Satyendra Nath Bose National Centre for Basic Sciences
Sector-III, Block – JD, Salt Lake, Kolkata – 700098

TENDER NOTICE

Notice No. (SNB/PUR/07/19)   Date: 08/03/2013

Tenders are invited in a sealed enclosure in a two bids format: Technical Bid & Price Bid for supply, installation, testing & commissioning of HIGH–PERFORMANCE COMPUTING CLUSTER system at the Centre. Complete tender bids should reach the office of Registrar, S. N. Bose National Centre for Basic Sciences, JD Block, Sector III, Salt Lake, Kolkata -700098. The last date of submission of tenders is 28/03/2013. The envelopes should be superscribed with the words "Quotation for HPCC" along with tender reference number. The main envelope should contain two separate sealed envelopes: Technical Bid and Price Bid, superscribed accordingly.

Technical Specifications:

1.	System Architecture	Tightly integrated cluster with **Power7** processor at **3.55** GHz or higher, connected through Mellanox **QDR** Infiniband / **AMD Opteron (Abu Dhabi)** processors at **2.5** GHz or higher, connected through **Gemini** interconnect. Both blade and rack based architectures are acceptable. There should be provision to use few nodes of the machine for running serial jobs and/or for high throughput visualization.
2.	Compute Power	A base system of at least 75 teraFLOPS of peak performance or higher [>60 teraFLOPS sustained compute power on HPL (turbo off)].
3.	Operating System	64-bit Linux server version with support.
4.	Compute Nodes	The compute nodes should be either blade based with blade enclosure or chassis based with chassis enclosure designed for HPC solution. Node should be hot pluggable with RAS features.
5.	Memory	At least 2 GB per core DDR3 at 1333 MHz or better (1600 MHz would be preferred). Option may be provided for a few fat nodes with at least 4 GB per core DDR3 at 1333 MHz or better (1600 MHz would be preferred).
6.	Application Benchmarking	The vendors should run the following application benchmarks: 1. VASP 2. NAMD 3. LAMMPS Benchmarking should be carried out based on the input obtained from **sajeev.chacko@bose.res.in** At least for 2 out of the 3 benchmarks, the following performance criteria should be achieved on a machine with $1/3_{rd}$ (one-third) the performance of the proposed machine, i.e. with ~25teraFLOPS for a 75 teraFLOPS solution: **a**. Should achieve a timing of 2800 sec (or better) on VASP for the given input. **b**. Should achieve a timing of 1400 sec (or better) on NAMD for the given input. **c**. Should achieve a timing of 60 sec (or better) on LAMPPS for the given input. The vendor should provide benchmark output as described in the benchmarking instruction given below: Benchmarking should have at least 3 data points. Benchmarking should be completed in all respects as entailed in instructions for each benchmark case.

7.	High Performance Linpack (HPL) Benchmarking	The vendor should report the best HPL performance and efficiency on the base system proposed with turbo mode off.
8.	Compilers	PGI or XL compiler consisting of C, C++ and FORTRAN 77, FORTRAN 90, and FORTRAN 95 with at least 10 user floating license for each.
9.	Software tools	Software tools namely MPI OpenMP, SHMEM and other libraries/development kit required to run jobs should be quoted with minimum of 10 user licenses, wherever applicable.
10.	Management software	Management software stack consisting of cluster management/ system management etc should be quoted. All software must be supported by OEM/ISV.
11.	Job/Workload Management tool	The solution must include job scheduler as a separate line item with appropriate no of tokens/licenses for the entire system.

Login Nodes (2 units dedicated)

12.	Configuration	2 dedicated units of configuration: AMD Opteron at 2.5 GHz / Power7 at 3.55 GHz or higher
13.	Other Nodes (Managing, head, monitoring)	Vendor must design and quote appropriate number of nodes to integrate the cluster solution to meet their proposed design of HPC system.

