

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
Jadavpur, Kolkata - 700032

(Tender Notice No. IACS/SCS/AD/120)

Sealed Tenders are invited for a High Performance Computing Cluster for CCRES. For details, please visit our website: www.iacs.res.in

REGISTRAR

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2 A & B RAJA S. C. MULLICK ROAD

JADAVPUR, KOLKATA – 700032

Invitation for Tender for Supply of a High Performance Computing Cluster for CCRES

(Tender Notice No. IACS/SCS/AD/120)

Indian Association for the Cultivation of Science invites Sealed Tenders for purchase of a **High Performance Computing Cluster (HPCC) in CCRES**

The bids have to be submitted by the vendors (one vendor per OEM) in Two-Bid pattern i.e. **Technical Bid** and **Price Bid** in two separate sealed covers distinctly marked accordingly and both to be put inside another envelope, which should be sealed and super scribed with '**High Performance Computing Cluster Tender under CCSRES' Tender Notice No., Due date and time of opening**. Two bids i.e. Technical Bid and Price Bid should be identical in all respects except that the Technical Bid should have blank space at the places where prices have been quoted in the Price Bid. *The vendors should mention their queries in the pre-bid meeting to be held before the tender submission date.* In case the scheduled date of opening of tender is declared as holiday, the tender will be opened on the next working day at 3.00 P.M. The technical bids will be opened first to evaluate the technical specifications of the equipment and the price bids of the technically qualified companies only will be opened thereafter.

Interested vendors may please send their Bids to:

(a) Prof. Ayan Datta, School of Chemical Sciences, Indian Association for the Cultivation of Science, Jadavpur, Kolkata -700032. Email: spad@iacs.res.in +91-33-24734971 (Ext 2105)

(b) Prof. Debashree Ghosh, School of Chemical Sciences, Indian Association for the Cultivation of Science, Jadavpur, Kolkata -700032. Email: pcdg@iacs.res.in +91-33-24734971 (Ext 1103)

Tender Notice No.	Tender Notice No. IACS/SCS/AD/120
Last date and time of submitting tender	February 16, 2022 at 3:00 p.m.
Pre-bid meeting to discuss technical specifications	February 11, 2022 at 3:00 p.m.
Date and time of opening tender	February 16, 2022 at 4:00 p.m.
Place of opening tender	I.A.C.S., Kolkata
Contact	Email: spad@iacs.res.in ; pcdg@iacs.res.in +91-33-24734971 (Ext 2105) +91-33-24734971 (Ext 1103)

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1. TECHNICAL BID: The Technical Bid should contain technical specifications and kept in a separate envelope duly super scribed as “**Technical Bid**” on the outer side of the envelope as detailed above.

The Technical Specifications acceptable for the '**Computer Cluster**' are as follows:-

(a) CPU Cluster (2 Master + 25 Compute Nodes)

Master Node with Storage

Qty: 2

Processor(s) 2 x ICX 6342 24C/48T 2.8G 36M 11.2GT 230W 4189 M1 or 2 x ICX 8358 32C/64T 2.6 GHz 48 M 11.2 GT 250 W 4189 D2 or better
RAM Atleast 256 GB DDR4-3200 ECC RDIMM (minimum 16 DIMM slots)
SSD 2 x 2TB SATA 6Gb/s 3D TLC 2.5" 7mm 3DWPD Rev.3 for OS
HDD(s) Atleast 10 x 16 TB, 7200 RPM, Enterprise SATA HDD
RAID Hardware RAID 0,1,10,5,6,50,60
NIC Dual Gigabit Ethernet Controller
Infiniband ConnectX®-6 VPI adapter card kit, HDR IB (200Gb/s) single-port QSFP56 with Cable

Graphics	Integrated
Management	On-board IPMI 2.0 with dedicated LAN and KVM over LAN support
Exp Slot(s)	3 PCI-E 4.0 x16, 2 PCI-E 4.0 x8 slots
Chassis	As per requirement
P. Supply	Redundant Power Supplies (Platinum Level preferable)

Compute Nodes

Qty: At-least 25

Processor(s)	2 x ICX 6342 24C/48T 2.8G 36M 11.2GT 230W 4189 M1 or 2 x ICX 8358 32C/64T 2.6 GHz 48 M 11.2 GT 250 W 4189 D2 or better
RAM	At-least 256 GB DDR4-3200 ECC RDIMM (minimum 16 DIMM slots)
SSD	At-least 4 TB SATA ENT HDD 7200 RPM.
NIC	2 x 1 G Ethernet ports
Infiniband Cable	ConnectX®-6 VPI adapter card kit, HDR IB (200Gb/s) single-port QSFP56 with
Graphics	Integrated
Management	On-board IPMI 2.0 with dedicated LAN and KVM over LAN support
Exp Slot(s)	2 PCI-E 4.0 x16 (LP)
Chassis	As per requirement
P. Supply	Redundant Power Supplies (Platinum Level preferable)

