

July 9th, 2019

Tender Notice for Supply, Installation, and Commissioning of High-Performance Computing Cluster

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Date: July 9th, 2019

Dear Sir/Ma'am,

The Department of Organic Chemistry, IISc Bangalore wishes to purchase a high-performance computing (HPC) cluster. The detailed specifications are provided below. The vendors are requested to submit their bids in two parts: Technical bid and Commercial bid in separate sealed covers. The technical bid should not include the price. Both bids should finally be put into one envelope, and marked as 'Bid for High-Performance Computing Cluster for Dr. Garima Jindal (Organic Chemistry)'.

1. Date of Tender Opening: **9th July, 2019**
2. Last Date for Submission of queries via email to gjindal@iisc.ac.in: **15th July, 2019**
3. Last Date and Time for Submission of Tender: **July 26th 2019, 5:00 pm**
4. The bids should be addressed to: The Chairperson, Department of Organic Chemistry, Indian Institute of Science, Bengaluru-560012, Karnataka, India
5. The sealed envelopes to be sent to: Dr. Garima Jindal, Department of Organic Chemistry, Indian Institute of Science, Bengaluru-560012, Karnataka, India
6. Validity of quotation: 12 weeks from the last date of tender submission

Technical Specifications

The essential requirements are 320 compute cores, a master node (8 cores) cum storage system (48 TB). The architecture should be scalable. The maximum scalability should be at least 1000 cores for the compute cluster. Vendor should inform about the maximum storage and compute cores possible for expansion in the architecture.

Master Node cum Storage (Quantity: 1)

Processor	Intel Xeon Silver 4215, 8 cores, 2.50 GHz
Form factor	Rack mount server 2U
Motherboard	Uni socket type; model should be specified
Memory	64 GB RAM; All populated DIMMs should be 16GB or 32GB DDR4 2933 MHz ECC Chip
HDD	12 * 4TB, 12 Gbps SAS@7200 rpm (48 TB total)
SSD	2* 256 GB
RAID Controller	High quality hardware Raid Controller with 2 GB cache and a battery backup unit supporting 1, 1+0, 5, 6 levels
Expansion Slots	2 PCIe 3.0*16; should be capable of supporting infiniband/intel omni path
IPMI	Standard IPMI with both web and command line interface (CLI) is required
NIC	2 * 10 Gbps LAN ports with Intel X722 + PHY Intel X557 without consuming PCIe slot
Warranty	Min. 3 years
	Should be capable of supporting infiniband/intel omni path
RPS	The entire solution should have redundant power supplies at least platinum level (94%)

Compute Node (Quantity: 8)

Processor	2* Intel Xeon Gold 6230, 20 cores, 2.10 GHz
Form factor	Rack mount server 2U
Motherboard	Dual socket type; model should be specified
Memory	192 GB per node; All populated DIMMs should be equally populated with 16GB or 32GB DDR4 2933 MHz ECC Chip
HDD	1 TB@ 7200 rpm
Expansion Slots	2 PCIe 3.0*16; should be capable of supporting infiniband/intel omni path
IPMI	Standard IPMI with both web and command line interface (CLI) is required
NIC	2 * 10 Gbps LAN ports with Intel X722 + PHY Intel X557 without consuming PCIe slot
Warranty	Min. 3 years
RPS	The entire solution should have redundant power supplies at least platinum level (94%). Power consumption of the compute cluster and master node cum storage should be provided

Miscellaneous

1. Standard 48-port unmanaged gigabit ethernet switch price to be included in the quotation
2. All required accessories including cables for connectivity must be quoted. Any installation and delivery costs should be quoted separately. C13-C14 type connectors at both ends should be provided.
3. The vendor must specify the cooling requirements for the entire system. All the proposed nodes should be efficiently cooled by a split AC located within a few feet of the nodes. The quote should contain the BTUs produced per hour, both per node and in total by all the nodes, alongside the typical cooling rate for a 2/3 tonnes AC in the same units.
4. UPS requirements for the entire computing system along and ACs should be mentioned. Bidder should mention the UPS capacity; and the backup period (min. 2 hrs).
5. The bidder would be responsible for installation of latest CentOS along with the support of all the necessary source code compilation and configuration tools. The user space (RAIDed on the master node) and software directories will be mounted via NFS.
6. Open source cluster management and monitoring software such as Rocks and Ganglia should be installed. The relevant binaries/source code will be provided, and the compilers to be used (gcc/gfortran or other commercial ones) should be specified at the time of installation.
7. The vendor is responsible for installing quantum softwares such as Gaussian16 and molecular dynamics packages (Amber, Gromacs, ChemShell).
8. The bidders must quote the price of an individual node with the Intel 6230 processor.

Optional items (depending upon the budget)

1. Price of Infiniband/Intel OmniPath along with the necessary accessories (cables, adapter) should be quoted separately. This is an optional item and may or may not be included depending upon the budget. However, there should be a provision in the current cluster to add the Infiniband/intel omni path later.
2. AMC charges after expiry of the warranty period should be specified
3. The number of compute nodes can be increased or decreased depending upon the budget.
4. Price of 42U rack along with necessary accessories (cable managers, PDU vertical strips mounted on the back-side of the rack) should be quoted. The rack should be closed and the sufficient blanks should be quoted to cover the unused front side.

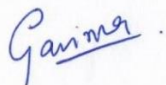
Terms and Conditions

1. All vendors must be registered with the Indian Institute of Science, Bangalore.
2. All prices should be quoted in INR inclusive of all taxes. They should also be inclusive of the delivery of the items to the site as well as the installation at the site. All the applicable taxes should be specified separately.
3. A minimum of three years' on-site parts and labour warranty is required. 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.

4. A letter of commitment for three 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.
5. Non-disclosure of various technical specifications listed above may lead to disqualification.
6. Both the hardware and software components should be from an original equipment manufacturer (OEM). In case the tenderer is an Authorized Partner or Service Provider a valid Agency-ship/Dealership Certificate to quote on behalf of OEM should also be enclosed along with the technical bid. **A document in support of this must be enclosed.**
7. The bidder must provide three references and purchase order copies where they have carried out installations of at least 20 Tflops at research institutions in India. The Purchase Committee shall independently obtain inputs from the provided referees.
8. The bid should be valid for at least 90 days from the last date of submission of the bids.
9. The bidder should have installation/service center base in Bangalore for such units. Kindly provide details of Karnataka Registration and Office Address.
10. A Technical & Purchase Committee shall deliberate on the bids shortly after the submission. The date of this meeting shall be made known to the bidders in sufficient advance. The decision of the Committee will be deemed final.
11. If a bidder wins the order, the payment for the product shall be made to the winning bidder after delivery, set-up, and satisfactory verification of the product components. Any component errors detected at the time of the OS installation should be promptly rectified, and the warranty period should be correspondingly extended.
12. IISc will have the right to impose a penalty of 1% of PO value per week for delay under any of the following conditions:
 - Delay in delivery of hardware beyond scheduled delivery period.
 - Delay in successful installations/commissioning of system beyond scheduled period
 - Delay in fulfilling the Storage Benchmark as stipulated in Technical section.
 - Any delay in node warranty servicing beyond 2 days will incur a penalty of 0.5% of the total cost per day of delay.
 - 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.
13. The competent authority reserves the right to reject the tender without assigning any reasons thereof.

With regards,



Dr. Garima Jindal