Storage and Backup:

14.	Storage and Backup	Storage sub-system with active-active at least one controller hardware RAID array. Minimum of usable 200 TB capacity of storage in RAID 5 layout. Native IB attached storage (FDR preferred / QDR acceptable). Separate data and metadata storage. Redundant power supplies and fans. No single point of failure in entire storage solution. There should be a provision for backup.
15.	RAID Support	1, 4, 5, 6
16.	Individual Disk	3 TB or higher capacity enterprise class SATA at 7200 RPM or better
17.	Parallel Filesystem	Luster 1.8.6 or newer based Parallel file system, or General parallel file system.
18.	IO nodes	One number of OSS servers with dual socket (AMD Opteron at 2.2 GHz or Power7 at 3.55 GHz or higher), 64-bit Linux server version with support, High Availability features, 128 GB DDR3 RAM, dual redundant disks (2x300 GB) for OS boot (mirror), 2 x dual port QDR Infiniband or Gemini, Gigabit Ethernet port for cluster administration network. One number of MDS servers with dual (AMD Opteron at 2.2 GHz or Power7 at 3.55 GHz or higher), 64 bit Linux server version with support, High Availability features, 128 GB DDR3 RAM, dual redundant disk (2x300 GB) for OS boot (mirror), dual port 8 Gbps FC for connectivity to metadata storage, dual port QDR Infiniband or Gemini, Gigabit Ethernet port for cluster administration network.

Warranty, training, Support, Site and Power Requirements:

19.	Warranty	5 years of comprehensive on-site warranty.
20.	Training	Two weeks of onsite training on system administration, storage management and usage of the HPC server must be provided to SNBNCBS team.
21.	Site requirements	Detailed site preparation document should be given. Details of power consumption, heat dissipation and cooling requirements should be specified. Space requirement should be specified. Details of noise generation by the system should be given.
22.	Power rating and Heat dissipation	The power rating of the compute machine should be less than 100 kW with around 220 kBTU/hr cooling requirement. The power rating/heat dissipation should not deviate more than 10%.

Additional Softwares:

> Apart from what is mentioned under no. 11, installation and porting of softwares and libraries such as VASP, CHARMM, TRIQS, GAUSSIAN, LAMMPS, GROMACS, OCTOPUS, CPMD, ABINIT, QUANTUM EXPRESSO, BLAS, LAPACK, ScaLAPACK, FFTW is required

For any clarification regarding technical specifications, etc. please send your queries to Dr. Sajeev Chacko (**sajeev.chacko@bose.res.in**).

Price Bid:

The financial bid indicating item-wise price for the items mentioned in the technical bid should be kept in a separate sealed envelope duly superscribed as "PRICE BID" on the outer cover of the envelope. ***The incremental cost along with all necessary hardwares, licenses, and software components with technical details for enhancing the system in a step of size 5 teraFLOPS sustained HPL to scale the peak performance upto 100 teraFLOPS should be quoted separately.***

PRICE: Price to be quoted should be based either on CIF Kolkata Airport basis or FOR S. N. Bose National Centre for Basic Sciences. The quotation once submitted will not be allowed to be withdrawn.

BID SECURITY:
1. An Account Payee Demand Draft/ Pay Order for Rs. 2,00,000/-(Rupees two lacs only) drawn in favor of "S. N. Bose National Centre for Basic Sciences" is to be furnished along with Technical Bid as Bid Security money (or EMD). The quotation will not be accepted without EMD/security deposit.
2. The Demand Draft/ Pay Order for the Bid-Security money should have at least 90 (ninety) days validity.
3. The Bid Security of unsuccessful bidders will be returned without interest.
4. The Bid security/EMD will be returned without interest to the successful bidder after the successful installation and commissioning of the system.
5. The Bid security/EMD deposited by the vendor will be forfeited for any deviation from the tender document.

Payment: 50% of the award price will be released after successful installation & commissioning of the system at the Centre and completion of all contractual obligations of the supplier; the balance 50% payment will be released after one year from the date of first payment.

Vendor Eligibility:

The participating vendors must be OEM or OEM authorized single vendor, only with original authorization certificates from the OEM. The service provider should be OEM or OEM authorized single vendor. Vendors should have proven experience in setting up a minimum of three HPCC with at least one at 20 TFLOPS (peak) in India and at two others at 100 TFLOPS (peak) elsewhere. A brief proof for such experience (copies of orders/installation certificate/performance certificate) should be provided in technical bid envelope. The technical committee's decision regarding the suitability of the technical specification will be judged on the basis of benchmarking, power efficiency, heat generation etc. and will be final and binding on the bidders.