(b) GPU Nodes

GPU Node Type 1

Number of nodes: At-least 2	
Processor	2 x Rome 7252 DP/UP 8C/16T 3.1G 64M 120W 4094
GPU	1 x NVIDIA A100 40GB CoWoS HBM2 PCIe 4.0 -- Passive Cooling
Memory	256 GB DDR4-3200 ECC RDIMM
Storage	2 TB SATA ENT HDD
Core/Thread	8 cores / 16 threads
Chassis	2U Rack-mountable
Power Supply	1600W Redundant Power Supplies
Network Interface Card	Dual Port 1GBase-T Ethernet Controller, minimum 2 RJ45 ports
Storage Controller	Compatible storage controllers Ports; RAID 0,1,5,10
Graphics	Integrated graphics
Expansion Bays	2 Hot-swap 2.5"/3.5" SAS/SATA drive bays, 2 Internal 2.5" drive bays
Expansion slots	4 PCI-E Gen 4 x16 (LP), 1 PCI-E Gen 4 x8 (LP)
Management	IPMI 2.0 compliant with dedicated port

GPU Node Type 2

Number of nodes: At-least 6	
Processor	2 x Rome 7252 DP/UP 8C/16T 3.1G 64M 120W 4094
GPU	2 x NVIDIA PNYQuadro RTXA5000 24GB GDDR6PCIe4.0 -ActiveCooling
Memory	256 GB DDR4-3200 ECC RDIMM
Storage	2 TB SATA ENT HDD
Core/Thread	8 cores / 16 threads
Chassis	2U Rack-mountable
Power Supply	1600W Redundant Power Supplies
Network Interface Card	Dual Port 1 GBase-T Ethernet Controller, minimum 2 RJ45 ports
Infiniband adapter	ConnectX®-6 VPI adapter card kit, HDR IB (200Gb/s) single-port QSFP56 with Cable
Storage Controller	Compatible storage controllers Ports; RAID 0,1,5,10
Graphics	Integrated graphics
Expansion Bays	2 Hot-swap 2.5"/3.5" SAS/SATA drive bays, 2 Internal 2.5" drive bays
Expansion slots	2 PCI-E 4.0 x16 (LP) slots
Management	IPMI 2.0 compliant with dedicated port

(c) CPU node type (high mem

Number of nodes: At-least 7	
Processor	1 x ICX 5315Y 8core/3.2GHz/140W
Memory	512 GB DDR4-2399 ECC RDIMM
Storage	SSD 1TB NVMe PCIe 3.1D TLC 2.5" 15mm 1DWPDP Rev
Core/Thread	8 cores / 16 threads
Chassis	1U/2U Rack-mountable
Power Supply	Redundant (preferable Platinum) 400W Power Supply
Network Interface Card	Dual Gigabit ethernet controller
Storage Controller	Compatible storage controllers Ports; RAID 0,1,5,10
Graphics	Integrated graphics
Expansion Bays	2 Hot-swap 2.5"/3.5" SAS/SATA drive bays, 2 Internal 2.5" drive bays
Expansion slots	1 PCI-E 4.0 x 16 (FHHL) slot
Management	IPMI 2.0 compliant with dedicated LAN and KVM over LAN support

(d) Accessories

RACK 42U 1000 Rack with required Accessories x 2 No's

Infiniband Switch MQM8790-HS2F - Mellanox® Quantum(TM) HDR InfiniBand Switch, 40 QSFP 56 ports (as per requirement of the CPU and GPU solutions) , 2 Power Supplies (AC), unmanaged, standard depth, P2C airflow, Rail Kit

Ethernet Switch 48 Port 1U Gigabyte Ethernet Switch x 2 No's

KVM Switch As per requirement of the solution

Console As per requirement of the solution (1U rack mountable KVM)

(e) Intel Compiler Studio

Intel® oneAPI Toolkits Base & HPC Toolkit (Multi-node) – Academic 2 concurrent User, Max 10 Developers Supported for 3 years (ESD).

(f) PBS Scheduler

PBS Professional Job Scheduler should support the entire solution.

The vendors have to quote for each requirements – (a) to (f) per unit price for each quantity.

