

Annexure-1: Amendment to Tender IISERM (1396)20/21-Pur

As per the requests and queries received during pre-bidding, clarification & additional information is provided through this document. Bidders must comply with all conditions and specs as per this document as well as all other documents along with the original NIT document. Please check carefully all the sections (Annexure –1, Annexure –2, Annexure –3 and prebid-answers) for more detailed explanations wherever it is applicable. No further clarifications will be entertained.

1. Technical evaluation shall be made strictly based on the original terms and conditions of NIT as well as this document.
2. Annexure-1,2,3 and the replies to the questions from the vendors also form a part of NIT.
3. If any vendor still desires to see the site, they are free to do so.

All vendors/bidders/OEMs must understand that this is not a standardized data-center facility, nor a monotonic high-performance computing (HPC) facility. Instead, it is a heterogeneous computing facility where HPC is a component. This computing facility is expected to offer a boost to the modelling and simulation research efforts encompassing across departments and disciplines. Thus, the proposed facility is expected to run a wide-range of applications and home-grown packages/codes/algorithms. Thus, any justification that applies to generalized monolithic high-performance computing may not be always relevant.

In view of this, all vendors and bidders are required to fully comply with our requirements as per technical specifications as expressed in original NIT, corrigendum and associated annexures.

Sl. No.	Item No. in NIT	Specifications in NIT	Amendment
1.	Item No. 1: CPU Only compute Nodes Point No. 4 : Disk	1x480GB or more Solid-State Disk of Enterprise grade. 1x8TB or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bay; At least 1 x Free hot-pluggable disk bay for adding 2 nd 8TB HDD in future.	1x480GB or more Solid-State Disk of Enterprise grade. 1x8TB or more Hard Disk Drive in LFF (7200RPM) or 4x2.4TB in SFF (10k RPM) or 2x4TB in either LFF (7200RPM)/SFF (10k RPM) or higher , Enterprise grade in hot-plug bay; At least 1 x Free hot-pluggable disk bay for adding 2 nd HDD in future.
2.	Item No. 1: CPU Only Compute Nodes	There must be at least one PCI-Express expansion slot available for future expansion.	Either of the following is acceptable: There must be at least one PCI-Express expansion slot available for future

	Point No. 10: Expansion Slots	(after populating all the required components).	expansion. (after populating all the required components). Or An additional slot for 1G/10G ethernet port. (after populating all the required components).
3.	Item No. 2: CPU-GPU compute nodes Point No 3: 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)	4 x Nvidia Tesla T4 GPU's System must be capable of supporting at least 4 x T4
4.	Item No. 2: CPU-GPU compute nodes Point No 11: 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	N+N Redundant hot swappable power supply and redundant fans and appropriate cables for the racks with 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 at least 4 x T4 GPUs.
5.	Item No 7: Storage Server Type 2 Point No 4: Disk	16 x 8TB or more Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays can be configured as RAID0,1,5,6	Must provide a RAW capacity of 128 TB or higher Hard Disk Drive, 7200RPM, Enterprise grade in hot-plug bays with JBOD technology or configurable RAID 0, 1, 5, 6. Bidders must certify that this server must be attachable to a parallel file system like Lustre in followup upgradation.
6.	Item No 13: UPS	UPS system should be in N+N mode	UPS system should be in N+N mode Energy Management System – ISO 45001:2018 certification or better should be provided

		Energy Management System – ISO 50001 certification should be provided	
7.	Item No 13: UPS	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.	12V Cells with APPROPRIATE AH value to match the backup time. Bidders must provide a detailed calculation of power factors battery backup time & AH capacity against UPS KVA/KW rating.
8.	Item No 13: UPS		An Additional UPS of 10kW must be provided as per the spec mentioned in Annexure-2
9.	Item No 13: UPS		Battery packs and UPS Units must be independently placed. Battery packs must be properly protected with an enclosure and fully covered with ventilation that may be required.
10.	Item No 13: UPS	Energy Management System - ISO 50001 certification should be provided	Energy Management System - ISO 50001 or ISO 45001:2018 certification should be provided
11.	Item No: 12 (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 keep more than 34 U (32U in case UPS main unit is included in the racks) contiguous empty space in one rack.	Integrated Cooling Solution; Standard Size; available clear space (length x width x height) 28 ft x 23 ft x 93 inch. (Check the layout in Annexure-3) Vendor must provide the detail dimension of the racks to fit all the equipment and still keep more than 34 U contiguous empty space in one rack.
12.	Item No: 12 (Racks)	Integrated Cooling Solution;	Cooling units must be integrated to the server racks as per our requirement. The cooling units must be placed adjacent to the server racks as an integrated solution (inrow cooling). The cooling solution must provide the cooling only for the server racks and not for the room where the racks are installed. The cold and hot aisle