General Instructions:

a. Incomplete & conditional tenders and tenders received after the due date will be summarily rejected without assigning any reasons thereof.

b. **Installation/Commissioning/Demonstration/Application Training at site:** Free of cost by the supplier. The vendors are required to give specific time required for installation, fine-tuning of the cluster and hand-holding/training of the principal users in the technical bid.
   Service facility: Suppliers should mention their details of service setup and Manpower in Kolkata who are responsible for after sales support. Experience and qualification of service engineers appointed by the tenderer are to be stated. Response time should be within 24 hours.

c. **Validity of tender:** Tender submitted shall remain valid at least for three months. Validity beyond three months from the date of opening the tender shall be by mutual consent.

d. The tender should accompany a compliance chart.

e. The rate should be inclusive of all taxes, transportation etc. Nothing extra will be paid in addition to the quoted rate.

f. The model number, make, and a printed literature of the offered product shall be submitted positively in the technical Bid.

g. Proposed delivery schedule should be mentioned clearly. The delivery, installation, and commissioning of the system should be completed within 6-8 weeks from the date of order, failing which the vendor has to pay a penalty of 0.5% per week of the total PO vaue. The maximum amount of penalty shall be 10% of the total PO value.

h. Guarantee certificate, users manuals etc. are to be handed over to the user after successful commissioning of the system.

i. The Institute shall not be responsible for delay, loss or non-receipt of the tender through post.

j. The aforesaid Open Tender is being issued with no financial commitment and purchaser reserves the right to change / vary any item or items thereof at any stage.

k. No tenderer shall be entitled for any compensation what so ever for rejection/non consideration of his tender.

l. Invitation of tender does not constitute any right or claim for issue of purchase order to the tenderer.

m. Only Price Bids will be opened in presence of the bidders or their authorized representatives who choose to attend on the date and time informed to them after opening of technical bids and its evaluation. The technical bids will opened internally and evaluated by the technical committee and if required clarifications will be obtained through email, fax, phone etc. from the tenderers.

n. The Centre will not be responsible for any misprinting by the news papers concerned and inaccessibility of the downloading facility for any reason whatsoever and in that case the tenderer(s) should contact to the tendering authority to verify the fact in case of confusion.

o. If any information furnished by the tenderer is found incorrect or false at a later stage he shall be liable to be debarred from ordering / tendering.

p. In case of any dispute, the decision of the competent authority of the Institute shall be final and binding on the bidders.

q. For any clarification regarding technical specifications, etc. please send your queries to Dr. Sajeev Chacko (**sajeev.chacko@bose.res.in**).

Arbitration:
- Except as otherwise provided elsewhere in the contract or tender document, if any dispute, difference, question or disagreement or matter whatsoever, shall, before and after extended period, hereafter arises between the parties, as to the meaning, operation or effect of the contract or out or relating to the contract or breach thereof, shall be referred to sole Arbitrator to be appointed by the Director of the Centre at the time of dispute.
- It is a term of the contract that the party invoking arbitration shall specify all disputes to be referred to arbitration at the time of invocation or arbitration under the clause.
- It is a term of the contract that the cost of arbitration will be borne by the parties themselves equally.
- The venue of arbitration shall be Kolkata.
- Subject as aforesaid the provisions of the Arbitration and Conciliation Act 1996 and any statutory modification or re-enactment thereof rules make hereunder and for the time being in force shall apply to the arbitration proceeding under this clause.

IMPORTANT INFORMATION

Institute reserves the right to reject any or all tenders without assigning any reason thereof.

Decision of the technical committee is final and incontrovertible regarding the qualification of technical bids.

All pages of this tender document duly sealed & signed by the authorized signatory of the bidder / tenderer is to be submitted along with technical bid as acceptance of terms & conditions mentioned herein above.

                                                                        REGISTRAR