भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान मोहाली

सैक्टर-81,नॉलेज सिटी,प॰ ओ॰ मनोली, एस॰ ए॰ एस॰ नगर,मोहाली, पंजाब 140306

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH MOHALI

(Ministry of Education, Govt. of India)

Sector-81, Knowledge city, PO-Manauli, SAS Nagar Mohali-140306, Punjab

PAN No. - AAAAI1781K GSTIN No:- 03AAAAI1781K2ZS

• **Phone : +91-172-2240086 & 2240121** • **Fax : +91-172-2240124, 2240266** • **http://www.iisermohali.ac.in** • **Email:** stores@iisermohali.ac.in

CPPP/Institute Website

IISERM (1396)20/21-Pur Dated: 10th November 2020

NOTICE INVITING E-TENDER

Online tenders are invited on behalf of Director, IISER Mohali in **TWO BID SYSTEM** for the **Supply, installation and commissioning of High Performance Computer Cluster (HPC) Facility at IISER Mohali** as per technical specification and details given below and BOQ list from the original manufacturer/supplier at CPPP i. e. **https://eprocure.gov.in/eprocure/app**. Tender documents may please be downloaded from the E-procurement portal website **https://eprocure.gov.in/eprocure/app**& Institute website **www.iisermohali.ac.in.**

-sd-
(Mukesh Kumar)
Assistant Registrar (P&S)

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E-TENDER NOTICE

Tender Ref.- IISERM(1396)20/21-Pur	Dated :- 10th November 2020

Critical Date Sections

Sr.	Description	Date	Time
1.	Tender Publishing Date and time	10th November 2020	6:00pm
2.	Tender Document download start Date & Time	10th November 2020	6:00pm
3.	Bid Submission start Date &Time	10th November 2020	6:00pm
4.	Pre-Bid Meeting	23rd November 2020	11.30 am
5.	Bid Submission End date and Time	10th December 2020	Up to 11:00am
6.	Tender opening Date and Time	11th December 2020	At 11:30am

Online tenders are invited on behalf of the Director, IISER Mohali in **TWO BID SYSTEM** for following item(s) from the original manufacturer/supplier at CPPP i.e. **https://eprocure.gov.in/eprocure/app**. Tender documents may please be downloaded from the E-procurement portal website **https://eprocure.gov.in/eprocure/app** & Institute website **www.iisermohali.ac.in.**Tender fee in shape of DD/Banker Cheque of Rs 590/- (Non-refundable) and EMD of Rs. **9,00,000**/- should be submitted by DD /Banker Cheque/FDR/ Bank Guarantee in favour of the Registrar, IISER Mohali payable at Mohali or through Online mode in Institute Account (Canara Bank Saving Account Number 4790101001912 and IFSC Code CNRB0004790). However, scanned copy of the both tender fee and EMD should be upload on website along with technical bid part. The hard copy of the same in original to be send to the address mentioned below duly superscribing the supply/work name and reference/ tender ID on the envelope and same must reach before opening the bid and if not received within due date the bid will be rejected summarily.

The Original EMD and Tender Fee should be sent to:

Assistant Registrar (P&S)
Indian Institute of Science Education and Research Mohali Sector-81, Knowledge City, SAS Nagar, Mohali, Punjab, India, Pin: 140306

Non-receipt of original EMD and Tender Fee will lead to rejection of tender.

Item Details

Sr.	Description	Qty. (in units)
1.	**Supply, installation and commissioning of High Performance Computer Cluster (HPC) Facility at IISER Mohali** **Technical Specifications: As per ANNEXURE-A**	**01**

A) IMORTANT NOTES:-

I. **The online updated Price BOQ is in INR format. If bidder want to quote other than INR please specify the quoted currency in the technical bid/part and fill the amount in same updated BOQ.**

II. **Please bifurcate the price on shipping terms i.e. Ex-works -> FCA/FOB -> CIP/CIF in price BOQ and specify the same in technical bid without price if quoted in foreign currency.**

III. **If quoted in foreign currency, kindly clearly specify the terms of delivery/country of origin/bank details with swift code/weight/size/dimension of shipment.**

IV. **The Online bids should be submitted directly by the original manufacturer/supplier. If quotation is submitted/filled by any representative/agent/dealer then they must upload a authority certificate from the principal company.**

V. **Kindly specify the weight of the product including weight of packing for assessment of Freight charges, if quoted in foreign currency. Also mention in Technical Bid/Compliance sheet the currency in which quoted.**

VI. **Kindly do not quote end of life model.**

VII. **All MSME/NSIC/Startup Units shall be considered as per provisions/rules prescribed by Govt of India.**

VIII. **Payment Terms with timeline: - 60% payment shall be released after supply and installation and commissioning and 30% payment shall be released after testing of installation for 3 months. 90% payment shall be released within 6 months' time after supply, installation and successful testing. Balance 10% payment shall be released after submission of PBG for the warranty period + 60 days from the stipulated date of completion of work.**

B) SUBMISSION OF TENDER

I. All bid/ tender documents are to be uploaded online at Central Public Procurement portal i.e. **https://eprocure.gov.in/eprocure/app** only and in the designated cover/ part on the website against tender ID. Tenders/ bids shall be accepted only through online mode and no manual submission of the same shall be entertained except tender fee and EMD. Late tenders will not be accepted.

II. The online bids shall be opened at the office of the Assistant Registrar (P&S), IISER Mohali, on above given date and time. If the tender opening date happens to be on a holiday or non-working day due to any other valid reason, the tender opening process will be attended on the next working day at same time and place. IISER Mohali will not be responsible for any error like missing of schedule data while downloading by the Bidder.

III. The bidder shall upload the tender documents duly filled in and stamped by the authorized signatory on each and every page. Tender not submitted/uploaded in the prescribed form and as per the tender terms and conditions shall be liable for rejection.

IV. The bidder shall upload scanned copy of the PAN Card, GST number duly signed and stamped. **Also bidders applying against 'MSME/NSIC Certificate" issued by appropriate Authority, should ensure that the certificate attached is relevant to the area of service/supply. For example, If the tender is for "supply & installation of Desktop"** ***the certificate should be issued for activity/area of "Computer supply and services activities etc" otherwise bid will be REJECTED without notice.***

V. E-procurement system ensures locking on the scheduled date and time. The system will not accept any bid after the scheduled date and time of submission of bid.

C) INSTRUCTIONS

1. The Online bids should be submitted directly by the original manufacturer/supplier, If quotation is submitted/filled by any representative/agent/dealer then they must upload a authority certificate from the principal company for quoting the price otherwise such quotation will be rejected.

2. The quantity mentioned in this inquiry is and shall be deemed to be only approximate and will not in any manner be binding on the Institute. Before the deadline for submission of the online bid, IISER Mohali reserves the right to modify the tender document terms and conditions. Such amendment/modification will be notified on website against said tender ID.

3. The rates offered should be FOR Chandigarh/Mohali in case of firms situated outside Chandigarh/Mohali, and free delivery at the Institute premises in case of local firms. Supplier from outside India should mention the Ex-works/FOB/FCA/CIF/CIP price clearly. Conditional tenders will be summarily rejected.

