



**NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA – 769 008, ODISHA**

Advertised/Open Tender Enquiry

Enquiry No: NITR/PW/CC/2017/09

Date: 30.08.2017

Important Dates

To

Event	Date	Time
Pre-bid Meeting at Computer Centre	07.09.2017	5:00 PM
Last date for Quotation Submission	04.10.2017	5:00 PM
Quotation Opening date	06.10.2017	5:00 PM
Opening of Financial bid	After evaluation of techno-commercial bid.	

Dear Sir,

We intend to purchase the commodities specified in enclosed documents and invite quotations in accordance with the terms and conditions detailed in the bid document. Kindly send your offer with prices and complete terms and conditions within the time mentioned above.

Please send your quotation to:

REGISTRAR, NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

Yours Sincerely,

Sd/-
REGISTRAR

Encl:

- (1) Schedule of requirement, specifications, dates etc.
- (2) Bid document containing detail terms and conditions.

1. Schedule of requirements

Sl. No.	Description of Goods/Service	Quantity
1.	High Performance Computer and accessories as per detail in Annexure-A	1

2. Specifications and allied Technical Details

As attached in *Annexure-A*

3. It is a two-part bid with separate techno-commercial and price bids.

4. The bid envelope should be super-scribed with

Bid for High Performance Computer and Accessories vide Enquiry No.
NITR/PW/CC/2017/09 Dated : **30.08.2017**

5. Quotations should be valid for a period of **180** days from the closing date of the bid.

6. **Warranty** of 5 years for the hardware supplied

7. (a) **GST:** GST may be charged according to applicable rates.

(b) Institute can provide custom duty exemption certificate if the equipment is to be imported. This option can be considered if there is a price advantage.

8. **Bid Security/EMD: ₹2,00,000 (Two Lakhs Only)** to be paid in form of DD or Bank guarantee payable to “ Director, NIT Rourkela”. The bid security shall be forfeited, if the bidder withdraws during the bid validity period. Bid securities of the unsuccessful bidders shall be returned before 30 days after the award of the order.

9. **Performance Security:** The successful bidder has to furnish Performance Security of **Rs. 5,00,000/- (Five Lakh Only)** in the form of DD or Bank Guarantee from a commercial Bank with a validity period of sixty days beyond the date of completion of all contractual obligations including warranty obligations. The Performance Security is to be furnished in favour of the Director, NIT Rourkela within ten days of intimation, failing which his bid security will be forfeited.

10. Please go through the enclosed “bid document” carefully for other bidding instructions.

11(a) Please send your quotations by Registered/Speed Post or by Courier Service to:

Registrar
National Institute of Technology, Rourkela – 769 008

12. For technical details, you may contact

Head, Computer Center
National Institute of Technology, Rourkela – 769 008
Phone: 0661 – 2462670
E-mail: hod-cc@nitrrkl.ac.in



NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA 769008 (ODISHA)

Proposals (technical and financial) are invited in the shape of two bid system i.e. (Technical & Commercial) from reputed Indian firms for supply of High Performance Computer, Blade chassis and Accessories. Sealed proposal should reach the undersigned by the date mentioned in the tender enquiry. The representatives of the firms should be present during the technical presentation.

Kindly frame your proposal in two parts: technical bid and financial bid. Both proposals should be clearly marked and individually sealed. The two proposals should be sealed in a larger envelope. The outer envelope should be superscribed with “*Bid for High Performance Computer and Accessories vide Enquiry No. NITR/PW/CC/2017/09, Dated: 30.08.2017*” and sent to “**Registrar, National Institute of Technology Rourkela, Odisha, Pin - 769 008**”. The quotation can be sent by speed post or hand delivered before the time of tender opening. Important information related to venues and dates are mentioned in the tender enquiry.

BID DOCUMENT

1. Instructions to the bidders

1.1 Sealed bids are invited on behalf of the Director, National Institute of Technology (NIT), Rourkela – 769 008, Odisha, from the intending bidders for supply of the High Performance Computer and accessories for the Institute as detailed in the enquiry letter.