Power, Heat & Cooling: Power consumption and heat dissipation estimate for the total cluster should be mentioned clearly.

Warranty: 5 years comprehensive on-site.

2. 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 super scribed as “**PRICE BID**” on the outer cover of the envelope as already detailed above. The price bid of only technically qualified bidders will be opened and they will be intimated the date and time of opening at their email id-s. Rest of the bids will stand rejected.

BID SECURITY DECLARATION IN TERMS OF ORDER NO F.9/4/2020-PPD dated 12.11.2020 of Ministry of Finance:

1. An Account Payee Demand Draft/ Pay Order for **Rs. 4,40,000/-** (Rupees Four Lakh Forty thousand Only) drawn in favour of "**Indian Association for the Cultivation of Science**" is to be furnished along with Technical Bid as Bid Security money (or EMD). Bidders registered with the Central Purchase Organizations, **National Small Industries Corporation/MSME** etc. may be exempted from paying EMD subject to their submission of a copy of valid registration certificate with their Technical Bids, failing which their bids will be rejected.
2. The Demand Draft/ Pay Order for the Bid-Security money should have at least 45 (forty five) days validity period after the opening of the Bids.
3. In case of non-award of the work, the Bid Security money would be returned to the bidders.

PERFORMANCE SECURITY in terms of order no F.9/4/2020-PPD dated 12.11.2020 of Ministry of Finance:

1. An Account Payee Demand Draft/ Bank Order/Bank Guarantee of **Rs. 6,60,000/-** (Rupees Six Lakh Sixty Thousand Only) drawn in favour of "**Indian Association for the Cultivation of Science**" is to be furnished by the successful bidder to be awarded the contract, as "Performance Security" money.

2. Performance Security should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the supplier including warranty obligations.

3. Bid Security would be refunded to the successful bidder on receipt of Performance Security.

General Instructions:

(i) Vendor Eligibility: 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 50 TFLOPS in the last three years in Eastern India (Documentary proof required). OEMs should have proven experience in setting up a HPCC of minimum 250 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.

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.

Vendor should have service engineers stationed at Kolkata and should respond to service calls within 24 hours of receiving a notice from IACS KOLKATA. 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 (Documentary proof has to be submitted like VAT registration of West Bengal or any other Govt approved docs). Service call resolution including replacement of parts should occur within 5 business days of receiving the service call.

Bidder should attach the ISO 14001, 27001 alongwith the bid.

OEM/Bidder should have atleast two (2) entry in CDAC Supercomputer list – <http://topsc.cdacb.in/topsc.php> and provide documents to prove that.

Bidder should not be blacklisted/banned/debarred from GEM or any other Govt./PSU organization in the last three years.

ii) Submitting Tender: The Tender must contain materials related to this specifications and should not contain materials that can overtly or covertly try to canvass for the vendor. The vendors are allowed to deviate from the specifications given below only when such deviations are demonstrated to be technically superior. Additional features in the quoted items which are better than those in the indent – may be highlighted. The technical bid should not have any mention of pricing. The commercial bid should have the pricing for each option separately. Prices should be inclusive all charges (taxes/duties as applicable, shipping charges, delivery at site, installation etc.) with clearly indicated break- ups. Fax, e-mail Tender will not be accepted. Duplicate Bid document must be submitted in Separate closed cover. **The vendors should quote CIF Kolkata for foreign make items.**

(iii) 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 Enterprise Linux OS or equivalent (to be provided by vendor). It will be highly desirable if the vendor has proven capability to install some commonly used quantum chemistry and computational materials programs like Gaussian, ADF, Gamess, Polyrate, NWChem, Molpro, DeMon2K, NAMD, VASP, Crystal 17, Quantum Espresso. Parallelized installation of quantum chemistry codes like Gaussian 09 TCP Linda is highly desirable.

iv) 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 two weeks at the site of installation.

(v) 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.

(vi) 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.

vii) Tender updates: Prospective bidders may please refer to our website <http://www.iacs.res.in>, occasionally for any update on the tender which may appear from time to time either in respect of pre-bid meeting or otherwise.

Important information

1. Incomplete tenders will be summarily rejected.
2. In case of any dispute, the decision of the Institute authority shall be final and binding on the bidders.
3. For any query pertaining to this bid document correspondence may be addressed to Prof. Ayan Datta and Prof. Debashree Ghosh through email: spad@iacs.res.in and pcdg@iacs.res.in
4. I.A.C.S., Kolkata reserves the right to accept or reject any or all the bids in part or in full without assigning any reason / drop any item or part thereof at any time before placing the Purchase Order.

Registrar