

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A & 2B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032

NIT No. : IACS/SCS/AD/2018-19/95

Date: 14/02/2019

Sealed tender in two bids system (technical bid and price bid) is invited from bonafide, resourceful and eligible manufacturer/exclusive distributor/vendors for **High Performance Computer Cluster with Intel Processors and NVIDIA Graphics Processing Units.**

Part-I (Technical Bid) of the tender should contain technical specifications in detail as well as commercial terms and conditions. Part-II (Price Bid) should clearly indicate group-wise price, if needed, as mentioned in the technical bid. The Technical Bid and Price Bid are to be submitted in separately sealed envelopes, distinctly marked accordingly and both to be put inside another envelop, that should be sealed and superscribed with tender notice number and due date. The bidders may submit bids duly signed in their own letterheads.

Completed tender bids should reach the office of the **Registrar, Indian Association for the Cultivation of Science (IACS), 2A & 2B Raja S. C. Mullick Road, Jadavpur, Kolkata-700032** strictly according to the time table provided below:

Tender Notice No.	NIT No. IACS/SCS/AD/2018-19/95 Date: 14-02-19
Last date and time of submitting tender	07.03.2019 before 4 pm
Pre-bid meeting(date, time & place) to discuss technical specification	21.02.2019 at 3pm at IACS, Kolkata
Date and time of opening tender (Technical Bids)	07.03.2019 at 5 pm
Place of opening tender	Computer Center, IACS
Date and time of opening of Price Bid	To be intimated later. The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.
Contact	Email: spad@iacs.res.in , tpad5@iacs.res.in Tel.+91 33 2473 4971 [Ext2105, 2757]

The technical bids will be opened first to judge/evaluate the technical specifications of the said instrument and thereafter the price bids of only technically qualified bidders will be opened.

Technical Bid Evaluation: The Technical Bids will be evaluated in the presence of the representatives of intending bidders who will be able to clarify technical aspects of their bids, if any, required by the Technical Evaluation Team.

Opening of price-bid: The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.

Please note that IACS will not provide any accommodation or reimburse any expenses to any of the bidders for attending opening of technical bid.

Quotations received incomplete or beyond the stipulated time will be summarily rejected.

Bidders should submit their past experience for supplying and successful installation of similar units to other research Institutes/Universities/other organizations in India and abroad. Please provide documentary proofs of such successful installation and supportive documents that the instruments are running successfully.

1. TECHNICAL BID

The technical bid should contain technical specifications and should be kept in a separate sealed envelope duly superscribed as 'TECHNICAL BID' on the outer cover of the envelop as already detailed above. **It should be clearly mentioned on the envelope as "Technical Specification for High Performance Computing Clusterwith Intel Processors and NVIDIA Graphics Processing Units".**

Technical Specification for High Performance Computing Cluster:

(i) Compute NODE Type1: Nos. needed : 28	
Processor	2 X Intel Ten core 2.4GHz E5-2640V4 25M processors Or higher
Memory	64 GB 2400 MHz DDR4-2133 ECC RDIMM
Storage	2 TB Enterprise SATA 7200 RPM
Chipset	Compatible Industry Standard Intel Chipset
Core/Thread	10 core/ 20 threads
Chassis	Effective form factor less than or equal to 1U
Power Supply	Redundant Industry Standard Platinum Level

(ii) Compute NODE Type2: Heavy Memory. No.s needed : 4	
Processor	Intel Six core 3.6GHz E5-1650 V4 15M processors Or higher
Memory	256 GB 2400 MHz DDR4-2133 ECC RDIMM
Storage	2 TB NVME
Chipset	Compatible Industry Standard Intel Chipset
Core/Thread	6 core/ 12 thread
Chassis	Effective form factor less than or equal to 1U
Power Supply	Redundant Industry Standard Platinum Level

(iii) Compute NODE Type 3: Heavy Memory No needed : 2	
Processor	2 X Intel Twelve core 2.2 GHz E5-2650V4 30M processors Or higher
Memory	256 GB 2400 MHz DDR4-2133 ECC RDIMM
Storage	2 TB NVME
Chipset	Compatible Industry Standard Intel Chipset
Core/Thread	12 core/ 24 thread
Chassis	Effective form factor less than or equal to 1U
Power Supply	Redundant Industry Standard Platinum Level

(iv) Compute NODE Type 4: CPU-GPU No.needed : 1	
Processor	2 x Intel E5-2620 v4 (8 core 2.1 GHz 20 MB cache) Or higher
GPU	2 x NVIDIA TESLA P100 GPU with 16 GB memory and NVLINK
Memory	4 x 16 GB 2666 MHz DDR4 ECC Registered DIMM
Storage	2 TB Enterprise SATA 7200 RPM
Chipset	Compatible Industry Standard Intel Chipset
Core/Thread	8 core/ 16 threads
Chassis	Effective form factor less than or equal to 1U
Power Supply	Redundant Industry Standard Platinum Level
Intranode link for GPU	NVLINK connection between the two GPUs

