Inquiry No.: CHE/JKS/2017/001 *Date: 06/02/17*

Quotations are invited for ***COMPUTER CLUSTER.***

*Please submit quotations (*Technical and Commercial*) for the following item for the up gradation of an existing cluster:*

S. NO	Description	Quantity
1.	Master node	1
2.	Compute servers	3

The quotation should indicate make delivery period, exact taxes applicable, installation charges warranty etc. Please mention VAT/ST/CST Registration numbers on the quotation, proforma invoice and bills.

The Tender Technical Bid *(*Part 'A'*) and* Commercial Bid *(*Part 'B') should be submitted in two separate *sealed envelopes duly subscribing our enquiry reference and due date in bold letters, addressed to*

Prof. Jayant K. Singh
Department of Chemical Engineering,
IIT Kanpur-208016

***Due Date for submitting your offer is on or before 17.00 hrs.* 22.02.2017**.

Technical Specifications and Conditions

Hardware:

ITEM 1: Head Node

1. Master Node	**Qty: 1 Unit**
Technical Specifications	
Processor(s)	2 x Intel® Xeon E5-2630V4 processors (10-Core, 2.2GHz, 25M L3 Cache) or better
RAM	128GB DDR4-2133 ECC RDIMM (at least 16 DIMMs or more)
RAID	On board or AOC Hardware SAS RAID Controller with RAID levels 0,1, 10, 5,& 50 supported
SSD(s)	1 x 1.2TB Non Volatile Memory Express based Enterprise SSD - Intel Make only (SSD Model to be specified in the bid)
HDD(s)	8 x 4000GB, 7200 RPM Enterprise SATA hot-pluggable HDDs at least 8 x 3.5" Hot-swap HDD bays or more
NIC	Dual Port Gigabit Ethernet ports thru on board NIC controller with dedicated IPMI port with required license
Interconnect	Single Port 40Gbps or better Infiniband port thru HCA or on board
Graphics	On-board graphics using server grade graphics controller
Exp Slots	3 PCI-E 3.0 x16 , 2 PCI-E 3.0 x8 slots or more
Management	On-board IPMI 2.0 with dedicated LAN and KVM over LAN support with required license for activation
Chassis &	Max 2U rack-mountable with sliding rails, minimum 2 x 700W, 1+1 redundant, hot-plug
P. Supply	power supplies (80PLUS Certified) with 80 plus report attached

ITEM 2: Compute Server

Form Factor	1U/2U Maximum, rack-mountable with sliding rails. One chassis should contain one node only.
Processor	2 x Intel Xeon® E5-2650V4 processor (12C/30MB Cache, 2.20 GHz)
RAM	128GB DDR4 @2133/2400MHz ECC RDIMM (up to **512** TB , at least **8** DIMMs)
Storage	1 x 1 TB Enterprise SATA 7200 RPM HDDs
Ports	2x Gigabit Ethernet Port and1 x 40Gbps or better Intel Infiniband Port.
Slots	Total 1x PCIe 3.0 slots or more
Power Supply	Redundant and Hotplug with 80 PLUS Certified Power Supplies
Management	Management Port should be provided

ITEM 3: Infiniband QDR Switch - 1

1. 12ports Intel 4X QDR Infiniband switch configured in 100% non-blocking Fat Tree Topology to support servers in solution (40Gbps) Single or Dual Port High Speed Interconnect Card, Infiniband or Intel OPA
2. Compatibility with OFED (OpenFabric Infiniband stack), OpenSM and OpenMPI; should provide full quoted performance on open source software (Linux-OFED-OpenMPI)
3. 19" rack mountable.
4. All software/firmware/drivers should be supplied.
5. Appropriate length QSFP Cable to be supplied. Numbers and length should be specified in the quotation.
6. Official OEM support to be included for Infiniband Switch for all three years of warranty.

ITEM 4: Ethernet switch - 1

1. 24 Port or higher port 10/100/1000 Mbps Ethernet switch with auto sensing of link speed on all ports
2. 19" rack mountable
3. Appropriate length cables to be provided; numbers and length should be specified in the quotation.