1.2 Eligibility of Bidders:

(a) **Bidder / OEM Presence in India:**

Minimum 10 years presence in Eastern India with local sales and support office. OEM should have at least 5 entries in each of the Top 100 Supercomputers listing (<http://topsupercomputers-india.iisc.ernet.in/>) published by IISC between June 2014 and Dec 2016 indicating consistent presence.

(b) **Bidder/OEM presence in High Performance:**

Minimum 3 years presence as a leading provider of High Performance Computing systems worldwide. OEM should have at least 15 entries in each of the Top 500 Supercomputers listing (<https://www.top500.org/lists/>) published between June 2014 and December 2016 indicating consistent presence in High Performance Computing.

(c) **Satisfactory delivery of similar goods/items of similar value**

The OEM/Bidder must have supplied 2-3 similar equipment for which reference /order copies need to be provided of similar project size or bigger of which at least one should be currently under maintenance in Eastern India. Certificate/ document in this regard have to be enclosed with the quotation.

(d) High Performance Computer manufacturer (OEM)/ their exclusive system integrator should quote. The manufacturer should authorize the system integrator for the tender specifically. Each manufacturer is expected to authorize only one bidder to quote on their behalf.

- (e) The OEM should have their office sales/service support in Eastern India (Kolkata/ Bhubaneswar/ Raipur/ Ranchi/ Jamshedpur) or any other place and should be able to provide the service in 12 hours. Evidence to this effect to be enclosed.
- (f) The product series quoted should have been supplied to at least 3 organizations in India in the last two financial year combined. i.e., FY 2015-16 and 2016-17.

- 1.3 Firms are advised to study all technical and commercial aspects, instructions, forms, terms and specifications carefully in the tender document. Failure to furnish all information required in the Tender Document in every respect will be at the firm's risk and may result in the rejection of the bid. The bidder should enclose a signature copy of bid document (each page to be signed)
- 1.4 The bidders should quote their offer/rates in clear terms without ambiguity.
- 1.5 All damaged or unapproved goods shall be returned at the firm's risk and the cost of incidental expenditure there upon shall be recovered from the concerned party.
- 1.6 Printed conditions of the firm sent along with the quotation, if any, shall not be binding on us.
- 1.7 The rates should be quoted both in figures and words and legibly written without any over-writings. In case of any correction, the same must be attested by the bidder with full signature. However, no over-writing is permissible. Manufacture's price-list, where applicable, should be submitted along with the bid.

Any discrepancy between quoted prices in figures and that in words, if noted, will be sorted out in the following manner: -

- a. If there is a discrepancy between the unit price and the total price, the unit price shall prevail and the total price will be corrected accordingly.
- b. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.
- c. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to above.
- 1.8 The bidder may modify the bid before the last date & time fixed for receipt of the bids by sending an amendment to the bid. No bid shall be modified after the deadline for receipt of the bids.
- 1.9 Bids received after the deadline indicated in point no.7 in tender enquiry, shall not be taken in to consideration.
- 1.10 **Clarification regarding tender document:** A prospective firm requiring any clarification of the tender document may do so through email or in person during pre-bid meeting. No clarification will be issued after the pre-bid meeting.

1.11 **Amendment of Tender Document:**

- a. At any time prior to the last date for receipt of bids, National Institute of Technology, Rourkela may modify the tender document by an amendment for any reason, whether at its own initiative or in response to a clarification required by a prospective firm.
- b. The amendment will be notified in writing through Institute website for the information of all prospective bidders and will be binding on them.
- c. National Institute of Technology, Rourkela may, at its discretion, extend the last date for the receipt of the bids if required.

1.12 **Tender Opening:** The authorized personnel from the company may be present at the opening date of technical bid with the valid authorization letter. The technically qualified bidders will be informed about the date of commercial bid opening and finalization.

All the services/ items to be supplied should be new, of latest technology, good quality and standard and as per specifications mentioned. The selected vendor shall be responsible for total system integration and management wherever applicable.