4. In case of Ex-godown terms the amount of packaging forwarding freight etc. should clearly be indicated by percentage or lump sum amount. Institute has policy not to make any advance payments towards any purchase, Letter of credit can be opened if required.

5. THE INSTITUTE IS EXEMPTED FROM CUSTOM DUTY under notification no- TU/V/RG/-CDE(1062)/201 CUSTOM DT.30.08.2016.

6. Tax: This Institute is not exempted from the payment of GST. The current rate (i.e. percentage of GST should be clearly indicated included or excluded) wherever chargeable. Please also provide/upload the copy of PAN card, GST number duly self-attested.

7. Concessional GST is applicable for all the items purchased for Research labs vide Ministry of Finance, notification no. 45/22017 dated 14.11.2017 and 47/2017 dated 14.11.2017.

8. Bidder/s quoting in currency other than **Indian Rupee (INR**) should explicitly mention the currency in which tender quoted wherever applicable in Technical Bid along the tender documents.

9. The delivery period should be specifically stated. Earlier delivery will be preferred.

10. The firms are requested to provide/upload detailed description and specifications together with the detailed drawings, printed leaflets and literature of the article quoted. The name of the manufactures and country of manufacture should also invariably be stated. In the absence of these particulars, the quotation is liable for rejection.

11. Validity of offer: 90 days. The warranty period after satisfactory installation should be mentioned and firm should replace all manufacturing defect parts/ whole item under warranty without any extra cost including clearance, freight, taxes. Security deposit/ Bank Performance Guarantee @ 10 % of the value of supply order as per norms may be sought from the firms.

12. The right to reject all or any of the quotation and to split up the requirements for itemized L-1 or relax any or all the above conditions without assigning any reason is reserved by the IISER Mohali. For any corrigendum and addendum please be checked the website https://eprocure.gov.in/eprocure/app and http:/www.iisermohali.ac.in

13. Disputes, if any, shall be subject to jurisdiction in the court of Mohali only.

–sd-
(Mukesh Kumar)
Assistant Registrar (P&S)

ANNEXURE-A

Technical Specification of HPC facility for IISER Mohali

IISER Mohali desires to augment its High-Performance Computing (HPC) resources. A heterogenous facility of this kind is expected to offer a boost to the modelling and simulation research efforts encompassing across departments and disciplines. Some of the proposed activities include computational fluid dynamics (CFD), Astro-dynamics, bio-molecular simulations, computational chemistry and biology, environmental and weather modelling simulations and several other areas of science and technology (softwares are ESPResSO, VASP, LAMMPS, SIESTA, CPMD, CP2K, ABNIT, NAMD, GROMACS, AMBER, Gaussian, Molpro, MATLAB, Mathematica, ANSYS etc.,).

Therefore, we intend to procure a HPC system which delivers sustained maximum floating point computing performance. The HPC solution provided by the vendors/OEMs must have ***a total of at least 1650 cores of CPU-only dual-socket processor compute nodes (Item #1 in the table below) containing processor of minimum base clock frequency of 2.1 GHz (any cores in Master/Login/Service/GPU nodes or in any other item other than #1 are to be excluded)*** and ***a total double precision floating point performance of 105 TeraFlops or more***. The double performance of the system must be calculated as **"Total No. of Physical Cores x Processor Base Clock Frequency x Maximum number of double-precision floating point operations per clock cycle for a processor core under AVX2 or AVX512 modes supported by the processor"**. The complete HPC solution must be based on either ***Intel-64 architecture (based on Intel 2nd Generation Xeon-SP Gold refresh series of processors or higher)*** or ***AMD-64 architecture (based on Epyc Zen-2 Rome series or higher)***. ***No mixed architecture (Intel-64/AMD-64) HPC solutions are allowed.***

System Attributes		***Specifications***
(1) CPU Only compute nodes	*Processors*	x86-64 architecture multi-core processor with base clock frequency of at least 2.1 GHz, with **26 or more cores per processor**, must support DDR4-2933 or faster memory. Native support for AVX2.
	No of Processors	Two processors per node.
	Memory	**7 GB memory per physical CPU core present or more with at least 384 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. The memory DIMMs must be installed **in a fully balanced mode (equally populated across all channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor. The number of memory channels should be such that for every memory channel, there are not more than 6 cores.
	Disk	**1x480GB** or more Solid-State Disk of Enterprise grade. [1] **1x8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in

[1] Neither the number of HDD/SSD's nor their capacity can be changed.

		hot-plug bay; At least 1 x Free hot-pluggable disk bay for adding 2nd 8TB HDD in future.[2]
	Interconnection	1 x 100Gbps InfiniBand InterConnect
	High Speed Network	2 x 10 G (RJ45) Ethernet ports
	Graphics	On-board server grade graphics;
	ports	Must have at least 2USB,1VGA/HDMI or any other ports
	Management	Dedicated Management port with KVM over LAN support
	Expansion Slots	There must be at least one PCI-Express expansion slot available for future expansion. (after populating all the required components).
	Power Supply	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Titanium or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails or is removed). This is to be substantiated by means of a detailed power budget for quoted configuration.
	Type	Rack mountable enclosure Server Chassis with suitable mounting kit; Modular multi-node systems may be quoted but each node must not effectively take more than 0.5 U space **(For example 2 nodes in 1U or 4 nodes in 2U)** . Must be compatible with the rack quoted in item #12.
	Cables	Must include necessary power cables with appropriate length in redundant configuration; Necessary networking cables with appropriate length for connecting the system to the infrastructure (IB Switch, 10G Switch and Management Network)
	Warranty	Warranty: As described under Item #16. Service Level: Next Business Day (NBD)
	Quantity	**32 (Thirty Two) Nodes.**
(2) CPU-GPU compute nodes	*Processors*	x86-64 architecture multi-core processor with base clock frequency of at least **2.1 GHz**, with **26 or more cores per processor**, must support DDR4-2933 or faster memory. Native support for AVX2.
	No of Processors	**Two** processors per node.
	GPU	4 x Nvidia Tesla T4 GPUs System must be capable of supporting up to 6 x T4 or 6 x V100 GPUs (system should support both types of GPUs with suitable PCIe expansion slots)
	Memory	**14 GB or more per physical CPU core with at least 768 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, ChipKill or equivalent technology. It should be possible for memory to scale up to at least a total of 1024 GB per node.

[2] Neither the number of HDD/SSD's nor their capacity can be changed.

		The memory DIMMs must be installed **in a fully balanced mode (equally populated across all channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor. The number of memory channels should be such that for every memory channel, there are not more than 6 cores.
	Disk	**1 x 480 GB** or more Solid-State Disk(SSD) Enterprise grade.[3] **2 x 1900 GB** or more hot-pluggable SATA based NVMe SSDs[4] At least two hot-pluggable disk bay for adding SSDs in future
	Interconnection	1 x 100 Gbps InfiniBand InterConnect
	High Speed Network	2 x 10 G (RJ45) Ethernet ports
	Graphics	On-board server grade graphics;
	ports	Must have at least 2USB, 1VGA/HDMI or any other ports
	Management	Dedicated Management port with KVM over LAN support
	Power Supply	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Platinum or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails (or is removed). This is to be substantiated by means of a detailed power budget for configuration with 6 x Tesla V100
	Type	Rack mountable enclosure Server Chassis with suitable mounting kit; Must not effectively take more than 2U space.
	Cables	Must include necessary power cables with appropriate length in redundant configuration; Necessary networking cables with appropriate length for connecting the system to the infrastructure (IB Switch, 10G Switch and Management Network)
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day (NBD)
	Quantity	**1 (one)** (This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria
	Processors	x86-64 architecture multi-core processor with base clock frequency of at least **2.1 GHz**, with **26 or more cores per processor**, must support DDR4-2933 or faster memory. Native support for AVX2. **The processor should be same as compute node.**
	No of	**Two** processors per node.

