Supply, installation, testing and commissioning of HPC units for CPU-GPU based Computational Facility with the following technical specifications and terms & conditions.

1. **Total Cluster Cores – 464 and Total Cluster RAM – 2432 GB**
2. **Master Node**
3. **GPU Node with 1x H200 GPU 141GB**
4. **GPU Node with 1x 6000 ADA 48GB**
5. **25 G Switch**
6. **1 G Switch**
7. **42 U Rack**

(Job Scheduler must be from OEM, data sheet must be attached not open source allowed)

Items		Qty	Page No.
Master Node		**1**	**2**
GPU Node with 1xH200GPU 141GB		**1**	**3**
GPU Node with 1x 6000 ADA 48GB		**6**	**4**
25 G Switch		1	
1 G Switch		1	
42 U Rack		1	
Cooling, Rack, and its monitoring/support/services			5
S/W Stack **WORKLOAD MANAGEMER with Below Features**			6
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(Job Scheduler must be from OEM, data sheet must be attached not open source allowed)

Technical Specifications of High-Performance Computing (HPC) Cluster

Master Node – 01 Qty.

Item Description	Technical Specifications
Processor	Min Two or more x86 Architecture base Processors ,Each CPU with 8 Cores, 2.6 GHz Base or higher with 22.5MB Cache or more.
Published Spec rating of processor	1. Specrate2017_fp_base >250 2. Specrate2017_int_base>170 System OEM must have listed SPEC benchmark score as aforementioned in www.spec.org with the same model or a model from the similar series, with same CPU configuration as quoted in the bid.
Memory	RAM:128GB or more ECC DDR5 RAM or better using 32 GB DIMM, System must support 16 DIMM slots or higher.
Drives	5x8 TB SATA Enterprise –7200 RPM HDD 1 x 3.84 TB SATA Enterprise Grade SSD
Drive bays	8 bays supporting HDD and SSD. (Large Form Factor based drive bays)
I/O slots	2 x PCIe Gen 5.0 x 8,4 x PCIe Gen 5.0 x16 band width based slots
RAID Level support	SAS 12 Gbps controller for SAS/SATAHDD's & SSD's that supports RAID 0,1,10,5 & 6 with dedicated 1GB cache memory.
Ethernet ports	2×1 Gbps Ethernet port sand 2x25 Gport with Trans receiver with pre boot Execution Environment PXE) boot capability (including cable for connecting to switch)
Ports	Minimum 2 USB3.0 or higher, 1 TPM and 1xM.2 ports.
Chipset	Compatible chipset
Power Supply	80 Plus 1200 W Redundant Titanium rated efficient power supply or higher. Multi Node architecture with shared power supplies not allowed.
Cooling	Optimum no. of redundant Cooling fans.
Operating System	Should support latest version of 64-bit Ubuntu /CentOS, support should be given by bidder.
Warranty	5 years onsite warranty by OEM/Bidder. Physical on-site visit by technical experts of Bidder or OEM for maintenance and technical support whenever needed.
Regulatory Compliance	Quoted Model must be listed on OS Official Website of Windows, RHEL and certificate copy must be attached with bid. Local Content must be on OEM Letter head.

Form Factor	2 U Rack Mountable (effective form factor per node) Nodes must be independently serviceable. Multi node chassis is also allowed.

GPU Node with 1 x H200 GPU 141 GB –   01 Qty.