1.13 **Submission of offer**

- a. The firm shall bear all costs associated with the preparation and submission of its Bid, including the cost of presentation for the purpose of clarification of the bid, if so desired by the client and the client will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.
- b. All prices and other information like discounts etc. having a bearing on the price shall be written both in figures and words in the form. Where there is a difference between amounts quoted in words and figures, the amounts quoted in words shall prevail. The taxes as applicable on educational institutions which are not meant for profit should be quoted separately, failing which, the Institute shall have no liability to pay these charges and the liability shall be that of the firm.
- c. Each page of the offer shall be numbered and bear the signature of the firm at the bottom. All offers shall be either typewritten or written neatly in indelible ink. Any corrections should be properly authenticated.

Envelop- A Envelop should be superscribed “Technical Bid”.
General Criteria Documents.

- a. Bidders must produce valid tender specific authorization certificate from the OEM.
- b. The list of client (at least three) with contact details of a person (phone/ mob no. with email ids) where the bidder had supplied specific High Performance Computer hardware. The HPC should be same series proposed here.
- c. Organizational details are to be enclosed in Covering Letter from Bidder (from all the collaborating consortium partners, as applicable).
- d. The bidder should enclose a copy of quality certificate from a recognized institution for their manufacturing/ assembly/ system integration facilities anywhere located in India or abroad. This certification should be from any globally recognized Institution
- e. Bidders must enclose details of their infrastructure with reference to locations and technical manpower, availability of inventory spares etc.
- f. Any eligibility Documents.

- g. Copy of Certificates/ P.O. with proof of having executed such similar projects.
- h. Bidder should submit valid documentary proof like GST, the details of income tax registration (PAN), Copy of Income Tax Returns/ Clearance Certificate for last three years.
- i. Bidders must submit a declaration on their letter head that they are not black listed in any Govt. body, undertaking, PSU or autonomous bodies. If found the declaration is false their offer will be out rightly rejected and their EMD amount will be forfeited.
- j. Bid security of Rs. 2,00,000/- (Two Lakhs only).

Technical Criteria Documents.

- a. Details of Hardware/ software included in offer.
- b. Details of Technical Specification and other specifications so as to enable technical assessment of the proposal.
- c. It should include technical compliance of the spec, and OEM available brochures with all technical details.
- d. Unpriced bid document exactly same as the price bid with full break up without the costs mentioned.
- e. All other relevant documents of this tender (excluding commercial part) should be included in this envelope.

**Envelop- B Envelop should be superscribed “Financial Bid”.
Commercial Criteria Documents.**

- a. The second cover shall be superscripted, “*Tender for Commercial Bid for High Performance Computer & accessories: Financial Bid*”.
- b. The commercial bid should essentially contain covering letter from the bidder mentioning the price of the product showing all the taxes separately as applicable.
- f. Both technical and commercial bid documents should be submitted in an organized and structured manner. No loose brochures/leaflets etc. should be submitted. Both these covers should be sealed separately and put in an outer cover, which is also sealed and addressed to the Registrar, NIT Rourkela-769008 giving indication that it contains the Tender for purchase of High Performance Computer.

1.22 Evaluation of offer

- a. First, the technical bids will be opened by a committee appointed by the Director. At time of Technical Bid evaluation, the shortlisted vendors may be called for detailed discussions at a specified date, time and venue, if required. They may be asked to give demonstration of their product/services, if needed. Financial evaluation will be done for those bidders who will successfully qualify in the technical evaluation.
- b. The financial bids of the bidders found to be unsuitable in technical evaluation will not be opened for commercial evaluation.
- c. Firms whose financial bids are considered unworkable in view of prevailing market condition will be rejected. L1 will be awarded after financial comparative analysis of technically qualified bidders.
- d. If the Institute feels necessary, it may ask for revised bids from the shortlisted vendors which should be submitted within two days of intimation to this effect in sealed envelopes on specified date and time. The revised bids shall not be for amounts

more than one quoted earlier for an item, unless the specification is of higher configuration than the earlier ones, by the respective vendor. Any vendor quoting higher rates for the same item quoted earlier in their revised commercial bid shall be disqualified for further consideration.