[3] Neither the number of HDD/SSD's nor their capacity can be changed.
[4] Neither the number of HDD/SSD's nor their capacity can be changed.

(3) **Master Node**	*Processors*	
	Memory	**7 GB memory per physical CPU core present or more with at least 384 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. The memory DIMMs must be installed **in a fully balanced mode (equally populated across all channels.) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor. The number of memory channels should be such that for every memory channel, there are not more than 6 cores.
	Disk	**2 x 480GB** or more Solid-State Disks (SSD) in hot-plug bays configured as RAID1; [5] **5 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays configured as RAID0,1,5,6.[6]
	Interconnection	1 x 100Gbps InfiniBand Inter Connect
	High Speed Network	2 x 10 G (RJ45) Ethernet ports 2 x 1G (RJ45) Ethernet ports
	Graphics	On-board server grade graphics;
	Ports	Must have at least 2USB, 1VGA/HDMI or any other ports 1 x DVDRW drive
	Management	Dedicated Management port with KVM over LAN support
	Expansion Slots	There must be at least two PCI-Express expansion slots available for future expansion. (after populating all the required components)
	Power Supply	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Titanium or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails or is removed). This is to be substantiated by means of a detailed power budget for quoted configuration.
	Type	Rack mountable enclosure Server Chassis with suitable mounting kit; Must not effectively take more than 2U space.
	Cables	Must include necessary power cables with appropriate length in redundant configuration; Necessary networking cables with appropriate length for connecting the system to the infrastructure (IB Switch, 10G Switch and Management Network)
	Warranty	Warranty: As described in Point#16. Service Level: Next Business Day
	Quantity	**2 (Two)**

[5] Neither the number of HDD/SSD's nor their capacity can be changed.
[6] Neither the number of HDD/SSD's nor their capacity can be changed.

		(This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria
(4) **Login Node**	*Processors*	x86-64 architecture multi-core processor with base clock frequency of at least **2.1 GHz,** with **<u>26 or more cores per</u>** processor must support DDR4-2933 or faster memory. Native support for AVX2. **The processor should be same as the compute node.**
	No of Processors	Two processors per node.
	Memory	**7 GB memory per physical CPU core present or more with at least 384 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. The memory DIMMs must be installed **in a fully balanced mode (equally populated across all channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor. The number of memory channels should be such that for every memory channel, there are not more than 6 cores.
	Disk	**1 x 480 GB** or more Solid-State disk Enterprise grade[7] **4 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bay which can be configurable in RAID0,1,5,6.[8]
	Interconnection	1 x 100 Gbps InfiniBand/Omni-Path InterConnect
	High Speed Network	2 x 10 G (RJ45) Ethernet ports 2 x 1G (RJ45) Ethernet ports
	Graphics	On-board graphics; compatible 2GB graphics card.
	Ports	Must have at least 2USB, 1VGA/HDMI or any other ports
	Management Ports	Dedicated Management port with KVM over LAN support
	Power Supply	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Titanium or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails or is removed). This is to be substantiated by means of a detailed power budget for quoted configuration.
	Type	Rack mountable enclosure Server Chassis with suitable mounting kit; one node per chassis. **Modular multi-node systems are not allowed – only one node per chassis.** Each node must not effectively take more than 2U space.

[7] Neither the number of HDD/SSD's nor their capacity can be changed.
[8] Neither the number of HDD/SSD's nor their capacity can be changed.

	Cables	Must include necessary power cables with appropriate length in redundant configuration; Necessary networking cables with appropriate length for connecting the system to the infrastructure (IB Switch, 10G Switch and Management Network)
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day (NBD)
	Quantity	**2 (two)** (This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria
(5) **Database Server**	*Processors*	x86-64 architecture multi-core processor with base clock frequency of at least **2.4 GHz**, with **16 or more cores per processor**, must support DDR4-2933 or faster memory.
	No of Processors	Two or more processors per node.
	Memory	**8 GB memory per physical CPU core present or more with at least 256 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. The memory DIMMs must be installed **in a balanced mode (equally populated across all memory channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor. The number of memory channels should be such that for every memory channel, there are not more than 6 cores.
	Disk	**2 x 480 GB** or more Solid-State Disks (SSD) Enterprise grade[9] **4 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bay which can be configurable in RAID0,1,5,6.[10]
	Interconnection	1 x 100Gbps InfiniBand InterConnect
	High Speed Network	2 x 10 G (RJ45) Ethernet ports 2 x 1G (RJ45) Ethernet ports
	Graphics	On-board server grade graphics;
	ports	Must have at least 2USB, 1VGA/HDMI or any other ports
	Management	Dedicated Management port with KVM over LAN support
	Expansion Slots	There must be at least one PCI-Express expansion slot available for future expansion. (after populating all the required components)
	Power Supply	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Titanium or better.

[9] Neither the number of HDD/SSD's nor their capacity can be changed.
[10] Neither the number of HDD/SSD's nor their capacity can be changed.

		The power supply must be completely redundant (capable of running the complete system without throttling if one module fails or is removed). This is to be substantiated by means of a detailed power budget for quoted configuration.
	Type	Rack mountable enclosure Server Chassis with suitable mounting kit; one node per chassis. **Modular multi-node systems are not allowed – only one node in a single chassis.** Each node must not effectively take more than 2U space.
	Cables	Must include necessary power cables with appropriate length in redundant configuration; Necessary networking cables with appropriate length for connecting the system to the infrastructure (IB Switch, 10G Switch and Management Network)
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day (NBD)
	Quantity	**2 (two)** (This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria
(6) **Storage Server Type – 1** **(All-Flash)**	*Processors*	x86-64 architecture multi-core processor with base clock frequency of at least **2.4 GHz**, with **16 or more cores per processor**, must support DDR4-2933 or faster memory.
	No of Processors	Two or more processors per node.
	Memory	**8 GB memory per physical CPU core present or more with at least 256 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. The memory DIMMs must be installed **in a balanced mode (equally populated across all memory channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor.
	Disk	**2 x 480 GB** or more Solid-State Disks Enterprise grade [11] **9 x 3.2TB** NVMe Solid State Disks in hot-swappable bays (endurance of 3 DWPD or better over 5 years). Must be configures in RAID0,1,5,6[12] **Must have at least 5 free expansion slots for future upgradation**
	Interconnection	1 x 100Gbps InfiniBand InterConnect
	High Speed Network	2 x 10 G (RJ45) Ethernet ports 2 x 1G (RJ45) Ethernet ports
	Graphics	On-board server grade graphics;

[11] Neither the number of HDD/SSD's nor their capacity can be changed.
[12] Neither the number of HDD/SSD's nor their capacity can be changed.

