



15 May 2017

Reference number: ChE-27/2017-1

RE: Purchase of high performance computing cluster

The Department of Chemical Engineering, IISc would like to purchase a high-performance computational cluster having a peak performance of 1.0 teraflops per node or above. The CPU proposed should support 16 double precision floating-point operations per cycle. Server chassis/enclosure based solutions, with redundant power supplies at least at the platinum level and configured with redundant fans, and capable of getting mounted on standard 42U (19") rack is desirable. Each of the server nodes should be individually serviceable without shutting down the other server nodes. Proposed servers should be preferably managed by a single network cable at 1 Gbps or higher speed.

Following are the item-wise specifications. Only core components are cited below and bidders are expected to also quote for and supply the necessary unlisted accessories (e.g. LAN, Rail, Software, etc.) that will be required for setting up the complete solution.

1) Compute Nodes with following specifications: Provide quotes for 10 nodes as essential specification. Optional specification of 12 nodes and 14 nodes tender should also be submitted separately.

- a. Broadwell processors with dual socket E5 2680 v4 series or higher with 12 cores or more and 2.4 GHz clock speed or higher.
- b. 128 GB DDR4 memory configured in each compute node (2400 MHz) in fully balanced mode
- c. SAS/SATA hard disk @ 7200 rpm or higher, minimum 2 TB capacity per node. Expandable to a minimum of 3 hot swappable disk drives.
- d. Interconnect: Please quote for EDR or equivalent (100 Gbps speed).
- e. Each node should have at least 1 Gb NIC.

2) Master Node: A separate master node with the same configuration as the compute nodes but with the following additional requirement

- a. Minimum of 3 × 4 TB SATA/SAS HDD
- b. DVD-RW drive
- d. Please provide a separate quote for a rack.

3) Network/Interconnect:

- a. Separate quotes for Infiniband switch with minimum of 24 ports with appropriate number of cables.
- b. A separate 1Gb network switch (minimum 24 ports unmanaged) with appropriate number of cables should be provided for management and administration of the cluster.
- c. Also, all network cables should be listed and supplied.

4) Software: Installation costs should be quoted separately.

Cluster Management Software: Complete cluster installation from standard Open-Source cluster (e.g., Rocks) distribution (including OS, compilers, debuggers, Communication libraries, Mathematical and Scientific Libraries), User account creation and management, NIS and NFS, cluster management tools (e.g., Ganglia), work load management/job scheduler with web interface.

5) General Specifications:

- a) The components of the server/chassis and management/monitoring software must be from OEM and it is preferred that they are from same OEM. The supplier warrants that all the goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the contract.
- b) All the equipment must be compatible with Indian electrical standards/codes
- c) The bidder must carry out installation, commissioning and cabling of all supplied hardware components and software. Installation and commissioning charges, if any, should be quoted in INR.
- d) The hardware supplied must have 3 years onsite comprehensive warranty. Problems escalated must be addressed by the next working day. The warranty period will commence from the date of acceptance of the equipment.
- e) During the warranty period, vendor will have to undertake comprehensive maintenance of the entire hardware, hardware components, equipment, software support and accessories supplied by the vendor at the place of installation of the equipment. The defects, if any, during the guarantee/warranty period are to be rectified free of charge by arranging free replacement wherever necessary. It should be completed within 2 working days for individual server and next working day for central components like power supply, networking and storage after the intimation of fault.
- f) Vendor will be responsible to protect data during any upgrades of firmware/OS.
- g) A letter of commitment for five years with respect to hardware support from the OEM and software support from the OEM should be enclosed in the cover for Technical bid. Offers will be rejected if they are not accompanied by the letter from OEM.
- h) IISc will have the right to impose a penalty of 1% of PO value per week for delay under any of the following conditions:
 - o Delay in delivery of hardware beyond scheduled delivery period.
 - o Delay in successful installations/commissioning of system beyond scheduled period
 - o Delay in fulfilling the Storage Benchmark as stipulated in Technical section.
 - o Any delay in node warranty servicing beyond 2 days will incur a penalty of 0.5% of the total cost per day of delay.
 - o The maximum penalty for non-performance will be 5% of the total cost. On reaching this limit in any year, the bidder will be considered in breach of the contract. The penalty will not apply if the delay is caused by IISc.

