirement of at least 12 TFLOPS.

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- In the event the final size of the order is revised as mentioned above, the revised price will be arrived at by using the unit rates quoted for the necessary items as listed in the BOQ with proportionate changes in the price of lumpsum items.
- **Delivery period: 14 weeks from the release of purchase order**
- Payment terms: Payment will be made through Letter of credit (LC) as per the following milestones:
  - M1 – 80%- after complete shipping/delivery
  - M2- 20%- after complete installation, commissioning, and on-site demonstration, as well as submission of a Performance Bank Guarantee equivalent to 3% of the Purchase order value, valid for the entire warranty period + 3 months

- **Detailed technical specifications for the master node (Qty – 1 Nos):**

| Sr No. | Parameter | Parameter Value |
|---|---|---|
| 1.1 | Processor | 1 x Intel Xeon 5th Generation, 2.0GHz, 12C/24T or higher/better |
| | | Processor should have a base frequency of 2.0 GHz or higher and cache per core 1.8 GB or higher |
| | | Processor should have a TDP of less than 12.6W per core (lower the better) |
| 1.2 | Chipset | Latest Intel Chipset Compatible with the chosen processor |
| 1.3 | Memory | 64 GB (or higher) ECC RDIMM DDR5 (or better) memory with minimum frequency of 4400 MHz or above. |
| 1.4 | Hard disk | 2 x 960 GB (or larger) SATA SSD (OS Boot - mirrored) |
| 1.5 | Network Interface | Min 2 x 10GbaseT Network Ports |
| | | Min 1 GbE RJ45 Ports for Remote System Management |
| 1.6 | External Ports | Minimum 2 nos. of USB 3.0 ports, minimum 1 VGA port |

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| | | |
|---|---|---|
| 1.7 | Chassis | 1U or 2U Rack Mountable form factor Chassis with sliding rail-kit. |
| 1.8 | System Management | All required licenses for server management software, configuration utilities, drivers, and diagnostic utilities with the following functionality: |
| | | Server management software with local as well as remote management capabilities with the required license. |
| | | ROM-based setup utility, automatic server recovery, status LEDs including system health and UID, and systems insight display for quick and easy server diagnostics. |
| | | Security features—Firmware technology that integrates security directly into the hardware level of servers and that provides advanced levels of protection against firmware attacks (details to be provided). |
| | | Pre-failure alert for key components like Processors, Memory, internal storage, fans, power supplies, RAID controllers, etc. |
| 1.9 | Industry-standard Compliance | Secure Digital 4.0, ACPI 6.3 Compliant, PCIe 5.0 Compliant, WOL Support, USB 3.0 Compliant, PXE boot support for IPv6 |

| | | |
|---|---|---|
| 1.10 | OS Support | The system is certified and supported for Linux |
| 1.11 | Power supply | Hot swappable, Redundant, high efficiency, 80 Plus Platinum or better certification, power supplies with Health/ Activity Indicators with necessary IEC power cords |
| 1.12 | Warranty | 3 years of onsite 8x5 NBD comprehensive warranty |

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- **Detailed specifications for the compute nodes (Qty - 3 Nos):**

| Sr No. | Parameter | Parameter Value |
|---|---|---|
| 2.1 | Processor | • 2 x Intel Xeon 5th Generation 2.0GHz 32C/64T or higher/better<br>• Both the master node and the compute node should have processors from the same OEM.<br>• All compute nodes should have identical processors. |
| | | Each processor should have a base frequency of 2.0 GHz or higher and cache per core 1.8 GB or higher. |
| | | Each compute node should have peak performance of a **minimum of 4 TFLOPS** |
| | | Each Processor should have a TDP of less than 8.9W per core (lower the better) |
| 2.2 | Chipset | Latest Intel Chipset Compatible with the above Processor |
| 2.3 | Memory | 256 GB (or higher) ECC RDIMM DDR5 (or higher) memory with minimum frequency of 4800 MHz (or higher) (4 GB per core minimum). |
| 2.4 | Hard disk | 2 x 480GB (or larger) SATA SSD (OS Boot - mirrored) |
| 2.5 | Network Interface | Min 2 x 10GbaseT Network Ports |
| | | Min 1 GbE RJ45 Ports for Remote System Management |
| 2.6 | Chassis | 1U or 2U Rack Mountable form factor Chassis with sliding rail-kit. |
| 2.7 | System Management | All required licenses for server management software, configuration utilities, drivers, and diagnostics utilities with the following functionality: |
| | | Server management software with local as well as remote management capabilities with required license. |
| | | ROM based Setup Utility, Automatic Server Recovery, Status LEDs including system health and UID, Systems Insight Display for quick and easy server diagnostics. |
| | | Security features—Firmware technology that integrates security directly into the hardware level of servers and that |