Item Description	Technical Specifications
Processor	Min Two or more x86 Architecture base Processors, Each CPU with 32 Cores, 2.5 GHz Base or higher with 60MB Cache or more.
Published Spec rating of processor	SPEC int_rate_base 2017 for the product (must be available on SPEC.ORG before evaluation) - 640 (minimum) SPEC fp_rate_base 2017 for the product(must be available on SPEC.ORG before evaluation) - 780 (minimum) System OEM must have listed SPEC benchmark score as afore mentioned in www.spec.org with the same System model or a model from the similar series, with same CPU configuration as quoted in the bid.
Memory	RAM:768GB or more ECC DDR5 RAM, System must support 16 DIMM slots or higher.
Drives	1x 3.84 TB NVMe M.2 SSD
GPU	1 x Nvidia H200 with dedicated141GB memory GPU card configured upto to 4 same GPU should support in future. OEM must be listed in NVIDIA" Qualified System Catalog" to ensure build quality compatible with the GPU H100 mentioned.
HDD bays	8HDD bays supporting HDD or SSDs.(Large Form Factor based drive bays)
I/O slots	7×PCIe Gen 5.0 x 16 Full height band width based slots
RAID Level support	SATA Controller Supports RAID levels 0,1&10
Ethernet ports	2×10 Gbps Ethernet port sand 2 x 25 Gport with Trans receiver with pre boot Execution Environment(PXE) boot capability (including cable for connecting to switch)
Ports	Minimum 2 USB 3.0 or higher,2M.2 slots,1COM ports,1TPM
Chipset	Compatible chipset
Power supplies	80 Plus Redundant 2000 W Titanium rated efficient power supply or higher.
Cooling	Optimum no. of redundant Cooling fans.
Operating System	Should support latest version of 64-bit Ubuntu/CentOS, support should be given by bidder
Warranty	5 years onsite warranty by OEM/Bidder. Physical onsite visit by technical experts of Bidder or OEM form maintenance and technical support whenever needed.
Regulatory Compliance	Quoted Model must be listed on OS Official Website of Windows, RHEL and certificate copy must be attached with bid. Local Content must be on OEM Letter head.
Form Factor	4U Rack Mount (effective form factor per node) Nodes must be independently serviceable. Multi node chassis is also allowed.

GPU Node with 1 x 6000 ADA 48 GB - 06 Qty.

Specification	Description
Processor	Min Two or more x86 Architecture base Processors, Each CPU with32 Cores, 2.5 GHz Base or higher with 60MB Cache or more.
Published Spec rating of processor	SPEC int_rate_base2017 for the product (must be available on SPEC.ORG before evaluation) - 640 (minimum) SPEC fp_rate_base 2017 for the product (must be available on SPEC. ORG before evaluation) - 780 (minimum) System OEM must have listed SPEC benchmark score as afore mentioned in www.spec.org with the same System model or a model from the similar series, with same CPU configuration as quoted in the bid.
Memory	256 GB or more ECC DDR5 RAM, System must support 16 DIMM slots or higher.
Drives	1 x 1.92 TB SATA Enterprise Grade SSD
GPU	1 x Nvidia RTX 6000 ADA 48 GB GPU, Upto 2same GPU should support in future. OEM must be listed in NVIDIA "Qualified System Catalog" to ensure build quality compatible with the GPU RTX 6000 mentioned.
Drive bays	4 bays supporting HDD and SSD (Large Form Factor based drive bays)
I/O slots	2xPCIe Gen5.0 x8,4 x PCIe Gen5.0 x 16 band width based slots
RAID Level support	SATA RAID controller supports RAID 0,1 & 10.
Ethernet ports	2 × 1 Gbps Ethernet ports and 2 x 25G port with Trans receiver with pre boot Execution Environment (PXE)boot capability (including cable for connecting to switch)
Ports	Minimum 2 USB 3.0 or higher, 1TPM and 2x M.2 ports.
Chipset	Compatible chipset
Power Supply	80 Plus Redundant 1200 W Platinum rated efficient power supply or higher. Multi Node architecture with shared power supplies not allowed.
Cooling	Optimum no. of redundant Cooling fans.
Operating System	Should support latest version of 64-bit Ubuntu/CentOS, support should be given by bidder.
Warranty	5 years onsite warranty by OEM/Bidder. Physical on-site visit by technical experts of Bidder or OEM for maintenance and technical support whenever needed.
Regulatory Compliance	Quoted Model must be listed on OS Official Website of Windows, RHEL and certificate copy must be attached with bid. ***Local Content must be on OEM Letter head.***
Form Factor	5U/Tower Rack Mountable (effective form factor per node) Nodes must be independently serviceable. Multi node chassis is also allowed.
	All required cables must be supplied

