



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

PR No. 1000051809

RFx No.6100002742

Item Description: Master Node Server

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
A. Master Node, Qty: 1 Nos.				
1.	Form Factor	Max 2U Rack Mountable		
2.	Chipset	Intel C741 or Equivalent		
3.	Processors	Dual CPU based processor (2 Nos) with following spec (Total 64 Cores):		
		(i) Each CPU with min. 32 cores		
		(ii) Min. clock frequency of 2.1 GHz or higher		
		(iii) 5th or 4th Gen Intel Xeon Processor		
4.	Memory	Minimum 128GB ECC DDR5 4400 or higher MHz RDIMM		
5.	NIC	Minimum 2 x 1GbE network ports		
6.	SSD	2 x 480 GB SATA SSD 2.5"		
7.	HDD	4 x 8 TB SATA 7200 3.5" Drive (RAID 5)		
8.	Interfaces	2 x RJ45, USB 3.0/2.0 support With Up to 3 total: 1 Front, 1 rear, 1 internal (Optional)		
9.	Interconnect	1 x 10GbaseT Ethernet		
10.	Power supply	Hot plug and redundant power supply with min 94% efficiency.		
11.	Operating systems Support	Configured with Rocky Linux Latest		
		Also, must support latest versions of		
		a) Microsoft Windows Server with Hyper-V		
		b) Red Hat Enterprise Linux (RHEL)		
		c) SUSE Linux Enterprise Server (SLES)		
		d) Canonical Ubuntu Server LTS		

12.	Secure encryption	System should support Encryption of the data		
13.	Management Port	Dedicated Gigabit remote management port		
14.	Configuration & Management	<ul style="list-style-type: none"> • Real-time out-of-band hardware performance monitoring & alerting • Agent-free monitoring, driver updates & configuration, power monitoring & capping, RAID management, external storage management, monitoring of FC, HBA & CNA & system health • Out-of-band hardware & firmware inventory • Zero-touch auto configuration to auto deploy a baseline server configuration profile • Automated hardware configuration and Operating System deployment to multiple servers • Zero-touch repository manager and self-updating firmware system • Support for Redfish API for simple and secure management of scalable platform hardware 		
15.	Security Feature	Should have a cyber resilient architecture for a hardened server design for protection, detection & recovery from cyber attacks		
		Should protect against firmware which executes before the OS boots		
		Should provide system lockdown feature to prevent change in system firmware image(s) & prevent malicious modification of server firmware.		
		Configuration upgrades should be only with cryptographically signed firmware and software		
		Should provide effective protection, reliable detection & rapid recovery using: <ul style="list-style-type: none"> - Silicon-based Hardware Root of Trust - Signed firmware updates - Secure default passwords - Configuration and firmware drift detection - Persistent event logging including user activity - Secure alerting - Automatic BIOS recovery - Rapid OS recovery - System erase 		
16.	Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response.		

17.	SPEC Benchmark	SPEC int_rate_base 2017 for the product (must be available on SPEC dot ORG before evaluation) - 450 or higher SPEC fp_rate_2017_peak for the product (must be available on SPEC dot ORG before evaluation) - 430 or higher		
18.	Another Mandatory Feature	Predictive Failure Analysis: PFA alerts should be available for all major components, including CPUs, DIMMs, adapter slots, fans, PSUs, storage devices etc		

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
B. Compute Node, Qty: Minimum 2 Nos.				
1.	Form Factor	Max 1U Rack Mountable		
2.	Chipset	Intel C741 or Equivalent		
3.	Processors	Dual CPU based processor (2 Nos) with following spec (Total 64 Cores):		
		(i) Each CPU with min. 32 cores		
		(ii) Min. clock frequency of 2.1 GHz or higher		
		(iii) 5th or 4th Gen Intel Xeon Processor		
4.	Memory	Minimum 128GB ECC DDR5 4400 or higher MHz RDIMM		
5.	NIC	Minimum 2 x 1GbE network ports		
6.	SSD	Minimum 1 of 480 GB SATA SSD 2.5"		
7.	HDD bays	Eight or more number of 2.5" Bays for future expansion		
8.	Interfaces	2 x RJ45, USB 3.0/2.0 support With Up to 3 total: 1 Front, 1 rear, 1 internal (Optional)		
9.	Interconnect	1 x 10GbaseT Ethernet		
10.	Power supply	Hot plug and redundant power supply with min 94% efficiency.		
11.	Operating systems Support	Configured with Rocky Linux Latest		
		Also, must support latest versions of		
		a) Microsoft Windows Server with Hyper-V		
		b) Red Hat Enterprise Linux (RHEL)		
		c) SUSE Linux Enterprise Server (SLES)		
12	Secure encryption	System should support Encryption of the data		
13	Management port	Dedicated Gigabit remote management port		
14	Configuration & Management	<ul style="list-style-type: none"> • Real-time out-of-band hardware performance monitoring & alerting 		