(v) Compute NODE Type 5: CPU-GPU No.needed : 1	
Processor	2 x IntelE5-2620 v4 (8 core 2.1 GHz 20 MB cache) Or higher
GPU	2 x NVIDIA TESLA V100 SXM2 GPU with 32 GB HBM2 memory
Memory	4 x 16 GB 2666 MHz DDR4 ECC Registered DIMM
Storage	2 TB Enterprise SATA 7200 RPM
Chipset	Compatible Industry Standard Intel Chipset
Core/Thread	8 core/ 16 threads
Chassis	Effective form factor less than or equal to 1U
Power Supply	Redundant Industry Standard Platinum Level
Intranode link for GPU	NVLINK connection between the two GPUs

(vi) Head NODE: No. needed : 1	
Processor	2 x Intel E5-2620 v4 (8 core 2.1 GHz 20 MB cache)
Memory	64 GB 2400 MHz DDR4-2133 ECC RDIMM
Storage	4 X 4 TB Enterprise SATA 7200 RPM
Chipset	Compatible Industry Standard Intel Chipset
Core/Thread	8 core/ 16 thread
Chassis	Effective form factor less than or equal to 2U
Power Supply	Redundant Industry Standard Platinum Level

(vii) INTERCONNECT and MANAGEMENT	
Ethernet	1 x 48 port Gigabit Ethernet Switch
	48 x RJ45 Ethernet Cables
Omni-Path	1 x 48 Port 100 Gb/s Omni-path Switch
	37 x Omni-path Cards
	37 x Omni-path Cables
KVM	48 Port USB KVM Switch
	37 x KVM Cables
Monitor, Keyboard, Mouse	22" LED/LCD Monitor, USB Keyboard, USB Mouse Or 1U Console with LED/LCD Monitor, Keyboard and Trackpad

(viii) Compilers	
Intel cluster suite with appropriate license	
CUDA aware MPI on Intel compiler	
GPU RDMA (CUDA 6.0 or higher)	

(ix) UPS and power backup	
Technology	IGBT based double conversion type
Power factor	0.9
Capacity	30 KVA
Redundancy	3+1
Backup time	10 mins

(x) 42 U Rack with powerstrips to house the HPC solution.

Also To be Supplied by the Vendor:

(i) Operating System: Open-Source stable Linux distribution (latest CENTOS stable version or equivalent).

(ii) Scheduling Software: Open-Source stable Linux based job scheduler. The vendor should have the ability to create different user groups with different job privileges.

(iii) Warranty: Three (3) years on-site OEM warranty for all components and parts and labor. The warranty period will commence from the date of certification of successful installation of the equipment.

(iv) Installation and Commissioning: Free of cost at IACS, Kolkata. The vendors are required to give an estimate of the time required for installation fine-tuning of the cluster and hand- holding/training of the principal users in the technical bid. The vendor shall be responsible for setting up of High Performance Linux Cluster using CENTOS Linux distribution or equivalent (to be provided by vendor).

The vendors should install:

- i) NVIDIA CUDA SDK
- ii) Standard quantum chemistry software (Q-Chem, Molpro, Orca). Software will be supplied by the users.
- iii) Python (latest version), including numpy, scipy, mpi4py
- iv) OpenMPI
- v) Standard molecular dynamics software: NAMD, GROMACS, LAMMPS. Software will be supplied by the users.

The vendor must supply battery rack for the UPS and power backup.

Vendor Eligibility:

(I) The bids must be submitted by OEMs or vendors quoting single OEM products (one vendor one OEM) only with original authorization certificates from the OEMs. **Vendors should have proven experience in setting up an HPCC of minimum of three 10 TFLOPS in the last three years in India. OEMs should have proven experience in setting up a HPCC of minimum 100 TFLOPS in the last three years in India.** A brief proof for such experience (copies of user satisfaction certificates along with machine configurations) should be included in the technical bid.

(II) Vendor should be responsible along with OEM in providing support (software and hardware) for the machine during the warranty period. Hence the vendor should be the service provider and OEM would

provide the parts. Vendor should provide that they have technical know-how to troubleshoot and provide proper service.

(III) Vendor should have service engineers stationed at Kolkata and should respond to service calls within 24 hours of receiving a notice from IACS. Additionally, the vendor (service provider) should have an office in Kolkata. The vendor has to provide contact details of service engineers and its office in Kolkata. Service call resolution including replacement of parts should occur within 5 business days of receiving the service call.

(IV) It will be highly desirable if the vendor has proven capability to install some commonly used quantum chemistry programs like Gaussian, ADF, Gamess, Polyrate, NWChem, DeMon2K, VASP, Quantum Espresso. Parallelized installation of academic codes like Gaussian 09 TCP Linda is highly desirable.