Cooling, Rack, and its monitoring/support/services

S.No.	Items
I.	1 x Switch (48x25GSFP28+8xQSFP28 switch ports, each QSFP28 supporting1x 100GbE or 1 x 40 GbE) 1 x 24Port1 G Lan Switch 1 x 42U Rack with 2PDU with all accessories
II.	Remote monitoring System: Must be integrated with system by bidder/OEM

S/W Stack

WORKLOAD MANAGER with Below Features

S. No.	Description
1	Fully featured version with support backed suite, with no limitation to no of jobs and scalability of nodes
2	Integrated advanced scheduling features including cross-system scheduling, peer to peer scheduling with advanced fair share & hierarchical fair share reservations, preemption, access control lists (ACLs), Role based access control and backfilling scheduling, multi-Cluster scheduling, Meta-scheduling for job scheduling and management across distinct clusters (earlier supplied by clusters are also to be covered)
3	Power aware job scheduling to support auto shutdown and auto boot of nodes as per the workload to be supported.
4	Topology-aware scheduling (both inter-and intra-node) to ensure maximum application performance while minimizing cross-job network contention;
5	Preemption and check pointing (suspend/checkpoint/requeue) allow users to immediately run high-priority work
6	Plugin framework for custom health checking , mitigation, and notification capabilities including off-lining flaky nodes, restarting scheduling cycles and requeuing jobs
7	The Management Suite must offer Web/CLI based Job submission, monitoring, management and 3D remote visualization capability with secure access control which can be integrated with LDAP.
8	The Cluster Management Suite must Web based tool for administration of HPC including real time monitoring, historical repository based on jobs, users, application etc.
9	Product Datasheet /Manual for the suite offered must be submitted with bid.

Additional System Requirements	
Operating System	Ubuntu/Cent OS operating system
Cluster Management Software	Unified system management, monitoring tool set for configuration, diagnosis and management of the system, Cluster manager with provisioning, monitoring and reporting capabilities Support Package and Image based provisioning Support Diskfull and diskless cluster deployment Intuitive web interface to manage and customize the cluster Customizing networks and compute node profiles through GUI Customizing compute nodes (upto changing kernel parameter) Able to Push configuration changes and updates to the compute nodes without reinstalling and rebooting. Product data sheet for the offered S/W suite must be submitted **Note:** Offered Stack must have been deployed by OEM/Bidder earlier as well as part of HPC Solution to govt organizations during last 3 years – documentary Evidence must be provided
Software Support for both Serial and Parallel Environment	Yes

Eligibility Criteria

Mandatory requirements for a bidder to qualify as a participant in this tender:

1. Bidder should be either an Original Equipment Manufacturer (OEM) or an OEM authorized System Integrator Partner having back-to-back support agreement with the OEM. Bid Specific Manufacturer's Authorization Form (MAF) for participating in this tender is mandatory for bidders and should be attached along with the bid.

2. The bidder/OEM should have mandatorily executed one HPC project with atleast 1.5 crore value using architecture and technologies similar to those being proposed in their quotation against this tender in India. These projects should be executed within the last 3 financial years before the bid opening date to any Central/ State Govt. Organization /PSU. Purchase order with contract value & invoice copies of relevant contracts (proving supply of required quantity any one financial year) to be submitted along with bid in support of quantity supplied in the relevant financial year along with the technical bid.

3. Proof for Past Experience and Project Experience clause: For fulfilling the experience criteria any one of the following documents may be considered as valid proof for meeting the experience criteria:
   a. *Contract copy along with Invoice(s) with self-certification by the bidder that service/supplies against the invoices have been executed.*
   b. *Execution certificate by client with contract value.*
   c. *Any other document in support of contract execution like Third Party Inspection release note, etc.*

4. Preference to Make in India products: Preference shall be given to Class 1 local suppliers defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry of specific Goods/Products. Only Class-1 and Class-II suppliers as per MII order dated 04.06.2020 will be eligible to bid. Non-Local suppliers as per MII order dated 04.06.2020 are not eligible to participate. **(Annexure- I)**

5. All warranty and support must be serviced directly by the OEM or should be provided by an Authorized System Integrator Partner who must have back-to-back support from the OEM.