6) General terms and conditions:

1. Delivery period will be 6 weeks from the date of opening of LC. Once delivered onsite, the installation, commissioning and acceptance testing period will be within 2 weeks from the date of delivery of equipment. Performance Bank Guarantee (PBG) of a total of 5% of the value of the quoted amount in commercial tender is required. The successful bidder will have to provide PBG. This will be retained until the completion of three years from the date when the installation is completed and warranty begins for the bidder who is successful in getting the order.
2. Entire installation should be done at the proposed site only. Remote control of network will not be given during installation.
3. Technical bid should include all model numbers of master nodes, compute nodes, hybrid nodes, storage nodes (MDS and OSS), InfiniBand chassis switch model, GPU/Accelerator card details, maximum number of port in IB switch and how many ports populated.
4. Provide case logging procedure for both hardware and software failure.
5. 80% of the payment will be made through irrevocable Letter of Credit (LC) with a credit period of 45 days from the date of shipment. The LC will be opened for 80% amount of PO value only after submission of PBG as stipulated at para 1 above. The balance 20% payment will be made subject to satisfactory and successful installation and acceptance certificate issued by IISc.
7. Vendor to quote item wise price. IISc may decide to increase/decrease node count at the time of negotiation based on budget availability. IISc may or may not order the optional items mentioned in the tender.

7) Eligibility Criteria:

The bidder should have set up at least 3 HPC systems in the last 3 years with at least one cluster with 20 TFlops or more. Purchase order copies of previous installations are required.

Bidder should have an office in Bangalore. Please give office address and contact details.

Bidder must quote for the entire solution; partial offers will not be accepted.

8) Submission of Proposal:

The quotation should be in two parts: Part I (Technical bid) and Part II (Commercial bid)

Part I should be put in a sealed cover and superscribed "Technical Bid". Part II should be put in a separate sealed cover and superscribed "Commercial Bid". Technical bid should include the masked price bid (bill of materials). Technical bid should have item wise compliance report of all specifications. The above covers should be put in another cover. This cover should be sealed and subscribed "Bid for High-Performance Computational cluster for Profs. Narendra Dixit and Ganapathy Ayappa (Chemical Engineering)".

The vendor can give multiple configurations (as noted above). The Technical bid should not have any details about pricing. The commercial bid should have pricing for each of the configurations quoted in the technical bid. The offer should be valid for a period of at least 60 days from the last date for submission of quotes.

Prices quoted should be inclusive of all taxes / duties. The prices quoted should be inclusive of delivery of the items to the site and installation at site and should include both rupee and US dollar quotes.

Please note that IISC, being an academic institution with University status, is eligible for customs duty exemption. INR price should be specified with applicable TAX separately.

Wherever multiple options have been offered mention details for each option.

IISc may decide to increase/decrease node count at the time of negotiation based on budget availability. RBI price of dollar on the last date for submitting of tender will be considered for all calculations.

Last date for submission of bids: May 26, 2017, 5 PM

9) Bid Evaluation:

A Technical & Purchase Committee shall deliberate on the bids shortly after the submission. The Committee will adopt a technical followed by a commercial evaluation procedure. Bidders who do not meet technical specifications/requirements will not be eligible for commercial evaluation. The date of the Committee meeting shall be made known to the bidders in sufficient advance. The decision of the Committee will be deemed final.

Sincerely,

A handwritten signature in blue ink that reads "M. Dixit". The signature is written in a cursive style and is underlined with a single horizontal stroke.

On behalf of Profs. Narendra M. Dixit and K. Ganapathy Ayappa (Chemical Engineering, IISc)