	Ports	Must have at least 2USB, 1VGA/HDMI or any other ports
	Management	Dedicated Management port with KVM over LAN support
	Expansion Slots	There must be at least one PCI-Express expansion slot available for future expansion. (after populating all required components)
	Power Supply	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Titanium or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails or is removed). This is to be substantiated by means of a detailed power budget for quoted configuration.
	Type	Rack mountable enclosure Server Chassis with suitable mounting kit; one node per chassis. **Modular multi-node systems are not allowed – only one node in a single chassis.** Each node must not effectively take more than 2U space.
	Cables	Must include necessary power cables with appropriate length in redundant configuration; Necessary networking cables with appropriate length for connecting the system to the infrastructure (IB Switch, 10G Switch and Management Network)
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day (NBD)
	Quantity	**1 (one)** (This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria.
(7) Storage Server type -2	*Processors*	x86-64 architecture multi-core processor with base clock frequency of at least **2.4 GHz**, with **16 or more cores per processor**, must support DDR4-2933 or faster memory.
	No of Processors	Two or more processors per node.
	Memory	**8 GB memory per physical CPU core present or more with at least 256 GB** DDR4-2933 MHz or higher; Memory must be protected by advanced ECC, Chip-Kill or equivalent technology. It should be possible for memory to scale up to at least a total of 512 GB per node. The memory DIMMs must be installed **in a balanced mode (equally populated across all channels) to operate at the maximum rated frequency of the memory and frequency supported by the quoted processor**. The memory should be configured to run at highest possible performance for the quoted processor.
	Disk	**1 x 480 GB** or more Solid-State Disk (SSD) Enterprise grade [13] **16 x 8TB** or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays can be configured as RAID0,1,5,6[14]
	Interconnectio	1 x 100Gbps InfiniBand InterConnect

[13] Neither the number of HDD/SSD's nor their capacity can be changed.
[14] Neither the number of HDD/SSD's nor their capacity can be changed.

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	High Speed Network	2 x 10 G (RJ45) Ethernet ports 2 x 1G (RJ45) Ethernet ports
	Graphics	On-board server grade graphics;
	Ports	Must have at least 2USB, 1VGA/HDMI or any other ports
	Management	Dedicated Management port with KVM over LAN support
	Expansion Slots	There must be at least one PCI-Express expansion slot available for future expansion. (after populating all required components)
	Power Supply	Redundant hot swappable power supply and redundant fans and appropriate cables for the racks. 80Plus Titanium or better. The power supply must be completely redundant (capable of running the complete system without throttling if one module fails or is removed). This is to be substantiated by means of a detailed power budget for quoted configuration.
	Type	Rack mountable enclosure Server Chassis with suitable mounting kit; one node per chassis. **Modular multi-node systems are not allowed – one node in a single chassis.** Each node must not effectively take more than 4U space.
	Cables	Must include necessary power cables with appropriate length in redundant configuration; Necessary networking cables with appropriate length for connecting the system to the infrastructure (IB Switch, 10G Switch and Management Network)
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day (NBD)
	Quantity	**2 (two)** (This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria
(8) **Interconnect network**	*Type and Topology*	Primary Communication Network (In 100 % non-blocking fat-tree topology or any other proprietary well-established proven topology connecting all Compute Nodes, Service Nodes & I/O Nodes with a minimum bandwidth of 100 Gbps per port) InfiniBand must be compatible with all the system components quoted in this tender having 100G Network Port
	Number of connection port	At least 72 end-devices connection 100Gbps per port connection
	Throughput	14Tb/s or higher
	Port Bandwidth	100 Gbps per port
	Mounting	Required rack mounting kit; Must not effectively take more than 2U space. Air-flow direction should match the server equipment quoted for uniform air-flow
	Power	N+N redundant power supplies with appropriate cables matching to the infrastructure power outlet.
	Software	Required software to operate/manage the switch for HPC with Licenses if any.
	Others	Bidder should describe the design of interconnects in detail

	Cables	Appropriate number of compatible cables must be supplied
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day (NBD)
	Quantity	**Quantity as per topology and total connection port requirements**
(9) **High Speed Network**	*Type and Topology*	High Speed Communication Network 10G Ethernet Switch Layer-3 Managed Switch Stackable with High-speed bandwidth.
	Number of connection port	48 x 10Gbps (RJ45) ports, 4 x 40Gbps (QSFP or better) ports, 2 x 1Gbps (RJ45) ports Must be compatible with all the systems quoted in this tender having 10G (RJ45) Network Port
	Throughput	1200 Gbps switching capacity or higher
	Port Bandwidth	10 G (RJ45)
	Mounting	Required rack mounting kit; Must not effectively take more than 1U space. Air-flow direction should match the server equipment quoted for uniform air-flow
	Power	N+N redundant power supplies with appropriate cables matching with the infrastructure power outlet.
	Software	Required software to operate/manage the switch for HPC along with Licenses required if any.
	Others	Bidder should describe the design of interconnects in detail
	Cables	Appropriate number of compatible cables connecting to all 10G ports in the in this tender must be supplied; Proper power cables should also be provided 40G (QSFP or better) compatible cables and connects must be provided to interconnect all 10G switches
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day
	Quantity	**2 (two)** (This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria
(10)	*Type and Topology*	Communication Network 1 G Ethernet Switch Layer-3 Managed Switch
	Number of connection port	48 x 1Gbps (RJ45) ports, 4 x 10Gbps (SFP or better) ports, 2 x 1Gbps (RJ45) ports Must be compatible to the 10G switch (RJ45) Network Port
	Throughput	160 Gbps or better
	Port Bandwidth	1 G (RJ45)

Management Network	*Mounting*	Required rack mounting kit; Must not effectively take more than 2U space. Air-flow direction should match the server equipment quoted for uniform air-flow
	Power	N+N Redundant power supplies with appropriate cables matching to the infrastructure power outlet
	Software	Required software to operate/manage the switch for HPC along with Licenses required if any.
	Others	Management Layer must be configured
	Cables	Appropriate number of compatible cables connecting to all 1G ports in the in this tender must be supplied; Proper power cables also be provided
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day
	Quantity	**1 (one)** (This is a tentative quantity; however, the numbers might change during purchase). Check the evaluation criteria
(11) KVM Console	*Console*	17" rack mountable Console with KVM connecting at least 16 Nodes. The console should be rack-mountable, offering a space-efficient solution for complete console control. must not effectively take more than 1U space.
	Cables	Required Number of cables with suitable length
	Power	Power supplies with appropriate cables matching to the infrastructure power outlet
	Technology	This can be either KVM over IP or any other technology compatible with above servers/nodes
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day
	Quantity	**Complete Solution**
(12) Racks	*Racks*	Integrated Cooling Solution; Standard Size; available clear space (length x width x height) 26 ft x 13 ft x 7.5 ft. Vendor must provide the detail dimension of the racks to fit all the equipment and still keeping more than 34 U (32U in case UPS main unit is included in the racks) contiguous empty space in one rack.
	Cooling	Must be UL-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling and minimum 4900 CFM considering 140 CFM per kW
	Usage Space	2 x 42 U usable slots; The cables used to bring power to cooling units, sensors or any other such units should not block or occupy the network cabling path or power dispensing plug.
	PDU	Number of properly configured power distribution units (PDUs) for the enclosures/rack's solution. Must be able to connect all