		<ul style="list-style-type: none"> • Agent-free monitoring, driver updates & configuration, power monitoring & capping, RAID management, external storage management, monitoring of FC, HBA & CNA & system health • Out-of-band hardware & firmware inventory • Zero-touch auto configuration to auto deploy a baseline server configuration profile • Automated hardware configuration and Operating System deployment to multiple servers • Zero-touch repository manager and self-updating firmware system • Support for Redfish API for simple and secure management of scalable platform hardware 		
15.	Security feature	Should have a cyber resilient architecture for a hardened server design for protection, detection & recovery from cyber attacks		
		Should protect against firmware which executes before the OS boots		
		Should provide system lockdown feature to prevent change in system firmware image(s) & prevent malicious modification of server firmware.		
		Configuration upgrades should be only with cryptographically signed firmware and software		
		Should provide effective protection, reliable detection & rapid recovery using: <ul style="list-style-type: none"> - Silicon-based Hardware Root of Trust - Signed firmware updates - Secure default passwords - Configuration and firmware drift detection - Persistent event logging including user activity - Secure alerting - Automatic BIOS recovery - Rapid OS recovery - System erase 		
16.	Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response.		
17.	SPEC Benchmark	<p>SPEC int_rate_base 2017 for the product (must be available on SPEC dot ORG before evaluation) - 450 or higher</p> <p>SPEC fp_rate_2017_peak for the product (must be available on SPEC dot ORG before evaluation) - 430 or higher</p>		

18.	Another mandatory feature	Predictive Failure Analysis: PFA alerts should be available for all major components, including CPUs, DIMMs, adapter slots, fans, PSUs, storage devices etc.		
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Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
C. GPU Compute Node, Qty: 1 No.				
1.	Form Factor	Max 2U Rack Mountable		
2.	Chipset	Intel C741 or Equivalent		
3.	Processors	Dual CPU based processor (2 Nos) with following spec (Total 48 Cores) :		
		(i) Each CPU with min. 24 cores		
		(ii) Min. clock frequency of 2.6 GHz or higher		
		(iii) 5th or 4th Gen Intel Xeon Processor		
4.	Memory	Minimum 128GB ECC DDR5 4400 or higher MHz RDIMM		
5.	NIC	Minimum 2 x 1GbE network ports		
6.	SSD	Minimum 1 of 480 GB SATA SSD 2.5"		
7.	HDD bays	Eight or more number of 2.5" Bays for future expansion		
8.	GPU	1 x Nvidia H100 NVL(94 GB) or latest		
9.	Interfaces	2 x RJ45, USB 3.0/2.0 support With Up to 3 total: 1 Front, 1 rear, 1 internal (Optional)		
10.	Interconnect	1 x 10GbaseT Ethernet		
11.	Power supply	Hot plug and redundant power supply with min 94% efficiency.		
12.	Operating systems Support	Configured with Rocky Linux Latest		
		Also, must support latest versions of		
		a) Microsoft Windows Server with Hyper-V		
		b) Red Hat Enterprise Linux (RHEL)		
		c) SUSE Linux Enterprise Server (SLES)		
	d) Canonical Ubuntu Server LTS			
13.	Secure encryption	System should support Encryption of the data		
14.	Management port	Dedicated Gigabit remote management port		
15.	Configuration & Management	<ul style="list-style-type: none"> • Real-time out-of-band hardware performance monitoring & alerting • Agent-free monitoring, driver updates & configuration, power monitoring & capping, RAID management, external storage management, monitoring of FC, HBA & CNA & system health • Out-of-band hardware & firmware inventory 		

		<ul style="list-style-type: none"> • Zero-touch auto configuration to auto deploy a baseline server configuration profile • Automated hardware configuration and Operating System deployment to multiple servers • Zero-touch repository manager and self-updating firmware system • Support for Redfish API for simple and secure management of scalable platform hardware - Secure alerting - Automatic BIOS recovery - Rapid OS recovery - System erase 		
16	Warranty	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response.		
17	SPEC Benchmark	<p>SPEC int_rate_base 2017 for the product (must be available on SPEC dot ORG before evaluation) - 450 or higher</p> <p>SPEC fp_rate_2017_peak for the product (must be available on SPEC dot ORG before evaluation) - 430 or higher</p>		
18	Other mandatory feature	Predictive Failure Analysis: PFA alerts should be available for all major components, including CPUs, DIMMs, adapter slots, fans, PSUs, storage devices etc		