			containment is required to be part of the integrated cooling solution.
13.	Item No: 12 (Racks) 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	<p>Must be UL-Certified/CE-Certified R-410A Coolant based, with a minimum cooling capacity of 35 kW cooling with at least 110CFM of air-flow to maintain a temperature gradient of 12C across the servers with the cold point (entry point at server) at 20+-2 C. And Delta T should not be more than 12 C between cold point to the hot point (exit point at server).</p> <p>Total heat dissipation is 35kW.</p> <p>The vendor must note that the above mentioned value of 110CFM is only a minimum allowed and the actual value will depend on the solution. A justification of the quoted CFM must be done by submitting a detailed calculation of the flow-rate as per the given temperature gradients and the load.</p> <p>Redundancy of cooling units should be at half of cooling capacity that is 17kW.</p>
14.	Item No: 12 (Racks) Cooling	<p>Must include Standalone Ultrasonic Rodent Repeller one per rack</p> <p>Must include 40% Blanking Panels</p> <p>Temperature, Humidity monitor across racks</p> <p>Preventive Maintenance for entire period of warranty should be covered by vendor (in every 6 months without any down time)</p> <p>Vendor must provide the input raw power requirements and specs.</p>	<p>Must include Standalone Ultrasonic Rodent Repeller one per rack as well as for the room.</p> <p>Must include 40% Blanking Panels</p> <p>Temperature, Humidity monitor across racks</p> <p>Preventive Maintenance for entire period of warranty should be covered by vendor (in every 6 months without any down time)</p> <p>Vendor must provide the input raw power requirements and specs.</p>

		Vendor must provide detail layout and drawing of the placing of racks, cooling units and outdoor units.	Vendor must provide detail layout and drawing of the placing of racks, cooling units and outdoor units.
15.	(14) Installation and Acceptance	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.	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. Following specific tasks must be demonstrated: <ol style="list-style-type: none"> 1. Job Scheduling test, auto-recovery test and stress test with full load. 2. User management and disks sharing structures. 3. Network bandwidth tests across various network paths. 4. User usage accounting - Storage and compute 5. Remote Switching on, starting up and shutting down the cluster. 6. Auto shutdown during power failure and auto restart upon power recovery. 7. Scheduled data backup and scratch cleanup 8. Another relevant test that may be required to demonstrate the functionality of the entire systems which are mentioned elsewhere.
16.	(18) Terms and Condition	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.	Either of the conditions 1 or 2 are to be met: <ol style="list-style-type: none"> 1. The bidder (HPC Solution provider) should have performed at least 5 HPC

		<p>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.</p>	<p>clusters each bigger than 15 Teraflop installations in India in the last 3 years.</p> <p>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.</p> <p>OR</p> <p>2. The bidder/OEM (HPC Solution provider) should have performed at least 5 HPC clusters each bigger than 15 Teraflop installations in India in the last 3 years.</p> <p>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.</p> <p>Additionally, within the last 3 years, the bidder must have completed at least one HPC solution of at least 15TF installation with the same OEM involved in this bidding. Both OEM and Bidder have to give a joint agreement certificate.</p>
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17.	Tender clause number VIII under the heading A-IMPORTANT NOTES on page number 3 of the tender.	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.	<p>The Tender clause number VIII under the heading A-IMPORTANT NOTES on page number 3 of the tender is amended as follows:-</p> <p>40% payment shall be released after receipt of complete bill of material as per order against certification/undertaking from the supplier that all the bill of material has been supplied as per order of the Institute.</p> <p>20% payment shall be released on the installation of complete hardware and satisfactorily working certification by End User.</p> <p>30% payment shall be released after testing of installation for 3 months as per certification from End User. 90% payment shall be released within 6 months' time after supply, installation and successful testing.</p> <p>Balance 10% payment shall be released after submission of Performance Security @ 3% of total order value for the warranty period + 60 days from the stipulated date of completion of Installation and Testing of HPC..</p>
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