- e. The Institute reserves the right to select the vendor on the basis of best possible specifications/ features quoted. The decision of the Institute shall be final and representation of any kind shall not be entertained on the above.
- f. Any attempt by any vendor to bring influence or pressure of any kind may disqualify the vendor for the present tender and the vendor may be liable to be debarred from bidding.
- g. The Institute shall have no obligation to convey reason for rejection of any bid. It shall be open for the Institute to reject even the lowest bidder in the interest of the Institute and no reasons need be given therefore.

1.23 **Technical Evaluation Parameters:** The vendor shall provide the following information with the bid to provide background information on vendor to Tender Committee. Weightage will be given to the vendors on point basis for the following details.

- a. The list of clients (contact details of a person phone/ mob no. with email ids should be attached) where the bidder had supplied the similar type of materials (as mentioned in schedule of requirements) with successful installation in last three years.
- b. Quality certificate from a recognized institution for their manufacturing/ assembly/ system integration facilities anywhere located in India or abroad.
- c. Delivery period from the date of placement of the Purchase Order.
- d. Customer support strength by the vendor.
- e. Possible quicker availability of the vendor when problem occurs.
- f. Mode of handling complains (whether by fault ticket/ complain given by email or by phone etc.).
- g. Validity period of cost of equipment.
- h. *Necessary documents* as mentioned in the bid document.
- i. Training agenda covering details for three days training.
- j. Any other points may deemed fit by the committee at time of technical evaluation of bid documents.

2. Commercial or Legal Conditions of the bid

2.1 The rates quoted should preferably be net, inclusive of all taxes and duties, packing, forwarding, freight, Insurance and all other incidental charges. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or ad valorem rate must be specified. Packing, forwarding, freight, entry tax etc., when quotes separately are reimbursable at actual. If external agencies are employed, their receipts must be enclosed with the invoice.

2.2 Duties and Taxes are to be quoted separately. Ad valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

It may be noted that the Institute is exempted from paying Excise Duty vide Government Notification No. 10/97 dated 01.03.1997 [Registration No.: TU/V/RG-CD (227)/2001, dated 10.12.2001].

2.3 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.

- 2.4 The goods offered should strictly conform to the specification and technical details mentioned in *Annexure-A*.
- 2.5 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.
- 2.6 **Penalty for delay in commissioning:** The schedule to be given for testing and acceptance and/or delivery and installation at site is to be strictly adhered to in view of the strict time schedule for implementation of various projects of the Institute as time is essence of the contract. Any unjustified and unacceptable delay in delivery beyond the delivery schedule as per Purchase order (which shall not be less than 30 days from the date of issue of purchase order) **shall render the vendor liable for liquidated damages by way of penalty at the rate of 1.5% (one and one half percent) per week subject to a maximum of TEN weeks** and thereafter the Institute holds the option for cancellation of the order of pending supply and procure the same from any other vendor and invoke the Bank Guarantee of the vendor. The Institute may deduct such sum from any moneys in their hands due or to become due to vendor. The payment or deduction of such sums shall not relieve the vendor from his obligations to complete the process of commissioning or from his other obligations and liabilities under the contract.
- 2.7 Payment (100 percent) will be made by Account Payee Cheque/ Bank Draft, within 30 days from the date of receipt of the goods in good condition or receipt of the bill, commissioning of the equipment, where applicable, whichever is later/ latest subject to conditions mentioned in point no. 2.12 under bid document.
- 2.8 If bid is foreign exchange with import price will be calculated based on exchange rate + 10% custom duty, and CIF. Exchange rate will be considered for evaluation on the basis of the date of bid opening.

2.9 **Training**

The order will be executed in following order:-

Three days training on “High Performance Computer Administration with Troubleshooting” will be executed by OEM (not by vendor) at NIT, Rourkela with live demonstration of equipment supplied in first phase of post-delivery period. Training agenda must be attached in technical bid.