		power cables needed for components mentioned in this solution. PDUs must be placed in such a way that it doesn't interfere with other cabling like networking arrangements
	Cable arrangers	There must be clear and independent cable arrangement available for each group of cabling.
	Rack accessibility	Must have full front and rear access of the racks.
	Accessories	Must include Standalone Ultrasonic Rodent Repeller one per rack Must include 40% Blanking Panels Temperature, Humidity monitor across racks Preventive Maintenance for entire period of warranty should be covered by vendor (in every 6 months without any down time) Vendor must provide the input raw power requirements and specs. Vendor must provide detail layout and drawing of the placing of racks, cooling units and outdoor units.
	Warranty	Warranty: As described in Item #16. Service Level: Next Business Day
	Quantity	**Complete Solution.** **The solution must be adaptable for future upgradation to include additional similar size racks.**
(13) UPS		CE certified 40 kVA UPS should be provided along with Battery bank, interlink cabling, battery DC Breaker UPS connections and power output must be compatible with the HPC solution.
		Overall efficiency of UPS system in double conversion mode : > 95 % for 25 - 75% loading
		Each UPS should be designed to unity power factor at output kVA=kW Input Power factor of UPS > 0.99 Input Voltage Window : 304 v - 477 v at Full Load Input Frequency range: 45 - 65 Hz
		Overload Capacity : 110% for 30 Minutes, 125 % for 10 Minutes, 150% for 1 minute Provision for UPS functional testing without external load bank Input/Output/Bypass/Maintenance Bypass switch to be present within UPS
		UPS system should be provided with embedded dust filter and conformal coating PCBA; UPS should have EPO and Wave form capturing for fault analysis. Logging/Monitoring through SNMP to be integrated into the HPC solution for control and monitor UPS status. Battery type must be of VRLA Sealed Maintenance Free (SMF)

		12V Cells with at least 150 AH or more AH. Bidders must provide a detailed calculation of power factors battery backup time & AH capacity against UPS KVA/KW rating. Vendors must provide input power requirements for the UPS. Vendors should provide all compatible items like switches/breaker/cables/wires etc. are required for the connection between UPS to racks. If the UPS is included in the racks, it must not exceed 2U of space.
		UPS system should support common battery bank to improve overall availability for Back up time
		Each UPS should be provided with minimum 10 minutes back up at full load of 40 kW
		UPS system should be in N+N mode Energy Management System - ISO 50001 certification should be provided
		App based 24x7 real time UPS Monitoring System which can generate alert/alarms, provide dashboards for minimum data of past 7 days and can transmit the message on mobile phones up to 10 users. App should also be capable of providing Benchmarks & actionable recommendations.
	Quantity	**Complete Solution.**
(14) Installation and Acceptance	1. HPC installation must be done by trained engineers of the HPC Solution provider	
	2. Installation must be done as per the requirements at IISER Mohali. All aspects of installation, networking, power-cabling must be discussed in detail by the engineers of HPC solution provider with IISER Mohali. Installation can begin only after all these issues are settled.	
	3. Demonstration of the full capabilities of the system that are listed in the proposal by the engineers of the HPC solutions is essential before it is accepted.	
	4. The vendor has to rack-mount all equipment with proper cabling and configure the system as a high-performance compute cluster. The vendor must ensure a very clean cabling and interconnecting system with proper routing of the cable.	
	5. All the cables from a node must be clearly labelled for each category of network layer.	
	6. Proposed system should be configured in such a way that it offers flexible upgrade options in future.	
	7. All unused U-space must be consecutively left in one rack.	
	8. The vendor must place the switches and cabling in such a way that it easily adapts to future upgradations.	
	9. Installation of the OS, Job scheduler, application software and other	

	management utilities should be done by the trained engineers, either prior to the delivery of the factory integrated solution or on-site. **For security reasons and firewall related issues, installation and testing of scientific applications and any other application/utility, other than the factory integrated ones, should be done on site. Please note that at no point of time access can be granted out of the IISER Mohali network for servicing or accounting etc.**	
	10. Configuration should be done in such a way that it should adopt a parallel storage system like Lustre or similar technology in future.	
	11. Cluster functionality tests need to be performed by the trained engineers from HPC solutions provider.	
	12. Training for general system administration with adequate documentation including tasks such as user/node management, installation/upgrade, queuing system management and file system management should be provided by the HPC Solution provider. In particular: a. User Creation/Deletion/Modification. b. User usage accounting - Storage and compute c. Switching on, starting up and shutting down the cluster. d. Disk, health status monitoring of Master/IO nodes and storage enclosure. e. Basic troubleshooting for storage and job scheduler. f. Step by step installation guide for node configuration from scratch. g. Any other document/manual useful for daily administration.	
(15) Software and Management	*OS*	Linux based 64-bit OS (CentOS 7.8) with support for NIS/LDAP/FreeIPA, NFS version 3/4 GNU Library like autoconf/automake, cmake, svn/mercurial/cvs/git, python, trace, vampir, emacs, vim etc. OS must support parallel file systems like Lustre or GPFS etc,
	Hardware integrity	Compute nodes should be hot-swappable; The configuration must have provision to set nodes to standby mode for servicing.
	Batch/Job Scheduler	Open source based or commercial workload managers (like, PBS, or Slurm etc) for batch job scheduling with policies to allow Pre-emptive and backfill scheduling, Job monitoring and management, policy aware, resource aware and topology aware scheduling, GPU aware scheduling, advance reservation support, Live reconfiguration capability. Must be able to support interactive jobs with debugging on a dedicated debug queue
	System configuration and HPC/Cluster management	Unified system management/monitoring toolset for configuration, diagnosis and management. Toolset/Manager must be capable of supporting package and image based provisioning, intuitive web interface for managing and customizing the cluster. Cluster Manager tool set with provisioning, monitoring, and reporting capabilities. Support for Customizing networks and compute node profiles. Capable of customizing compute nodes and able to push configuration changes and updates to the compute nodes without

		reinstalling and rebooting. **The bidder must come into an agreement with IISER Mohali to provide support for integration of all future upgradations of the cluster including addition/deletion of compute nodes, CPU-GPU nodes, service nodes, storage and lustre solutions, irrespective of architecture, make and vendors**.
	Job Accounting & Control	A centralised job and user accounting service (using LDAP/FreeIPA) must be configured and installed including centralised directory manager.
	Development Environment	Should configure Intel Cluster Studio with runtime libs, profilers and debuggers.
	Open-source compiler suite	Latest open-source C, C++, Fortran, gFortran, PGI, etc. compilers and debuggers.
	Communication libs	Communication libs MPI/OpenMP/pthreads. Vendor specific versions like MPICH2/MVAPICH/OpenMPI with non-MPI based installation.
	Reliability and Server Health Care:	As mentioned above, a dedicated & independent 1 Gbps or higher system management network for nodes and cabinet level controllers in the system. Provision for monitoring racks status (i.e. cooling, power, etc) has to be there.
		Integrated supervisory software tools to allow management, administration, monitoring and maintenance of the system at hardware and software levels. Such tools will have interfaces accessible to qualified users and allow: 1. Monitoring the physical state (such as power and temperature) of each node, allowing each node to be turned on and off remotely. 2. Monitoring and administering the file sharing system. 3. Simultaneously installing a software package on all nodes.
	Applications	Vendor should install following software Espresso, VASP, LAMMPS, SIESTA, CPMD, CP2K, ABNIT, NAMD, GROMACS, AMBER, Gaussian, MolPro, HooMD, HalMD, MATLAB, Mathematica & ANSYS etc. (CPU & GPU version where available). CUDA Toolkit, OpenACC, OpenCV in GPU Nodes. Commercial software listed above will be provided by IISER Mohali except those explicitly asked for in the tender under the section "Commercial Software".
	Commercial Software	Vendor must quote for the following commercial cluster version software for academic edition with floating license with 3 years of update; The purchase of these software is optional and will not be used for financial evaluation of the HPC solution. However it is mandatory to quote. 1. Gaussian Latest Version (Unlimited Institution-wide License) 2. Latest version of Intel Compiler Libraries – cluster edition