6. The Bidder/OEM should have valid ISO certifications i.e. ISO 9001:2015 & ISO 14001:2015

7. Products offered should have official OEM support for Five years from date of Commissioning the date of acceptance *of equipment.*

8. The entire HPC solution should be proposed by the bidder/OEM with details of power consumption and power efficiency.

9. 2-3 Days admin and user training on the cluster usage and administration must be provided.

10. The bidder should provide 5 years onsite NBD support for the proposed open-source cluster software and day-to-day troubleshooting for system errors arising from the OS/cluster software/job schedular whether proprietary or open source.

11. OEM and Bidder must not be put on a holiday period or banned or debarred by any govt.

organization for during last 5 years. Certificate to be attached **(Annexure-II)**

12. Make in India System offered must comply with DIPPs notification no. P-45021/2/2017-PP(BE-II) with revisions till date and compliance with P-45021/102/2019-BE-II-Part (1) (E-50310) Office Memorandum issued by GoI. OEM Certificate should be submitted with bid.

13. **Site Preparation:** The supplier shall inform CENTRAL UNIVERSITY OF PUNJAB, V.P.O. Ghudda, District Bathinda- 1 5 1 4 0 1 about the site preparation alongwith technical bid, if any, needed for the installation & must provide complete details regarding space and all infrastructural requirements needed for the equipment, which CENTRAL UNIVERSITY OF PUNJAB, V.P.O. Ghudda, District Bathinda will arrange before the arrival of equipment to ensure its early installation and smooth operation thereafter. The supplier may offer his advice and render assistance to CENTRAL UNIVERSITY OF PUNJAB, V.P.O. Ghudda, District Bathinda in the preparation of the site and other pre-installation requirements.

Make-in-India (MII) Local supplier certificate (as per order No P-45021/2/2017-PP (BE-II) by DPIIT, Ministry of Commerce and Industry, GoI.)

Bid number: _____

Name of the item(s): _____

I/We certify that the item(s) offered meets the local content requirement for

- Class I Local supplier (Minimum 50% of local content)

- Class II Local supplier (Minimum 20%, but less than 50%, of local content)

(Select one of the above and strike off the other)

Percentage of local content in the all quoted product(s) is _____

Details of the location(s) at which local value addition made:

_____
 (Site/facility address where local value addition is made)

Place: **Signature of Authorized Person**

Date: **Designation**

                                              Seal

FORMAT FOR NON-BLACKLISTING OF SUPPLIER

I/ We _____Manufacturer/Authorized Distributor/Agent (strike out which is not applicable) of (Supplier) _____ do hereby declare and solemnly affirm that our firm/company is not black-listed by the Union/State Government/Autonomous body.

Deponent

Address _____

I/ We hereby solemnly declare and affirm that the above declaration is true and correct to the best of my/our knowledge and belief. No part of it is false and nothing has been concealed.

Deponent

Dated: _____

ANNEXURE

LAND BORDER DECLARATION CERTIFICATE
Restrictions on procurement from Bidders from a country or countries, or a class of countries
under Rule 144(xi) of the General Financial Rules 2017.

Tender Document No:_____

Bidder's Name: _____ _____(Bidder Address & contact details)

Bidder's Reference No._____ _____Date:_____

Restrictions on procurement from Bidders from a country or countries, or a class of countries
under Rule 144(xi) of the General Financial Rules 2017.

"We have read the clause regarding restrictions on procurement from a Bidder of a country which shares a land border with India; and solemnly certify that we are not from such a country or, if from such a country, we are registered with the Competent Authority (copy enclosed). We hereby certify that we fulfill all requirements in this regard and are eligible to be considered."

Penalties for false or misleading declarations:

We hereby confirm that the particulars given above are factually correct and nothing is concealed and also undertake to advise any future changes to the above details. We understood that any wrong or misleading self-declaration by us would be violation of Code of integrity and would attract penalties as mentioned in this tender document, including debarment.

_____
(Signature with date)

_____
(Name and designation)
Duly authorized to sign Bid for and on behalf of

_____
(Name & address of the Bidder and Seal of Company)