2.10 **Payment**

- a. The payment will be made in two parts. On delivery and after successful completion of training, installation, configuration, testing, implementation with existing infrastructure and proper verification of equipment's, 100% of **part-I** (Supply and Installation of High Performance Computer) payment will be made. No part of the contract price shall become due or payable until the vendor has delivered and installed the items and provided service to the complete satisfaction of the Institute. Payment shall be made subject to recoveries, if any. If required, NIT can open LC for procurement of the materials against foreign exchange.
- b. A pre-receipted bill shall be submitted in duplicate in the name of NIT, Rourkela at the location mentioned in the purchase order. It shall be done soon after the delivery and installation of the items along with a copy of the duly received delivery challan and original excise duty gate pass, if any.

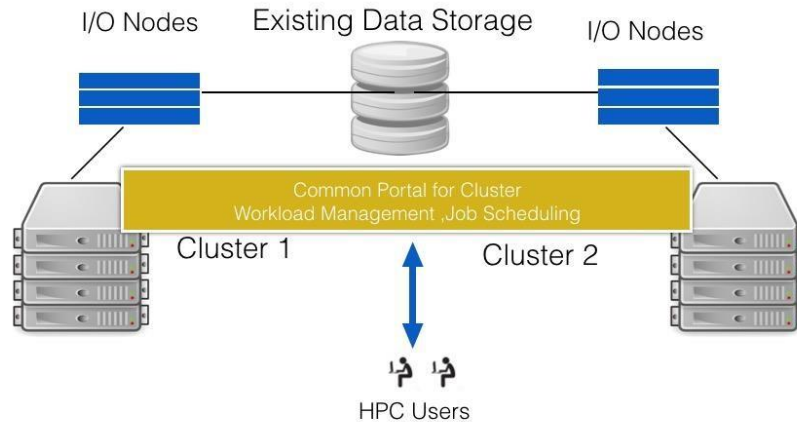
- c. In case there is a price reduction in service components during the contract period, then the vendor will pass on all such benefits to NIT, Rourkela without claiming by the Institute.
 - d. Packing list must be put in all packets during time of delivery.
- 2.11 **Right to award the contract:** The institute reserves the right to award the contract to any of the bidders irrespective of not being lowest or to change any of the terms taking into consideration of interest of the Institute and in this respect, the decision of the Director, NIT Rourkela shall be final.
The bid document/resultant contract will be interpreted under Indian Laws.
- 2.12 **Effect and validity of offer**
- a. The offer shall be kept valid for acceptance for a minimum period of 180 days from the date fixed for opening of tenders.
 - b. In the event, the vendor's company or concerned division of the company is taken over/merged into another company, all the obligations under the agreement with the Institute shall be passed on to the new company/ division for compliance by the new company on the negotiations.
 - c. If the name of the product is changed for describing substantially the same product in a renamed form, then all techno- financial benefits agreed, with respect to the original product shall be passed on to the Institute and the obligations of the vendor towards the Institute in respect to the product with old name shall be passed on to the product so renamed.
 - d. In case the Institute sees that the market rates have come down from the time when rates were finalized in the rate contract/order or there is a need for selection of new system configuration based on market trends, the Institute, may ask the technically short listed vendors to requote the prices and the vendor shall be selected on the basis of procedure given earlier.
- 2.13 **Acceptance of tender:** The tender shall be processed as per standard procedures. The Institute, however, reserves the right to reject any tender without disclosing any reason. The Institute would not be under obligation to give any clarifications to those vendors whose tenders have been rejected, unless otherwise decided or covered under the provision of the Right to Information Act, 2005.
- 2.14 **Right to modify the requirement:** The categories of items and quantity will be as per requirements. NIT, Rourkela reserves the right to increase or decrease the quantity or delete some or all of the items depending on the needs of the Institute without assigning any reasons.
- 2.15 **Arbitration:** In the event of any question, dispute or difference arising under these conditions 'Instructions' or in connection with this contract the same shall be referred to the arbitration of a sole arbitrator, to be appointed by Director, NIT, Rourkela or his nominee. The award of the arbitrator shall be final and binding on the parties to this contract. The arbitration shall be held at the NIT, Rourkela. The proceedings of arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act, 1996 or any statutory amendments thereto, and both the parties to this contract shall bear the cost of arbitration equally. If differences persist even after arbitration and there are compelling reasons to go to the court, it will be decided in the court of Rourkela only.