ITEM 5: Warranty and technical support:

1. Cluster management and support for 3 years
2. Hardware Warranty for 3 years

ITEM 6: Scope of Work with Deliverables to be part of implementation:

1. Physical Verifying Hardware items in Bill of Material
2. Rack mounting all the Hardware and Connecting Power cables, Ethernet cables to all the nodes
3. Hardware Installation Compute Nodes, switches
4. Installation and configuration of Linux Cluster OS (compatible with HPC environment) and Cluster Toolkit and compute Nodes

5. Installation of OpenPBS, and Configuration of Scheduler, queues, users and policies; policies to be discussed with IITK before installation process and implemented.

Installation of Compilers & Libraries

6. Installation and Integration of Intel compilers (Academic version)
7. Installation and Integration of Open Source compilers and libraries
8. Testing and Verification of Complete setup functionality

Application

9. Applications Testing

Benchmarking

10. Demonstration of HPL Benchmark performance of minimum 70-75% on CPU

Training and Documentation

11. Cluster Usage Training & Scheduler training to End Users
12. Documentation
13. Project final Sign-off

ITEM 7: Technical Conditions:

1. Itemized price list for each hardware item, software bundle and service and warranty to be given separately and clearly.
2. Benchmarking report of LAMMPS, GROMACS, and CPMD scripts should be reported for the proposed server.
3. Minimum downtime with next business day reporting on-site.
4. Server OEM should have minimum 2 installations in top 500 supercomputing and should have support center either directly or thru authorized legal distributor/service partner in either Kanpur/Lucknow/Delhi. Documentation to be submitted for the same.
5. Bidder should have registered support center in either Kanpur/Delhi/Lucknow. Documents to be submitted
6. Bidder should have deployed at least five compute clusters of 24 or higher number of nodes, in India in last six years. Details of these previous installations must be provided. If the vendor falls short of satisfying the above criteria but has tie-up with an Original Equipment Manufacturer (OEM), the OEM then should have met the above criteria in

India. In addition, OEM/Bidder should provide a guaranty for clustering and also for application software integration and bidder must prove the previous experience of deploying HPC by submitting at least three reference purchase orders from IITs, IISERs,DRDO labs,CSIR Labs .

7. Bidder should have authorization letter from server vendor for specific tender.
8. The bidder should be financially sound to execute the order, its annual turnover of at least 10 Crores each in the last three financial years.
9. International OEM with 2 entries in the top500 (www.top500.org) list latest by November 2016 release should only quote.
10. Entire solution to be implemented in 12 weeks' time line. Delay in delivery will have penalty of 0.5 % of order value per week to total of 5% of order value. IITK reserve the right to cancel the order if it is not deployed even after that.
11. Delay due to IITK will not be considered in computing time.
12. The Bidder should give the power and cooling requirements for the cluster solution along with the proposal.
13. The vendor is also required to maintain integration of licensed software (if any) with the cluster throughout the warranty period.
14. The Unit Prices should be quoted for every component and the prices can be in INR or in valid foreign currencies (e.g. US Dollar). For INR quotations, delivery should preferably be up to IIT K. For foreign currency quotations rates must be for CIF New Delhi. Sales Tax, VAT and any other applicable charges should be mentioned.
15. Vendors are required to quote per node cost for compute server.
16. Quantity may increase or decrease at the discretion of IIT.
17. Installation and maintenance (for **three years**) should be explicitly mentioned in the financial and technical bids.
18. Equivalent (or better) hardware/software can be allowed at the discretion of IIT Kanpur. However, in such cases, the Bidder must provide sufficient justification for the deviation from the specifications given here.
19. Warranty and support period (minimum 3 years on-site) should be mentioned.
20. Terms and Conditions, and deviations should be clearly stated with the signature of the responsible person.

Important Dates:

Date of issue of this inquiry: 06 February 2017

Last date for receiving quotations: 22 February 2017

Contact Address:
Prof. Jayant K. Singh
Professor
Department of Chemical Engineering
IIT Kanpur-208016, India
Office: +91-512-2596141
Email: jayantks@iitk.ac.in