D. Primary Interconnect Switch, Qty: 1 No.

10GbaseT Ethernet Switch of minimum 24 port with minimum 2 nos of SFP uplink port

E. Secondary Interconnect Switch, Qty: 1 No.

10/100/1000 Mbps Ethernet Switch of minimum 24 port with sufficient CAT6 Cables

F.HPC Software Stack

- a. Rocky Linux Operating System (Latest)
- b. xCAT or equivalent opensource/Free cluster Manager
- c. Slurm/OpenPBS or equivalent opensource Workload Manager
- d. Ganglia/Grafana or equivalent Opensource Monitoring Tool
- e. Opensource Libraries (C, C++, Fortran etc)

G. UPS Qty: 1 No.

Minimum 20 KVA or Higher UPS with external battery modules for minimum 30 mins backup

H. Installation, Commissioning & Integration Qty: 1 No.

Installation & Commissioning of entire HPC Facility including Master Node, Compute Node, GPU Node, Primary Interconnect, Secondary Interconnect & HPC software stack along with

scientific applications (will be provided by user). UPS installation is also to be carried out as a part of overall solution.

Bidder should take the responsibility of integrating one existing GPU Server Compute Node (Lenovo make) to this HPC facility. If required, details of existing specification could be shared on request.

A) Mandatory terms and conditions and Vendor (Bidder/OEM) eligibility criteria:

1. Bidder (if not the same as the OEM) must be the authorised OEM partner and has to submit the signed OEM authorisation letter from OEM specific to this tender along with the technical-bid.
2. All nodes / servers proposed must be OEM factory integrated products with OEM part numbers for all internal components. Detailed Bill of Material with OEM part numbers must be submitted with technical bid.
3. The Bidder should have documentary experience evidence of execution at least 3 Nos of HPC supply and successful installation of distributed memory CPU only Compute node cluster, of at least 30 TF peak performance, in India, each in a single order in past three years. Purchase order copies with Installation reports must be submitted with the technical bid.
4. Bidder has to provide the onsite support for HPC Cluster including Hardware, Software troubleshooting (excluding application) during the entire warranty period.
5. Bidder has to run the LINPAC and should be demonstrated at site.
6. Compute node OEM & Bidder both must have minimum 2 entries each in latest list (December 2025) of India Top supercomputers (<http://topsc.cdacb.in>). Printout of the list showing the systems supplied by the bidder marked should be submitted with the technical bid.
7. Compute Node OEM must have registered support office in India. Documentary proof is required to be submitted in this regard.
8. Bidder must have office in Mumbai or Pune region for adequate service and support. A document is required to be submitted with technical bid.
9. Bidder must have experience to deploy scientific application (for WRF, Quantum Chemistry/Physics, Molecular Dynamics Simulation package etc) on provided HPC. A customer recommendation letter must be substantiated with technical offer in this regard.
10. Bidder shouldn't be blacklisted in past 10 years. An undertaking in this regard is to be submitted.
11. OEM must have supplied and deployed minimum 2 HPC clusters of 200TF. Referral documents should be submitted with technical bid.

12. Bidder should have executed at least 2 orders of HPC System having a minimum of 100 nodes in past. Purchase Order Copies should be submitted along with technical bid.

B) Warranty

1. On-site Comprehensive Warranty should be provided for 3 Years from the date of Acceptance on Compute hardware, License/OEM supported software if any.
2. In case of any replacement during the warranty period the same shall be made free of cost. All the duties/taxes relating to these replacements have to be borne by the supplier.

C) Other terms and conditions:

- a. The entire job has to be considered and completed on turnkey basis.
- b. In case the proposed HPC system or any of its components are deviating from the specifications mentioned in the tender, the bidder should describe the same as in what respect and to what extent the hardware offered by them differs / deviates from the specifications.
- c. The supply, installation, configuration, commissioning, testing and maintenance support for both hardware and software during the warranty period should be provided either by OEM engineer or by OEM authorized system integrators engineers
- d. Maintenance support for HPC system required during the warranty period should be of 8x5 NBD response time.
- e. Detailed Power, Cooling & Rack Space requirement of Compute Solution must be submitted with technical bid.