		(2-User license)
(16) Services Level Agreement (SLA) & Warranty	1. The entire HPC solution including each firmware, and hardware component should have a **3-year warranty** from the HPC Solution provider (with 24x7 service level unless specified otherwise earlier.)	
	2. The Bidder (HPC solution provider) warrants that all the goods are new, unused, and of the most recent or current supported models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.	
	3. The Bidder (HPC solution provider) has to ensure that the proposed solution delivers an uptime guarantee of 98% of the entire system on a yearly basis (i.e. annual node-hours of uptime). The downtime for 2% or more on a yearly basis will incur a penalty as extension of warranty period for a month per 5% downtime, which the bidder has to compensate by increasing the period of subsequent total months of warranty for the entire system.	
	4. In the event of failure of any of the subsystems or components of the proposed solution, the Bidder (HPC solution provider) has to ensure that the defects are rectified within two full working days. Any delay in node warranty servicing beyond 3 days will incur a penalty as extension of warranty period for a month per every 10 days (a fraction would be rounded to the nearest multiple of 10 days), which the bidder has to compensate by increasing the period of subsequent total months of warranty for the entire system.	
	5. The defects, if any, during the guarantee/warranty period are to be rectified free of charge by arranging free replacement wherever necessary. It should be completed within 2 working days for individual servers and next working day for critical components like internal power supply, networking and internal storage, UPS and Cooling after the intimation of fault. Any delay in replacement more than 2 days will incur a penalty as extension of warranty period for a month per 10 days of delay, which the bidder has to compensate by increasing the period of subsequent total months of warranty for the entire system. Please note that conditions in item 3, 4 and 5 in this section be applied simultaneously. Thus the bidder must ensure and agree to overall running and maintaining the acceptable uptime of entire HPC solution during entire warranty period.	
	6. The bidder/HPC Solutions Provider is required to provide a letter confirming the extended period of warranty after taking into account of all the accrued penalties two weeks before the end of the standard warranty period.	
	7. During the warranty period, Bidder (HPC solution provider) will have to undertake comprehensive maintenance of the entire hardware components, equipment, firmware support and accessories supplied by the vendor at the place of installation of the equipment.	

	8. A letter of commitment for five years from the date of installation, with respect to Hardware and Firmware support from the OEM should be enclosed in the cover for Technical bid. Offers will be rejected if they are not accompanied by the letter from the OEM.
	9. Technical support should be provided for system administration/maintenance of the HPC solution during the entire warranty period.
	10. Bidder (HPC solution provider) should protect any data during the events of upgrades of hardware/firmware/OS.
	11. Warranty period is to be counted from the date when the installation is completed and acceptance certificate has been issued by IISER Mohali
	12. The installation will be executed by certified and OEM trained engineers for such HPC cluster stack and other peripherals.
	13. Any item not specifically mentioned in the specification but is required for successful implementation of the HPC solution (in the proposed solution) must be brought to our notice in ***pre-bid meeting*** and upon reply they should quote accordingly. At the time of installation, if it is found that some additional hardware or software items are required to meet the operational requirement of the configuration, but not included in the Bidder's (HPC solution provider's) original list of deliverables, the Bidder (HPC solution provider) shall supply such items to ensure the completeness of the configuration at no extra cost.
	14. Any query/queries must be brought to our notice in the ***pre-bid meeting***. No query will be entertained after pre bid meeting.
	15. Entire installation should be done at the proposed site only. Requests for remote access for installation/fine tuning will not be entertained during installation period. No remote access should be asked for rectification or service related issues during the warranty period.
	16. Acceptance certificate will be issued only after all the acceptance tests as outlined earlier (in Technical Specifications Item # 16 and also elsewhere in this document) have been satisfactorily passed.
	17. The vendor will also be required to submit documentation with details about the hardware installation with diagram and flowchart.
	18. The bidder must agree to install and configure the user sought operating systems, mostly open source Linux versions, MPI libraries, Job schedulers plus cluster management tools and demonstrate its running in parallel as part of the system acceptance. 19. Installation and maintenance charges for 3 years (if any), should be mentioned separately along with training on cluster usage to its users. Zero or unrealistic cost quoted here will be liable to rejection of the bid. ***20. Bidder must quote an option for having one trained engineer onsite for day-to-day troubleshooting and administration. The cost for this may be quoted on a monthly basis considering a deployment of two years. This will not be considered for the financial evaluation of the bid.***
	21. Any newer version available of the firmware proposed in the respective

	domain should be provided and implemented at no extra cost for the entire contract period.
(17) Evaluation Criteria	1. The Evaluation process to identify the successful bidder is based on the combined techno-commercial evaluation. The bids received from the bidders will be evaluated by the Technical Committee constituted by the Institute. The decision of the technical committee is final and binding on all bidders.
	2. The technical bids are evaluated first. The mandatory conditions mentioned elsewhere must be adhered to and failure of the same will result in disqualification of the bid.
	3. The evaluation will be done on the basis of aforementioned items and quantities, including the accessories, however the number of items purchased may be more or less in quantities.
	4. The financial evaluation will be done using the quantities mentioned under each item for Items 1 to 13 mentioned in this document.
	5. The total cost for the purposes of comparison to decide the lowest bid, will be determined by considering the total cost of the entire solution i.e HPC components, storage, racks and UPS. **4th and 5th years AMC quote is optional for purchase, but mandatory to quote.** This part will not be considered for the price evaluation of the lowest bidder.
(18) Term & Condition	1. Bidder must provide complete and detailed Schematic Diagram, Networking, Rack layout, Power & Cooling requirements, Electrical infrastructure requirement and anything else required at IISER Mohali as a site preparation.
	2. Prices should NOT be given anywhere in the technical bid. **Accidental/incidental** mention of prices in technical bid may result in disqualification. **The technical bids must be submitted in the format (excel file) that has been uploaded with this tender. It is mandatory to fill out this excel file with all the details of the hardware specifications that has been asked. In addition, all brochures/literature/certificates that is to be supplied with this tender must be given item numbers so that these item numbers can be quoted clearly in the excel file for referencing. Vendors must take utmost care and transparency in providing technical specifications and these should be very easily verifiable by IISER Mohali. Please note that any modifications in the filled out coloured cells of the excel file would make the bid liable for rejection.** **In case of any discrepancy in the specifications/terms and conditions in the ancillary files with this tender document, the bidders must bring to our notice in the pre bid meeting. IISER Mohali will try to ensure correction of such details. However, if corrigendum is not published,**