Registrar
National Institute of Technology, Rourkela

Annexure-A

NIT Rourkela proposes to procure an HPC system which needs to be integrated with the existing HPC system and also utilize the existing Switching fabric in order to deliver an optimized performance utilizing the existing resources as well. The system should be connected through I/O nodes to the existing Storage system for data storage facility as per the architecture given below:

Proposed HPC setup



Solution Diagram -- for HPC Linux Cluster Computing architecture

This proposed HPC system should be integrated with existing HPC allowing users to submit their HPC jobs to a common PBS/ equivalent portal front end which will then fire it on specific cluster resources to deliver the necessary results utilizing the existing data storage with OEM based parallel file system.

The HPC infrastructure being proposed is based on:

1. Industry Standard state of the art processors from Intel Broadwell range
2. Industry standard Intel based servers from the leading provider of industry standard servers
3. FDR InfiniBand from Mellanox as the high-speed, low latency interconnect
4. Parallel File system storage for the HPC infrastructure with connectivity to existing Data Storage facility.
5. Simple, fast and effective gigabit Ethernet management network for admin and management network.

The proposal should include the solution design, delivery, installation and commissioning of the proposed system, along with services to support the ongoing maintenance of the system for a period of Five years .

Components of Proposed HPC Setup:

1. 1 Master Node ,1 Login Node and 1 management node
2. 20 No of CPU based Compute Nodes with Intel Broadwell Processor
3. 4 No of Storage I/O Nodes

4. 4XFDR InfiniBand fabric with full non-blocking fat tree topology
5. Management network for all Servers
6. Ethernet adapters for connecting to Core network
7. Software solution including Cluster deployment, management and Parallel file system
8. Connectivity and Integration with existing Data storage configured with storage nodes for a parallel file system access

Master/Login /Management Node (1U Rack Servers) – 3 units

- i. 2 x Intel E5-2697 V4 @ 2.3 GHz processor
- ii. 128 GB DDR4 2400MHz Memory DIMMs
- iii. 4 x 1.8 TB 10K rpm Hard Disk (with Hardware RAID 1/5)
- iv. 1 x 4XFDR InfiniBand
- v. 4 x 1Gig Ethernet Ports
- vi. Redundant Power Supply

Compute Nodes with common infrastructure with each having – 20 units

- i. 2 x Intel E5-2697 V4 @ 2.3 GHz processor
- ii. 128GB DDR4 2400MHz Memory DIMMs
- iii. 2x1TB Hard Disk capacity (with hardware RAID1)
- iv. 1 x 4XFDR InfiniBand
- v. 2 x 1Gig Ethernet Ports
- vi. Redundant Power Supply from the Enclosure

Storage I/O Nodes (For parallel file system) – 4 units

- i. 2 x Intel E5-2697 V4 @ 2.3 GHz processor
- ii. 128GB DDR4 2400MHz Memory DIMMs
- iii. 2x1TB Hard Disk capacity (with hardware RAID1)
- iv. 1 x 4XFDR InfiniBand
- v. 2 x 1Gig Ethernet Ports
- vi. 2 x 8Gbps FC port.
- vii. Redundant Power Supply

InfiniBand

Non-blocking implementation for the Computing Cluster including all compute nodes. InfiniBand switch operating at 56Gbps should be included in the proposal. Cable and adapter in the nodes should be included. The InfiniBand switch should have sufficient ports to connect all the servers.