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| | | |
|---|---|---|
| | | provides advanced levels of protection against firmware attacks (details to be provided). |
| | | Pre-failure alert for key components like Processors, Memory, internal storage, fans, power supplies, RAID controllers, etc. |
| 2.8 | Industry-standard Compliance | Secure Digital 4.0, ACPI 6.3 Compliant, PCIe 5.0 Compliant, WOL Support, USB 3.0 Compliant, PXE boot support for IPv6 |
| 2.9 | OS Support | The system is certified and supported for Linux |
| 2.10 | Power supply | Hot swappable, Redundant, high efficiency, 80 Plus Platinum or better certification, power supplies with Health/ Activity Indicators with necessary IEC power cords |
| 2.11 | Warranty | 3 years of onsite 8x5 NBD comprehensive warranty |

Note that the compute nodes can be configured using processors with a greater number of cores, and/or each node can have more than 2 processors, with the requirement that the total compute power (Rpeak) of the compute nodes is greater than or equal to 12 TFLOPS.

- Power cycling (on/off) for the compute nodes should be controllable from the master node.
- **Detailed specifications for the master node storage requirements**

| **3. Master Node Storage Hard Drives : Qty - 1 Nos** | | |
|---|---|---|
| **Sr No.** | **Parameter** | **Parameter Value** |
| 3.1 | Storage | 20 TB (2 x 10 TB) (or larger) (mirrored) SATA 7200 rpm |

- **Detailed specifications for the primary interconnect switch are given below:**

| **4. Primary Interconnect Switch: Qty -1 Nos** | | |
|---|---|---|
| **Sr No.** | **Parameter** | **Parameter Value** |
| 4.1 | Ethernet Switch | 10G Gigabit Ethernet switch with advanced layer 2/3 feature |
| 4.2 | Ports | 12 nos, or higher 10G BaseT Ethernet ports |
| 4.3 | Cables | With required numbers of CAT6A cables along with appropriate cable length to connect all the Computing nodes and Master Node. |
| 4.4 | Form Factor | Rack mountable with mounting kit |
| 4.5 | Power supply | Internal Redundant power supply |
| 4.6 | Warranty | 3 years of onsite 8x5 NBD comprehensive warranty |

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- **Details of the software suite to be supplied and installed are given below:**

| 5 Software(s) Suits : Qty - 1 Set | | |
|---|---|---|
| **Sr No.** | **Parameter** | **Parameter Value** |
| 5.1 | Operating system | Open source Linux of specified flavour (Rocky Linux etc.) |
| 5.2 | Cluster Manager | xCAT or Equivalent Free Software/open source Cluster Manager |
| 5.3 | Job Scheduler | OpenPBS or Equivalent Job Scheduler |
| 5.4 | Monitoring Tool | Ganglia or Equivalent Monitoring Tools |
| 5.5 | Compilers | Open Source Compilers (C, C++, Intel Fortan etc.) |
| 5.6 | Libraries/Applications | Libraries: LAPACK, MVAPICH, BLAS, LAPACK, ScaLAPACK, FFTW, and HDF5<br>build tools: CMake, Imake<br>applications: Python, anaconda, Quantum Espresso, VASP, Fleur, JuKKR, SPRKKR<br>If any commercial license are required, would be arranged by IISER Thiruvananthapuram |

- The specifications listed above are the minimum requirements for the cluster. Additional minor components, software, cables, etc., shall be included as per the requirements of the specific solution proposed by each vendor, if required.
- Software configuration and documentation to be done by the vendor:

1. **Cluster management:**
   - User management should be configured from the master node.
   - A suitable cluster monitoring tool must be installed in the master node to allow an easy overview of the status of the cluster hardware and users.
   - User home directories should be created in a file with quotas enabled.
   - Integration of all software components should be done to make the complete HPC cluster system fully functional and usable (e.g., integration of the scheduler with MPI, license managers, if any, etc.).
2. **Job Management:**
   - Jobs can be submitted only from the master/login node.
   - Jobs must be scheduled based on a fair-share calculation, historical usage etc.
   - Job scheduler must support multiple queues with different properties, access to resources etc. allowing for policy-based resource allocation.
   - Dynamic resource management and load balancing must be enabled.
   - Module support for maintaining multiple versions of the same software.

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- Job status monitoring must be possible. Runaway processes must be checked for before allocating new jobs.
- User login directly to compute nodes must be prevented/restricted.

3. **Documentation**
   - Step-by-step guides should be provided for user creation/management, for bringing up the cluster and shutting it down, creating/deleting of new job queues with various privileges and restrictions, etc.
   - A basic troubleshooting guide and status monitoring guide should be provided.

- **User acceptance:** The following tests must be done, and documentation for the test results provided to show the following:
  1. **Rmax value** obtained using exactly the same ground rules as given in http://www.top500.org/project/linpack/.
  2. Demonstrating that **Rmax/Rpeak** is 0.70 or better.
- The user acceptance tests should be done right after the completion of the installation and commissioning and then repeated 30 days later, demonstrating the same performance after the 30-day window.
- **Mandatory terms and conditions and Vendor (Bidder/OEM) eligibility criteria:**
  1. Both the master node and the compute nodes must be from the same OEM.
  2. Bidder (if not the same as the OEM) must be the authorised OEM partner and has to submit the signed OEM authorisation letter (in original) from OEM specific to this tender along with the technical-bid.
  3. All nodes/servers proposed must be OEM factory integrated products with OEM part numbers for all internal components.
  4. Detailed bill of material must be submitted with the technical bid.
  5. Bidder should have documentary experience evidence of execution at least 2 Nos of HPC supply and successful installation of distributed memory CPU only Compute node cluster, of at least 5 TF peak performance, in India, each in a single order in past three years. Purchase order copies with installation reports must be submitted with the technical bid.
  6. Bidder has to provide the onsite support for HPC Cluster, including Hardware, Software troubleshooting (excluding application), during the entire warranty period.
  7. Bidder has to run the LINPAC and should demonstrate it at the site after installation and repeat it after 30 days.
  8. Master/Compute node OEM must also have a minimum of 1 entries in the latest list (December 2025) of India Top supercomputer (http://topsc.cdacb.in). A

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printout of the list showing the systems supplied by the bidder should be submitted with the technical bid.

9. OEM must have a registered office in India.
10. Bidder/OEM is responsible for integration of the supplied components to provide a fully functional and useful cluster.

- **Warranty**

1. On-site 8x5 NBD Comprehensive Warranty should be provided for 3 Years from the date of Acceptance on Compute hardware, License/OEM supported software if any
2. In case of any replacement during the warranty period the same shall be made free of cost. All the duties/taxes relating to these replacements have to be borne by the supplier.

- **Mandatory documents to be submitted in the technical bid:**

1. Detailed datasheets/brochures of the master node, the compute nodes, primary interconnect switch.
2. A declaration that the bidder/OEM satisfies all criteria listed above under "mandatory eligibility criteria" and "Warranty".
3. Signed OEM (if bidder is not same as the OEM) authorisation letter.
4. Detailed bill of material.
5. Purchase order copies and installation reports as mentioned in "**Mandatory terms and conditions and Vendor (Bidder/OEM) eligibility criteria**".
6. Printout showing the presence (at least 1 entry) of OEM in India Top supercomputer (http://topsc.cdacb.in) list of December 2025 edition.

- **Price bid format**

1. Provide unit prices for each individual component, along with the overall total cost. State the unit price for the master node and for each compute node separately. Include the unit price for 20 TB storage hard drive. List costs for connectors, cables, and other accessories separately.

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