	the bidders may include that separately below the coloured section. **In addition to this excel file, the bidders must fill out the terms and acceptance and the service level agreement provided in Annexure I, II and checklist of documents Annexure III.** **In case of any discrepancy in the wordings/specifications mentioned in the ancillary files (Tech. Spec. file and the annexures), the specifications/terms and conditions mentioned in this document would be considered final and binding.**
	3. The bidder shall provide the Registration number of the firm along with the GST/LST/CST/WCT/ST No. and the PAN Number allotted by the concerned authorities.
	4. The bidder must have experience of supplying 5 similar or better orders of HPC within the last 5 financial years for any Govt. organizations, preferably to Educational and R&D organizations. The documentary evidence in this regard must be attached. Contact details of the concerned person of institutions where installation have been made by the bidder should also be enclosed. During technical evaluation IISER Mohali would seek information/feedback from these organisations/labs. Therefore, the bidder must provide accurate contact information of the contact person of these previous installation outside IISER Mohali. Any incorrect information would make the bid liable to reject.
	5. The bidder (HPC Solution provider) should have performed at least **5 HPC clusters** each bigger than **15 Teraflop installations** in India in the **last 3 years**. Of these installations, the bidder must have provided at least one HPC cluster with **50 TeraFlops (double precision CPU peak performance) in** the **last 3 years.** The details of the same need to be provided. Of these installations, the bidder must have performed at least one HPC solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.
	6. Compliance to eligibility criteria must be attached along with an unpriced technical bid.
	7. This is a two-part tender. The bid should be submitted in two parts Technical and Commercial. Technical Bid should not contain any indication about the prices. If this is not followed, the entire bid would be rejected.
	8. Bidder should be an ISO certified System Integrator. Certification needs to be attached.
	9. One OEM should quote with one bidder only & vice versa.
	10. The quoted prices can be in INR or in any valid foreign currencies (e.g. US Dollar). For INR quotations, delivery should be up to IISER Mohali.
	11. **Pre-bid meeting will be held for this requirement as per schedule**. For any technical queries, the undersigned authority can be contacted through e-mail (stores@iisermohali.ac.in) only within the stipulated period of time or

	on or before mentioned dates and subsequently, corrigendum be raised on satisfactory reasoning, if required. The vendor must indicate his willingness to participate in the pre-bid meeting via email to the authority. All queries pertaining to the technical specifications of the components of the HPC should be send to authority through email at least 3 days prior to the announced date of the pre-bid meeting. The committee needs to deliberate on the questions for resolving any queries on technical specifications. In addition, all technical related queries must pertain to the published specifications only. The vendors are required to adhere to this. At no point a vendor should try to push for an alternate solution for the HPC. No major change in the overall HPC solution/layout will be accepted. There will be no vendor presentations during pre-bid meeting. All questions and the answers to these questions may be collated and uploaded in the tender page in addition to the minutes of the pre-bid meeting. The vendors participating in the pre-bid meeting agree to the publishing of their queries online and a discussion of these during the meeting.
	12. The vendor must not quote a bundled price. Price should be quoted item-wise. IISER Mohali reserves the right to increase or decrease the quantity of items by up to 30%.
	13. The bidder should have a turnover of at least **Rs. 4 Crore each year** during the **last 3 years [FY: 2017-18, 2018-19 & 2019-2020].** Authentic documents to this effect must be attached along with the bid.
	14. Bidder (HPC Solution provider) should have a direct local sales & support office in Chandigarh-Mohali-Panchkula Tri-city or in Delhi NCR.
	15. The OEM must provide authorization certificate to one Bidder only. A letter from OEM must be attached along with the bid.
	16. The OEM should have a good reputation and service experience at all IISERs & IITs including IISER Mohali.
	17. There must be a clear documentation of each item and comparison tables if any; The manual/brochures for each item must be included in the technical bid.
	18. The bidder must submit the printed catalogues, literature of the proposed product in used in the HPC solution.
	19. The firms are required to quote Servers of established and branded makes only. The OEM can quote either directly or through an authorized partner or service provider. In case of partnership, MAF is compulsory.
	20. Point by point compliance to all the above-mentioned features should be provided by the firm (in the format provided). There should not be any significant deviation and if any, should be stated clearly to aid the technical evaluation.

	21. Full Server configuration as listed above should be tested and integrated at the OEM manufacturing plant which includes all major components, power supply, cooling fan cabinet etc. No local site integration of server components will be allowed, except for storage.
	22. The bidding firm must be authorized by the manufacturer to supply, install and maintain the system. The specific authorization by the manufacturer for participating in this tender should be enclosed, otherwise quotation may be rejected
	23. The vendor must provide the Bill of Material for the items proposed to meet the complete solution. The vendor should verify and certify that the items proposed are sufficient to integrate the proposed solution into a production mode.
	24. Special instructions for site preparation if any should be clearly mentioned in the technical bid.
	25. The supply, installation and commissioning of the system should be completed within 8-12 weeks from the date of purchase order. The project/activity must be completed on turnkey basis, integrating hardware, system software and application software by a single vendor/system integrator.
	26. 4th and 5th years AMC quote is optional for purchase but mandatory to quote.
	27. No EOL/EOS product should be quoted and the same should be stated on OEM letterhead that EOL/EOS would not be there for quoted products for at least 3 years
	28. Bidder (HPC solution provider) should provide Training on cluster usage to its users at least twice in the first year.
	29. Price should be quoted on the basis of 24x7 response against call log by IISER Mohali to the Bidder/OEM.
	30. Bidders must mention GST and HSN/SAC codes of all the items quoted.
	31. An undertaking (self-certificate) is to be submitted by the bidder that the organization has not been blacklisted by any Central/State Government Department/Organization and educational institutes.
	32. Canvassing in any form, including communication with institute officials other than what is provided here, would disqualify the OEM from further participation.

ANNEXURE I
Acceptance of Terms and Conditions

Particulars	Acceptance	Remarks
1. HPC installation must be done by trained engineers of the HPC Solution provider		
2. Installation must be done as per the requirements at IISER Mohali. All aspects of installation, networking, power-cabling must be discussed in detail by the engineers of HPC solution provider with IISER Mohali. Installation can begin only after all these issues are settled.		
3. Demonstration of the full capabilities of the system that are listed in the proposal by the engineers of the HPC solutions.		
4. The vendor has to rack-mount all equipment with proper cabling and configure the system as a high-performance compute cluster. The vendor must ensure a very clean cabling and interconnecting system with proper routing of the cable.		
5. All the cables from a node must be clearly labelled for each category of network layer.		
6. Proposed system should be configured in such a way that it offers flexible upgrade options in future.		
7. All unused U-space must be consecutively left in one rack.		
8. The vendor must place the switches and cabling in such a way that it easily adapts to future upgradations.		
9. Installation of the OS, Job scheduler, application software and other management utilities should be done by the trained engineers, either prior to the delivery of the factory integrated solution or on-site. **For security reasons and firewall related issues, installation and testing of scientific applications and any other application/utility, other than the factory integrated ones, should be done on site.**		
10. Configuration should be done in such a way that it should adopt a parallel storage system like Lustre or similar technology in future.		
11. Cluster functionality tests need to be performed by the trained engineers from HPC solutions provider.		
12. Training for general system administration with		

adequate documentation including tasks such as user/node management, installation/upgrade, queuing system management and file system management should be provided by the HPC Solution provider. In particular: a. User Creation/Deletion/Modification. b. User usage accounting - Storage and compute c. Switching on, starting up and shutting down the cluster. d. Disk, health status monitoring of Master/IO nodes and storage enclosure. e. Basic troubleshooting for storage and job scheduler. f. Step by step installation guide for node configuration from scratch. g. Any other document/manual useful for daily administration.		