Management Networks

The management network is based on Ethernet and comprise the cluster management network for cluster-related administration traffic.

System and Cluster Management network:

The proposed setup will combine system management and cluster private management network into a single Ethernet port per node. The software should be provide with complete support matrix from the OEM. It should be able to integrate and support the server management ports. The management software from server to cluster to storage should be from same OEM **Software stack for the entire cluster system:**

- a) RedHat Enterprise Linux with three years support for all systems including the Master Nodes and all other nodes including compute nodes and storage nodes
- b) Intel luster Parallel File system software
- c) Intel Cluster studio for the HPC development environment
- d) Altair PBSPro for Workload management and job scheduling
- e) Altair Compute Manager for multi cluster Workload management /Equivalent integrating the current cluster which is using PBS Pro

Enclosure Rack :

The OEM rack system (same as server manufacturer) for housing all of the above and enabling proper power, cabling, management along with requisite accessories, KVM functionality and Console for the entire setup

Detailed Technical Specifications

High Performance computing system with the following requirements:

1. Compute: Nodes chassis Specifications

- i. Chassis - Vendor should offer a Server chassis / enclosure based solution which can hold dense servers (Pure CPU based compute nodes) on an average of 0.5U per Server, capable of getting mounted in a standard 19" 42U Rack (max depth of 1400mm). Each of the Server nodes should be individually serviceable, without shutting down the other Server nodes. The racks should be limited to 1400mm depth. Systems with higher depth will not be accepted.
- ii. Redundant Power Supplies- The entire solution should be offered with redundant power supplies either at Rack level or enclosure level. N+1 redundancy to be configured. The solution should be capable of being configured for N+N redundancy if required
- iii. Redundant Fans - The chassis / enclosure should be configured with redundant fans

2. Compute Node Specifications: - 20 nodes with scope to add 4 more

Each of the compute nodes in the chassis/enclosure should be configured with the following:

- i. CPU – Minimum 2 x Intel Xeon E 5 2697 v4 or latest processors
- ii. Memory Requirement - 128 GB to be configured using 2400 RDIMMs. Adequate DIMMs to be configured to populate all memory channels in a balanced manner.
- iii. Memory Scalability - Should be capable of scaling upto 512 GB Memory. Memory should still work at 2400MHz with 2 DIMMS per channel.
- iv. Memory protection- Advanced ECC
- v. Disks required - To be configured with 2x 1000GB SATA SFF disks @ 10k rpm
- vi. InfiniBand - Dual port 4XFDR (56Gbps) to be configured as part of the solution
- vii. Networking - 2 x 1Gbps ports with PXE boot capability
- ix. Management Port - 1Gbps dedicated Management Port - either at the Server level or Enclosure level
- x. PCI-Express 3.0 slots - The compute node should have at least 1 no. of PCIe -Gen3 (x16) low profile for adding internal devices like Hardware RAID controller.
- xi. OS Support - Should support RHEL7.x / SLES 11 or higher
- xii. Fabric connectivity - Host adapter with at least one port of min. 56Gbps compatible with the quoted primary switch. Connected to processor with PCIe Gen3 min. x8 non-shared connectivity. Port should support greater than 100M messages/sec.

3. Master Node /Login Nodes /Management Node (1u Rack Servers) – 3 nos

- i. CPU – Minimum 2 x Intel Xeon E 5 2697v4 or latest processors
- ii. Memory - 128 GB(16GB x 8) DDR4, 2400 MHz ECC Memory, in balanced configuration for maximum performance
- iii. Hard Drives - 4 x 1.8 TB 10K RPM SAS Disks, Hardware RAID with support for 0,1 and 5.
- iv. Networking - 4 x 1Gigabit Ethernet ports with PXE boot capability for 2 master nodes in HA and login nodes.
- v. OS Support - Should support RHEL7.x / SLES 11 or higher
- vi. Cluster Interconnect - Host adapter with at least one port of min. 56Gbps compatible with the quoted primary switch. Connected to processor with PCIe Gen3 min. x8 non-shared connectivity. Port should support greater than 100M messages/sec.
- vii. Form Factor - 1U rack mountable.