Additional Information to be furnished by the vendor:

(i) Power, Heating and Cooling: Power consumption and heat dissipation estimate for the total cluster should be mentioned clearly

Additional Requirements:

(i) **Compliance List:** The vendor must submit a table indicating the compliance of the features of the model of the components being quoted with those given in the indent. In case of non-compliance against a particular item, the vendor should justify that.

(ii) **Training:** Free training on operation, maintenance and troubleshooting of the whole HPCC Solution should be imparted to at least 2 persons for a period of one week at the site of installation.

(iii) **Post-sale service:** The vendor must submit the names of the service engineers employed by them who are competent to serve the HPCC installation along with their contact details in India.

****Please Note: The decision of the Technical Committee on technical competence and eligibility of any technical bid submitted by any vendor would be final and cannot be contested.**

Warranty: 3 years on site extendable warranty.

A list of other places where the instrument has been installed should also be provided.

A compliance table (see below) must be prepared and submitted along with the technical bid.

Sr. No	Tender specification	Your offered instrument specification	Extent of compliance

Tender will not be accepted if the technical compliance chart is NOT provided following the above format.

2. PRICE BID

The financial bid indicating (item-wise, i-x) price for the item(s) mentioned in the technical bid should be kept in a separate sealed envelope duly super scribed as 'PRICE BID' on the outer cover of the envelope as already detailed above. The L1 bidder will be decided taking into account the sum of the prices of all the 10 items. Price bids of only technically qualified bidders will be opened, and they will be intimated the date and time of the opening of price bid at their e-mail ids. Rest of the bids will stand rejected.

PRICE: Price to be quoted in US dollars on CIF Kolkata basis.

3. BID SECURITY:

An Account payee Demand Draft of any of the Commercial Banks for Rs. 2,50,000 (Rupees Two lacs and Fifty Thousand only) drawn in favour of **“Indian Association for the Cultivation of Science (State Bank of India, Jadavpur University Branch, A/C No. 11079699211, IFSC: SBIN000093, MICR Code: 700002048)”** is to be furnished by the bidders alongwith Technical Bid, except Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organisation or the concerned Ministry or Department.

Alternatively, the bidder shall have the option to furnish EMD in the form of Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks. The Bid-Security should have at least 90 (ninety) days validity period beyond the final bid validity period.

In case of non-award of the work the Bid Security money would be returned to the unsuccessful Bidders.

4. PERFORMANCE SECURITY:

An Account Payee Demand Draft on any commercial bank of India or Bank Guarantee (BG) of any Commercial Bank of 10% of the order value in the name of “Indian Association for the Cultivation of Science” is to be furnished by the successful bidder as Performance security. Performance security money should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Bid security money or EMD will be refunded to successful bidder on receipt of the Performance security money.

5. TERMS OF PAYMENT :

Payment will be made through irrevocable Letter of Credit in two instalments. 90% of the money will be released on submission of shipping of documents. Remaining 10% will be released after successful installation of the instrument and receipt of Performance Security.

6. GENERAL INSTRUCTIONS :

1. Validity of tender: Tender submitted should remain valid for at least six months from the date of opening the tender. Validity beyond six months from the date of opening of the tender shall be lapsed by mutual consent.
2. The tender should accompany a compliance chart.
3. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof.
4. At any time prior to the bid due date, IACS may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder during pre-bid meeting, modify the bidding documents. The amendment(s) will be notified on the institute website. Prospective bidders are advised to occasionally visit the website (www.iacs.res.in/tender) for any amendment.
5. Installation/Demonstration/Application training at site: Installation & user training at IACS, free of cost by the supplier.
6. Service facility: In India, preferably Kolkata, supplier should mention their details of service setup and man powers who are responsible for after sales support. Response time should be within 24 hrs.
7. The model number, make and a printed literature of the product should be submitted positively.
8. Proposed delivery schedule should be mentioned clearly.

9. Manufacturers / exclusive distributors / vendors should have history of supplying this type of instruments to this or other scientific organizations. Availability of a list in this regard would be preferred.
10. Authorized dealership certificate should be provided in case of principal manufacturing company is not quoting directly.
11. Guarantee certificate, users manuals etc. are to be handed over to the user after successful commissioning of the system.
12. In the event of date being declared a closed holiday for purchaser's office, the due date for submission of bids and opening of the technical bids will be the following working day at the appointed time.
13. In case of any dispute, the decision of IACS authority shall be final and binding on the bidders.
14. In case of any litigation the matter will be dealt within the jurisdiction of the High Court of Calcutta only
15. For any clarification regarding technical specifications, information etc., please send your queries to Prof.AyanDatta (spad@iacs.res.in) and Dr. Arnab Das (tpad5@iacs.res.in).
16. The authority of IACS reserves the right to reject any or all of the tenders received without assigning any reason thereof.

Acting Registrar