ANNEXURE II

Service Level Agreement and Warranty

Particulars	Agreement (Yes/No)	Remarks
1. The entire HPC solution including each firmware, and hardware component should have a **3-year warranty** from the HPC Solution provider (with 24x7 service level unless specified otherwise earlier.)		
2. The Bidder (HPC solution provider) warrants that all the goods are new, unused, and of the most recent or current supported models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.		
3. The Bidder (HPC solution provider) has to ensure that the proposed solution delivers an uptime guarantee of 98% of the entire system on a yearly basis (i.e. annual node-hours of uptime). The downtime for 2% or more on a yearly basis will incur a penalty as extension of warranty period for a month per 5% downtime, which the bidder has to compensate by increasing the period of subsequent total months of warranty for the entire system.		
4. In the event of failure of any of the subsystems or components of the proposed solution, the Bidder (HPC solution provider) has to ensure that the defects are rectified within two full working days. Any delay in node warranty servicing beyond 3 days will incur a penalty as extension of warranty period for a month per every 10 days (a fraction would be rounded to the nearest multiple of 10 days), which the bidder has to compensate by increasing the period of subsequent total months of warranty for the entire system.		
5. The defects, if any, during the guarantee/warranty period are to be rectified free of charge by arranging free replacement wherever necessary. It should be completed within 2 working days for individual servers and next working day for critical components like internal power supply, networking and internal storage after the intimation of fault. Any delay in replacement more than 2 days will incur a penalty as extension of warranty period for a month per 10 days of delay, which the bidder has to compensate by increasing the period of subsequent total months of warranty for the entire system.		
6. The bidder/HPC Solutions Provider is required to provide a letter confirming the extended period of warranty after taking into account of all the accrued penalties two weeks before the		

end of the standard warranty period.		
7. During the warranty period, Bidder (HPC solution provider) will have to undertake comprehensive maintenance of the entire hardware components, equipment, firmware support and accessories supplied by the vendor at the place of installation of the equipment.		
8. A letter of commitment for five years from the date of installation, with respect to Hardware and Firmware support from the OEM should be enclosed in the cover for Technical bid. Offers will be rejected if they are not accompanied by the letter from the OEM.		
9. Technical support should be provided for system administration/maintenance of the HPC solution during the entire warranty period.		
10. Bidder (HPC solution provider) should protect any data during the events of upgrades of hardware/firmware/OS.		
11. Warranty period is to be counted from the date when the installation is completed and acceptance certificate has been issued by IISER Mohali		
12. The installation will be executed by certified and OEM trained engineers for such HPC cluster stack and other peripherals.		
13. Any item not specifically mentioned in the specification but is required for successful implementation of the HPC solution (in the proposed solution) must be brought to our notice ***in pre bid meeting*** and upon reply they should quote accordingly. At the time of installation, if it is found that some additional hardware or software items are required to meet the operational requirement of the configuration, but not included in the Bidder's (HPC solution provider's) original list of deliverables, the Bidder (HPC solution provider) shall supply such items to ensure the completeness of the configuration at no extra cost.		
14. Any query/queries must be brought to our notice ***in pre bid meeting***. No query will be entertained after the ***pre bid meeting***.		
15. Entire installation should be done at the proposed site only. Requests for remote access for installation/fine tuning will not be entertained during installation period. No remote access should be asked for rectification or service related issues during the warranty period.		
16. Acceptance certificate will be issued only after all the acceptance tests as outlined earlier (in Technical Specifications Item # 16 in the main tender document and also elsewhere in the main tender document) have been		

satisfactorily passed.		
17. The vendor will also be required to submit documentation with details about the hardware installation with diagram and flowchart.		
18. The bidder must agree to install and configure the user sought operating systems, mostly open source Linux versions, MPI libraries, Job schedulers plus cluster management tools and demonstrate its running in parallel as part of the system acceptance.		
19. Any newer version available of the firmware proposed in the respective domain should be provided and implemented at no extra cost for the entire contract period.		

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ANNEXURE III

Checklist of Documents

Particulars	Submitted (Yes/No)
1. A letter of commitment for five years from the date of installation, with respect to hardware and firmware support from OEM should be enclosed in the cover for Technical bid.	
2. Registration number of the firm along with the GST/LST/CST/WCT/ST No. and the PAN number allotted by the concerned authorities.	
3. Document proof that bidder have experience of executing 5 similar or better HPC installations within the last 5 financial years for any Govt. organization preferably to educational and R&D organizations.	
4. Contact details of the concerned person of institutions where similar HPC installation have been executed by bidder are enclosed.	
5. Document to proof that bidder have installed 5 HPC clusters bigger than 15 Teraflop in India in last 3 years.	
6. Document to show that bidder must have provided at least one HPC cluster with 50TF in last 3 years.	
7. Document to show that the bidder has supplied and installed at least one solution using the same processor architecture (Intel-64/AMD-64) as being proposed in the current bid/solution.	
8. An ISO certification as System Integrator	
9. Document to show that bidder's company has turnover of at least Rs. 4 Crore each year during last 3 years.	
10. A bundled price has been quoted. Apart from this, item-wise price should be quoted	
11. Bidder has direct local sales and support office in Chandigarh-Mohali-Panchkula Tri-city or in Delhi NCR.	
12. Authorization certificate from OEM.	
13. Document to show that OEM have sales/service experience at other premiere Institutes such as (IISERs & IITs including IISER Mohali)	
14. Undertaking (self-certificate) by bidder that the organization has not been blacklisted by any Central/State Government Department/Organization or educational institutes	
15. Undertaking that "No" EOL/EOS product have been quoted and the same should be stated on OEM letterhead that EOL/EOS would not be there for quoted products for at least 3 years	
16. Document has been provided for the Bill of Material for the items proposed to meet the complete solution.	
17. Document to show that firm is authorized by the manufacturer OEM to supply, install and maintain the system.	
18. Point by point compliance of all HPC components is provided in the attached format. Deviation if there, is clearly stated and submitted with appropriate justification.	
19. The printed catalogues and sufficient literature of the proposed product required for HPC is enclosed.	

20. Undertaking to certify that the items proposed are sufficient to integrate the proposed solution into a production mode.	
21. Bidder to provide complete details about Schematic Diagram, Networking, Rack layout, Power & Cooling requirements, Electrical infrastructure requirement and anything else required at IISER Mohali	
22. The firms are required to quote Servers of established and branded make only. OEM can quote either directly or through an authorized partner or service provider. In case of partner, Manufacturer Authorisation Form is compulsory.	