- viii. Power Supply - Redundant and Hot Pluggable, 80 Plus Platinum or better certified power supply.
- ix. Management - IPMI 2.0 or equivalent Support with KVM and Media over LAN features. Must include any licenses, if required for using these features

4. Storage node - 4 nos

The node should be of same specification as Master node. The storage node should have additionally 2XFC ports for connectivity to SAN storage.

5. Primary Communication

- i. 100% non-blocking architecture FDR/ Omnipath switch with min bandwidth of 56Gbps per port
- ii. Sufficient numbers of Cables of appropriate length and compatible with the quoted Host adapter cards in servers to suite the solution.
- iii. Redundant power supplies with power cables compatible with the existing rack PDU. Power cables compatible with the existing rack PDU

6. Secondary Interconnect - *Managed Gigabit Ethernet switches to connect all HPC nodes for cluster management, provisioning and IPMI management*

- i. For cluster admin network, distributed switches at rack level and connected with 1G uplink to central 1G switch.

7. Software

- i. Commercial Cluster management, monitoring and node provisioning tools. It should include accounting, reporting, and analysis tools. The software should be supplied by Cluster OEM directly.
- ii. All Software's quoted should be Licensed and Commercial software. System Integrator / Bidder developed software cannot be proposed. Software proposed should be from reputed brands and should be certified by Hardware OEM's.
- iii. Standard Versions of Software are to be proposed which will have full functionality and features of the product
- iv. Commercial Workload manager software like PBS/ LSF to be provided with the cluster.
- v. Intel® Parallel Studio XE Cluster Edition for Linux* - Floating Commercial 2sts for 3yrs
- vi. Operating System RHEL (Standard) for all nodes
- vii. Only commercially supported Intel Luster Parallel file systems to be quoted/supplied with Min 3-year support from OEM directly
- viii. Portal based interface compatible and equivalent with PBS portal for providing multi cluster management with common web front.

Note regarding Existing storage to be connected:

1. Storage system details: Capacity-500TB, Make- HP, Model- 3PAR Store-Serv 7400 4-N Storage Base, HP Product Name: QR485A, No. of Controllers- 4
2. SAN Switch: No. of SAN Switch- 2; Make- CISCO; Model- MDS9148 multilayer fabric switch. Nearly 20 ports are available on each of the SAN switches for future expansion including user requirement against this tender

Note: Any specification terms found to be vendor specific, may be quoted with equivalent technical specification.

RELEVANT TENDER INFORMATION

The following information will be taken into consideration in the process of technical bid evaluation.

1. Name of the firm: _____
2. Client reference with similar deployment by OEM -5 Nos

Sl.No	Name of the Educational Institution	No of Aps deployed	Contact person with details

2. Delivery Period (as per technical detail attached in *Annexure –A*):
3. Validity Period of cost of equipment (as per technical detail attached in *Annexure –A*):
4. Whether tender specific authorization certificate from the OEM attached?
5. Whether quality certificate from a recognized institution for their manufacturing/assembly/system integration facilities anywhere located in India or abroad attached?
6. Whether infrastructure related details with reference to locations and technical manpower, availability of inventory spares etc. attached?
7. Whether copy of Certificates/P.O. with proof of execution of similar projects (mentioned in point no. 2) attached?
8. Whether documentary proof of GST registration number, the details of Income Tax registration (PAN), Copy of Income Tax Returns / Clearance certificate for last three years attached?
9. Whether declaration on their letter head that they are not black listed in any Govt. body, undertaking, PSU or autonomous bodies is attached?
(Hiding facts in this regard will be taken as offence and cancellation of contract can be possible at any moment of information during period of the contract)

If yes provide possible reasons:

10. Whether penalty for delay in commissioning ever faced by any organization?
(Hiding facts in this regard will be taken as offence and cancellation of contract can be possible at any moment of information during period of the contract)

If yes provide possible reasons:
