

## **TENDER NOTICE (No- NIT/IT-01/2024 )**

### **INTRODUCTORY NOTE:**

ICGEB is an international organization dedicated to advanced research and training in molecular biology and biotechnology, with special regard to the need of the developing world. ICGEB, New Delhi Component has been given privileges and immunities as for other UN Organizations in India vide Government of India's gazette notification no. 216, SO 403(E) dated 12 April 1988.

ICGEB invites sealed Bids to meet the immediate requirement for the work of Supply, Installation, Testing and Commissioning of HPC and HCI Cluster Systems in the ICGEB Campus within short time span, from contractors who possess adequate resources and trained/skilled manpower to carry out the said work.

### **GENERAL TERMS AND CONDITIONS SUBMISSION OF BIDS**

**Note: Bidders must read these conditions carefully and comply strictly while submitting their bids.**

#### **PREPARATION AND SUBMISSION OF THE BID DOCUMENT:**

The Bidder is expected to examine all instructions, forms, terms & conditions and specifications stated in the Bid Documents. Failure to furnish all information required in the Bid Document or submission of a Bid not substantially responding to the Bid Documents in every respect will be at the Bidder's risk and may result in the rejection of the Bid. The following sections of the Bid Documents must be completed and submitted by the Bidder:

#### **1. TECHNICAL BID: should contain the following**

- a. Technical Bid Form. (Annexure-A)
- b. Manufacture Authorization Certificate or Customer Performance Certificate.
- c. Details of other organization for similar product/order (Completion certificate must be submitted)
- d. Complete Tender document (except price bid) duly signed and stamped on each page as a token of acceptance

Note: All the Annexures should be filled properly and neatly.

#### **2. FINANCIAL / PRICE BID:**

In this bid, the bidder is required to quote the rates/prices for the mentioned technical specifications. The rates/price should be inclusive of all material cost, labour, services, charges for the plant/machinery/tools & tackles required for work, freight, Insurance, Govt. duties, excluding GST. If the tax rates are not shown separately, it will be deemed to be included in the quoted price and dealt with accordingly.

Quoted rates will be deemed to cover all the items & works which may be required for completeness and functioning of total system, even though they may not have been

explicitly mentioned in the scope and schedule of works.

No charges towards price escalation, site difficulties shall be payable extra or separately. It is mandatory on bidder to quote all items rate as asked for in the BOQ/ PRICE schedule. Failure to adhere to this condition will lead to rejection of tender.

**Sealed quotation must be in Foreign Currency/INR. It must include:**

- a. Net Price After Discount
- b. Grand Total.
- c. Delivery Time
- d. Validity Of the quotation
- e. Incoterms shall be FOR, ICGEB or CIP, The Custom clearance shall be managed by ICGEB.

### **3. Warranty/Guarantee Period**

**FIVE YEARS WARRANTY** shall be applicable to the supplier items (as applicable)

If any of the items found defective in the supplied lot during the contract period the vendor will replace the same with the corrected one free of cost.

4. **PERIOD OF VALIDITY.** Bids shall remain valid for **90 days** after last date for bid submission prescribed by ICGEB which may be extended with mutually agreed terms. A bid valid for a shorter period may be rejected by ICGEB as non-responsive.

**Payment Terms:-** ICGEB Payment terms are 100% after delivery and satisfactory installation within 30 days. ICGEB is exempt from custom duty. NO ADVANCE PAYMENT TERMS CONSIDERED.

5. **Tender Rejection:** ICGEB Director reserves the right to reject any or all the tenders in full or in part without assigning any reasons whatsoever, and the decision of the centre in this regard will be binding on all the bidders. Tenders not complying with any of the provisions stated in this tender document are liable to be rejected. Director, ICGEB reserves the right to accept or reject any tender without assigning any reason and does not bind himself to accept the lowest tender.

### **6. FORMAT AND PREPARATION OF THE BID:**

The Bidder shall prepare the **Technical Bid** and **Financial Bid** and place them in two separate sealed covers, clearly marking each as "Technical Bid" and "Financial Bid". Name of firm / proprietor, NIT no, address & contact no. should be mentioned clearly on both the envelopes. These should further be placed in a large size envelope with the same information on it. Both Technical & Financial Bids, along with documents required to be submitted, shall be signed by the Bidder and a person duly authorized by the Bidder to, on each page. Written power of attorney accompanying the Bid shall indicate necessary authorization. Any correction in the Bid shall be initiated by the person signing the Bid. If the cover containing the Bid documents is not sealed and marked as instructed above, no responsibility will be assumed for any misplacement of the Bid or before time opening of the envelope.

### **7. IMPORTANT NOTE:**

- Bid received through email/ non-sealed envelope and/or after the scheduled date and time

will not be accepted.

- ICGEB reserves the right to accept any or reject all the tenders without assigning any reason thereof.
- Selection will be done on competitive basis. Canvassing in any manner shall lead to disqualification of the Firm / Individual.
- ICGEB reserves the right to visit the sites mentioned by bidders as proof of experience to ascertain the quality of service rendered. The bidder will have to arrange for such visit.

## **8. BID EVALUATION:**

The Bidder must have supplied the information required in the tender document. A Bidder not fulfilling any criteria stipulated, his bid will be considered non responsive and may be rejected.

The Bidders who have duly complied with the Eligibility Criteria will be eligible for further processing.

The Bids which have been established as responsive in all respects will be compared for its price competitiveness. On the basis of technical and financial evaluation, substantially responsive and most advantageous bid will be considered for the award of order/contract. The bidder is expected to examine all instructions, terms and conditions in the order/contract. Failure to furnish all information required in the bidding documents or submitting a Bid not substantially responsive to the bidding documents in any respect may result in the rejection of the Bid.

THE BIDDER SHALL BEAR ALL THE COSTS associated with the preparation and submission of its bid, and ICGEB in no case will be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

9. **PROFESSIONAL EXCELLENCE AND ETHICS:** ICGEB requires that all Bidders participating in this Tender adhere to the highest ethical standards, both during the selection process and throughout the execution of the contract.
10. **FAILURE OF THE SUCCESSFUL BIDDER** to comply with all the requirements shall constitute sufficient grounds for the annulment of the award, in which event ICGEB may make the award to the next lowest evaluated bidder or call for new bids.
11. **THE TENDERING AUTHORITY RESERVES THE RIGHT TO ACCEPT ANY BID** not necessarily the lowest, reject any bid without assigning any reasons for entering into the Rate Contract.

12. **CONDITIONAL BIDS:** If a bidder imposes conditions, which is in addition to or in conflict with the conditions mentioned herein, his bid is liable to be summarily rejected.

13. The Director, ICGEB reserves the right to cancel any or all the tenders without assigning any reason.

14. Tender once submitted will remain with ICGEB and will never be returned to the bidders.

15. **TENDERER TO SIGN ALL PAGES:**

The tenderer shall stamp and sign at the bottom right hand corner of every page of the tender documents in token of acceptance of tender conditions and for the purpose of identification.

16. **ERASURES AND ALTERATIONS:**

Tender containing erasures and alterations of the tender documents are liable to be rejected unless these are authenticated by the person signing the Tender documents.

17. **AMENDMENT IN TENDER DOCUMENTS:** ICGEB reserves the right to revise or amend the Tender Document up to the date prior to the date notified for opening of the tenders and also the right to postpone the date of submission and opening of tenders without assigning any reason, whatsoever

**Address for sending sealed quotation:**

Procurement Manager  
International Centre for Genetic Engineering and Bio Technology ICGEB  
Campus, Aruna Asaf Ali Marg,  
New Delhi – 110067, India  
Phone: 91-11-26741358 / 26741361 / 26742360 (Extn.-318)  
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You can contact Mr. [Ravindra Kumar Ravi](#) on Mobile Number [8882281489](#) for any query.

## Annexure-A

### Technical Specification

**Item: 1: Detailed Technical Specifications for Parallel Computing:**

**(I): Master cum Log in Node (CPU-CPU), Qty – 1 Node**

Master cum Log in Node		Qty. Required: 1 Nos.	Warranty: 05 Years
S.N.	Item	Technical Specification	Compliance (Yes/No)
1	Form Factor	Rack mounted with sliding rails, for standard rack	
2	Performance Benchmark	1.Specrate2017_fp_base >250 2.Specrate2017_int_base >250 System OEM must have listed SPEC benchmark score as aforementioned in www.spec.org with the same node model or a model from the similar series, with same CPU configuration as quoted in the bid.	
3	Configured CPU	Min Two or more Intel Xeon/AMD Architecture Based Processors, with(min Total 56 Cores, 112Threads or more). Each with min 28 cores, operating at 2.0 GHz Base or higher with 42MB cache or more.(min 3 <sup>rd</sup> Gen or higher)	
4	Scheduling Utility	Perpetual Licensed based unified system management/monitoring utility with JOB scheduling capabilities on single node. OEM Commercial S/W utility only be acceptable. Detailed datasheet should be submitted with bid documents.	
5	Memory configured	128GB DDR4 Registered ECC RAM or Better installed from day one. Motherboard should support at least 4 TB RAM	
6	RAID Controller	RAID controller must support at least RAID 1, 5 Level.	
7	Disks configured	Volume 1: 2 no's x 960GB or higher NVME (M.2) SSDs, and Volume 2: 6 no's x 3840GB or higher NVME (M.2) SSD Installed	
8	Ethernet and Management Ports	2 x 10Gig/25 Gig SFP+ SR and 1 x 1Gbps RJ-45 Ethernet Ports. 1 x 1G (IPMI) dedicated port,	
9	PCI Slot	Mini 4 or more (x16). atleast one PCI slot should be free for future expention.	
10	Power Supply	Dual redundant Platinum or better hot plug power supply. The power supply should be enough for future expansion as well.	
11	Installation	Installation, Testing, Training, and Implementation cost for all above mentioned solution must be included from day one. (Should be done by OEM Engineers)	
12	System Management Utility	Dedicated IPMI-Compliant Remote management active licenses of premium/Enterprise Edition. Out of band Management Capabilities, Stack with a full IPMI compliance implementation, Hardware Health monitor, Remote power control Etc. Product datasheet/manual must confirm the compliance.	
13	System Security	TPM2.0, Root-of-Trust, Secure Boot, Malicious Code Free Design, Network card secure firmware boot, Detail mentioned document must be submitted with technical bid.	

**(II): Compute Nodes (CPU-CPU), Qty – 3 Nodes**

Compute Nodes (CPU-CPU)		Qty. Required: 3 Nos.	Warranty: 05Years
S.N.	Item	Technical Specification	Compliance (Yes/No)
1	Form Factor	Rack mounted with sliding rails, for standard rack	
2	Performance Benchmark	1.Specrate2017_fp_base >250 2.Specrate2017_int_base >250 System OEM must have listed SPEC benchmark score as afore mentioned in www.spec.org with the same node model or a model from the similar series, with same CPU configuration as quoted in the bid.	
3	Configured CPU	Min Two or more Intel Xeon/AMD Architecture Based Processors, with(min Total 56 Cores, 112Threads or more). Each with min 28 cores, operating at 2.0 GHz Base or higher with 42MB cache or more.(min 3 <sup>rd</sup> Gen or higher)	
4	Scheduling Utility	Perpetual Licensed based unified system management/monitoring utility with JOB scheduling capabilities on single node. OEM Commercial S/W utility only be acceptable. Detailed datasheet should be submitted with bid documents.	
5	Memory configured	256GB DDR4 Registered ECC RAM or Better installed from day one. Motherboard should support at least 4 TB RAM.	
6	RAID Controller	RAID controller must support at least RAID 1, 5 Level.	
7	Disks configured	Volume 1: 2 no's x 240GB or higher NVME (M.2 /U.2) SSD	
8	Ethernet and Management Ports	2 x 10Gig/25 Gig SFP+ SR and 1 x 1Gbps RJ-45 Ethernet Ports. 1 x 1G (IPMI) dedicated port,	
9	PCI Clots	Mini 4 or more (x16). atleast one PCI slot should be free for future expansion	
10	Power Supply	Dual redundant Platinum or better hot plug power supply. The power supply should be enough for future expansion as well.	
11	Installation	Installation, Testing, Training, and Implementation cost for all above mentioned solution must be included from day one. (Should be done by OEM Engineers)	
12	System Management Utility	Dedicated IPMI-Compliant Remote management active licenses of premium/Enterprise Edition. Out of band Management Capabilities, Stack with a full IPMI compliance implementation, Hardware Health monitor, Remote power control Etc. Product datasheet/manual must confirm the compliance.	
13	System Security	Root-of-Trust, Secure Boot, Malicious Code Free Design, Network card secure firmware boot, Detail mentioned document must be submitted with technical bid.	

**(III): GPU / Accelerator Node (CPU-GPU), Qty – 1Node**

GPU / Accelerator Node (CPU-GPU)		Qty. Required: 1 Nos.	Warranty: 05 Years
S.N.	Item	Technical Specification	Compliance (Yes/No)
1	Form Factor	Rack mounted with sliding rails, for standard rack	
2	Performance Benchmark	1.Specrate2017_fp_base >250 2.Specrate2017_int_base >250 System OEM must have listed SPEC benchmark score as aforementioned in www.spec.org with the same node model or a model from the similar series, with same CPU configuration as quoted in the bid.	
3	Configured CPU	Min Two or more Intel Xeon/AMD Architecture Based Processors, with(min Total 56 Cores, 112Threads or more). Each with min 28 cores, operating at 2.0 GHz Base or higher with 42MB cache or more.(min 3 <sup>rd</sup> Gen or higher)	
4	NVMe Support	At least Four or more drive /Slots must have native support for NVMe drives.	
5	Memory configured	1024 GB DDR4 Registered ECC RAM or Better installed from day one. Motherboard should support at least 4 TB RAM.	
6	Accelerator/GPU	1 x NVIDIA A100, 80GB GPU or better should be installed from day one. Node Should have provision to add additional accelerators from day one.	
7	Disks Bays	At least 8 or more Hot Swap SAS /SATA HDD Bays.	
8	RAID Controller	RAID controller must support at least RAID 1, 5 Level.	
9	Disks configured	2 no's x 960GB or higher Enterprise NVMe /SATA SSD	
10	I/O slots	At least 8 nos. of PCIe 4.0 Expansion slots with X16	
11	Scheduling Utility	Perpetual Licensed based unified system management/monitoring utility with JOB scheduling capabilities on single node. OEM Commercial S/W utility only be acceptable. Detailed datasheet should be submitted with bid documents.	
12	Ethernet ports and other ports	2 x 10Gig/25 Gig SFP+ SR and 1 x 1Gbps RJ-45 Ethernet Ports. 1 x 1G (IPMI) dedicated port,1 x VGA, 2 x USB 3.0 Ports.	
13	OS Certification	Node /Server model should be certified for Windows, RHEL and SUSE Server Operating system. Certificate copy must be attached with bid documents.	
	Virtualization certification	Node /Server model should be certified for VMware and Citrix. Certificate copy must be attached with bid documents.	
14	Performance Benchmarks - AI	Report with Logs must be submitted with bid achieving enumerated results as below - 1. ML Commons 0.7: Object Identification – Heavy (with 4 GPUs - 180 minutes or with 8 GPUs 120 minutes). 2. ML Commons 0.7: NLP-BERT - (with 4 GPUs - 130 minutes or with 8 GPUs - 190 minutes ). 3. ML Commons 0.7: Translation -NMT - (with 4 GPUs - 20 minutes or with 8 GPUs - 12 minutes). GPUs must be A100 80GB PCIe variant.	
15	Power Supply	Dual redundant Platinum or better hot plug power supply. The power supply should be enough for future expansion as well.	
16	Installation	Installation, Testing, Training, and Implementation cost for all above mentioned solution must be included from day one. (Should be done by OEM Engineers)	

17	System Management Utility	Dedicated IPMI-Compliant Remote management active licenses of premium/Enterprise Edition. Out of band Management Capabilities, Stack with a full IPMI compliance implementation, Hardware Health monitor, Remote power control Etc. Product datasheet/manual must confirm the compliance.	
20	System Security	Root-of-Trust, Secure Boot, Malicious Code Free Design, Network card secure firmware boot, <b>TPM2.0</b> Detail mentioned document must be submitted with technical bid.	

**(IV): Workload Manager:**

Descriptions	Compliance (Yes/No)
Perpetual & floating license with commercial support for all nodes with warranty upgrade. Fully featured version with no limitation to no. of jobs and scalability of nodes	
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 .	
Power aware job scheduling to support auto shutdown and auto boot of nodes as per the workload to be supported.	
Topology-aware scheduling (both inter- and intra-node) to ensure maximum application performance while minimizing cross-job network contention;	
Preemption and checkpointing (suspend/checkpoint/requeue) allow users to immediately run high-priority work	
Plugin framework for custom health checking, mitigation, and notification capabilities including off-lining flaky nodes, restarting scheduling cycles and requeuing jobs	
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.	
The Cluster Management Suite must Web based tool for administration of HPC including real time monitoring, historical repository based on jobs, users, application etc.	
S/W offered must be a licensed version and support backed , bidder or the ISV(back end arrangement with bidder) must provide end to end support for the same. Datasheet al must be submitted with bid	
Perpetual & floating license with commercial support for all nodes with warranty upgrade. Fully featured version with no limitation to no of jobs and scalability of nodes	

Features	Descriptions	Compliance (Yes/No)
V. Operating System Supported	Enterprise Linux / Ubuntu Linux / Cent OS Linux	
VI. HPC Operating System Support by bidder	REQUIRED	
VII. Resource Management/Job Scheduling Support	REQUIRED	
VIII. File Systems	Support for Lustre /GPFS/BGFS or equivalent FROM DAY ONE (also native support for augmenting PFS Storage in future)	
IX. Software Support for both Serial and Parallel Environment	YES	

**(X). Licensed Node Management S/W: The Node management stack with a GUI based system monitoring for all the cluster nodes. (Academic License)**

Descriptions	Compliance (Yes/No)
System monitoring and management software with the following features	
System manager with provisioning, monitoring and reporting capabilities	



Support Package and Image based provisioning	
Support Disk and diskless cluster deployment	
Intuitive web interface to manage and customize the cluster	
Customizing networks and compute node profiles through GUI	
Customizing compute nodes to max, upto changing kernel parameter	
Able to Push configuration changes and updates to the compute nodes without reinstalling and rebooting	

**(XI). Interconnect-Network Switch**

Quantity	1 Unit	Warranty: 5 Years	
S.N.	Specification	Description	Compliance (Yes/No)
1.	Primary Interconnect Switch	24 Ports or more, 10/25Gbps Fiber SFP+ SR Switch for Primary Communication. All required cables must be supplied with Cluster.	
2.	Secondary Switch	24 Port ,1 Gbps Ethernet Switch for Secondary /Management Communication Purpose. All required cables must be supplied with Cluster.	

**(XII). Server Rack:**

S.No	Components	Specifications	Compliance (Yes/No)
1	Description	42 U OEM Server rack to mount servers, KVM Switch, Ethernet Switch etc. Reputed Brand.	
2	Size	42U with width & depth of 800mm x 1200mm	
3	KVM Switch:	One KVM switch per rack to support up to 16 Servers (along with supporting cables)	
4	Monitor, Keyboard, Mouse:	Keyboard, Mouse, Folding 15" or higher LCD/LED Monitor per rack to be connected through KVM	
5	Appearance:	Evenly distributed holes from top to bottom of front and rear doors to permit adequate airflow (equivalent to the required 64 percent open area for ventilation)	
6	Power:	9KW Server rack, having dual PDU and MCB Protection. Each PDU shall support 12xC13 (10A) receptacles & NEMA connectors	
7	Accessories:	Adjustable mounting depth Casters, leveling feet included Cable pass-through in top & bottom of rack Vertical cable management bar One stationary shelves One sliding shelves	
	Cooling Fans	Fan tray with 6 fans for Colling the servers	
	Warranty	5 Years onsite replacement warranty after installation & acceptance	

### XIII. Unified Storage System

Features	Descriptions	Compliance (Yes/No)
Data Secure Storage Architecture	Security of the system is based on the protection and secrecy of the cryptographic info, especially against reading out or manipulation of the key data. Tick counter with tamper detection, Protection from Dictionary Attack Support RSA Secure ID, Encrypted File System.	
VTL Enabled	- VTL to VTL replication - VTL Logical block protection - Physical tape import/export	
Controller	The controller should support storage high availability with minimum of two controller nodes, with min 8GB Cache per Controller.	
Storage Operating System	The Storage will have embedded Operating Systems and there should be only one OS to provide the required Protocols. (It will not be a general-purpose OS such as Windows, Linux, etc.) The OS of the same make as that of storage or as per OEM standard. Linux based OS on Flash memory module/flash drive /or a dedicated drive separate from the storage volume, OS with Unlimited User license from day one.	
Protocols Supported	The Proposed Storage must support SMB/CIFS, NFS, FTP, NFS over RDMA for file storage purpose and iSCSI, FC for block storage connectivity respectively.	
Storage to Host Connectivity	Minimum 4 x 1G (RJ45) and 2 x 10/25G or higher for storage connectivity with load balancing enabled from day one. Future upgrade to Optional FC (16G) Controller and 1 x 100G (IB) support also available. User department will decide for connecting systems using respective controller.	
Security Parameters	- Multiple multitenant access zones for different Active Directories and LDAP. Each Access zone with simultaneous support for local, Active Directory and LDAP users. - System Auditing for system as well as supported protocols.	
Storage Capacity	At least 12 or more Hot-swap SAS/SATA SSD/HDD bays, 115TB or more Useable Storage capacity must be installed on Enterprise Grade 12Gbps HDD/SSD. Minimum Speed of Hard disk should be 7.2K rpm after RAID 6 or Equivalent RAID Configuration. Hot spare disk should be available separately. Controller must support future expansion of storage up to 200 drives with secondary units/disk encloser.	
Redundancy	There should be complete Redundancy at power modules and cooling sub system level for easy operations	
RAID & Memory Support	The offered Storage should support Raid 0, 1, 1+0, 5, 6,50 and Raid 60 or equivalent RAID Volumes. Per Controller Memory should be 32GB volatile Memory or higher.	
Storage Features	Storage system (disk shelves) should support SSD/ SATA/ NL-SAS/ SAS disks simultaneously with different rpm. Storage back-end connectivity should be at least 12Gbps SAS Ports (for optional connectivity). Other · File System with Journaling support · Support for ADS & NIS · Support for Volume Replication	
Storage Management	Should have Single Graphic Use Interface (GUI) for both File and Block as well as command line interfacing. Must include real time performance monitoring tools giving information on CPU utilization, volume throughput, I/O rate and latency etc. All monitoring tools must be from OEM only- no 3rd party monitoring s/w to be bundled with system.	

	Management · Web based GUI for management · Hardware monitoring · SNMP support	
User License	Storage must support Unlimited user access license. OS Licenses to be issued in the name of Customer Organization.	
Host / Server OS Support	Linux distribution , MS Windows.	
OS & Management Support	Storage system must be supplied with Commercial support included for OS & Management Utilities	
Regulatory Compliance	Storage OEM and the product must be BIS Certified and listed on BIS website for Storage Category.	
OEM Experience	OEM Must have experience for sell and supports High end Storage systems in GoI Sector. Documentary evidence must be submitted with bid.	
	OEM and bidder must not be put on a holiday period or banned or debarred by any govt organization for >3 months during last 5 years.	
OEM MAF	Bidder must submit bid specific OEM MAF with the bid.	
Warranty	5 Yrs. comprehensive onsite warranty,	
Local Support	OEM must have their own registered Service and support center in Consignee State. Details must be listed on OEM Website. And OEM must provide documentary evidence issued by Govt department	
Form Factor	4U or Lesser Rackmount with rail kits	

**Item: 2: Detailed Technical Specifications for Virtual Computing Solution:**

Virtual Computing through Converged Architecture Description		Compliance (Yes/No)
1	SOLUTION have all the features of offered industry standard hypervisor.	
2	SOLUTION has independently scaled storage and compute as and when needed without any downtime.	
3	SOLUTION is configuration of SSD/SAS/NL SAS/NVMe then the caching must be on appropriate capacity of SSD/ NVME drives to meet the IOPS/performance requirements.	
4	SOLUTION must have VDI support.	
5	VLAN for networking and integrated VM IP's Management capabilities.	
6	SOLUTION has a security compliance methodology to ensure highly secure environment.	
7	SOLUTION provides management through a remote and On premise GUI console. GUI console/Software must be from the SOLUTION OEM (no 3rd party shall be acceptable) . Also provides storage, compute & hypervisor metrics on a per VM /Node level as well as health and monitoring of entire platform.	
8	Platform support LDAP Active Directory integration. The clients installed on any major Operating System.	
9	Platform supports monitoring via SNMPv3, email alerting via SMTP.	
10	Capable of creating instant snapshots of virtual machines and maintaining multiple copies of snapshots & and clones.	
11	Capability to support native VM/SOLUTION level replication for installed Hypervisor	
12	SOLUTION capable to sustain single power supply failure.	
13	Intelligent Optimum data distribution across all nodes.	

14	SOLUTION support container based application.	
15	Single management tool supports multiple clusters.	
16	Management tool is built into the solution, scales with the cluster, having the ability to add and auto discoverable Nodes.	
17	SOLUTION having built-in -security for data.	
18	SOLUTION must have Multi tenancy support	
19	Solution must support Live Migration of VM	
20	The solution shall support the ability to push updates and patches specific to the Virtualization and SOLUTION Infrastructure without any impact to the VMs. During the upgradation activity the offered solution shall ensure that there is no data loss.	
21	The solution shall be provided with storage / VM level snapshots for local Auto backups or equivalent.	
22	The solution shall support data replication for VM or APP consistent snapshot/backups and there should not be any limitation on number of VMs to be replicated.	
23	Management tool is built into the solution, scales with the cluster and does not require separate hardware infrastructure.	
24	SOLUTION should support scalability for more than 150 nodes in a single cluster	
25	The license supplied shall not limit the numbers of VMs.	
26	Integrated management for hyperconverged infrastructure and virtual environments with Compute / Storage/ Network / Computer and associated components.	
27	The proposed solution shall support future addition of heterogeneous configuration nodes with different CPU models and memory capacity/configuration in the same cluster.	
28	Must have SR-IOV, DPDK Support. OEM must certify the same thru datasheet.	
29	Must have Network/ Port Security	
30	Must have Application Load Balancer to the tenant level.	
31	Must have provisioning, operations and lifecycle management of Kubernetes, automated deployment, scaling, and operation of application containers across a cluster of hosts.	
32	Appliance must support on demand Kubernetes, compliance to the same must be confirmed by OEM	
33	Intelligent data distribution across all nodes and uniform capacity utilization across all nodes at all time.	
34	The solution shall come with various pre-installed software including Software Defined Storage with Enterprise class Storage Services.	
35	Appliance must support network bandwidth limit to the guest machine level.	
36	The proposed solution should be proposed with AHV (Acropolis Hypervisor) or Hyper - V or VSPHERE or KVM	
37	Hardware nodes and Software stack both should be from same OEM.	
38	5 Years Comprehensive supports (Hardware + Software update and upgrades + service) from OEM must be included from day one.	
39	The proposed shall include direct OEM, L1, L2 and L3 support for 5-years, 8x5xNBD for hardware and 24x7x365 days with unlimited incident support (Telephonic/ Web/ Email) and technical contacts within 60 mins or less response time including the unlimited upgrades and updates for software.	
40	Sufficient cable lengths for connecting the nodes with switches.	

Installation & Commissioning		Compliance (Yes/No)
i	Implementation, Commissioning / Configuration of the SOLUTION	
ii	Extending technical support for Server Management Service at the data center during warranty period.	
iii	Training for 3 officials of user organization for 5 days.	

iv.	The offer system should be compatible with the existing IT infrastructure.	
V.	OEM must be BIS certified. Proof must be submitted with technical bid	

<b>Technical Specifications of Converged Infrastructure Solution</b>			
I.	Computing Node	Minimum 4 Nos. Physical Nodes / Warranty: 05 Years	
Sr.	<b>Per Physical Node Technical Specification:</b>		Compliance (Yes/No)
1	Processor(s)/ Core(s)	Each node must provide at least 56 physical cores operating @ 2.0GHz or higher. Note: nodes/cores to be used for infrastructure management / administration job must be provided thru s dedicated separate node. Processor must be of Intel / AMD platform, the same must be confirmed thru compliance submitted	
2	Memory	At least 512GB Populated with (16 x 32GB) or above with DDR4 DIMMs or higher.	
3	Booting Volume	2 x 480GB or above NVMe (M.2 / U.2) SSD s	
4	Storage Volume	6 x 3840GB or above NVMe (M.2 / U.2) SSDs	
5	Network Ports	2 x Dual Port 10/25Gb Ports (/SFP+ SR)	
6	Graphics	Graphics using on board graphics controller or dedicated professional add on graphics controller	
7	Management	On-board IPMI 2.0 or equivalent with dedicated LAN and KVM over LAN support with all feature activation license .	
8	Chassis	Rack mounted with sliding rails, for standard rack	
9	Accessories	Accessories if any required must be supplied with the system	
10	P. Supply	(N+1) Redundant Hot Plug Power Supply with Power Cords	
11	Support	5 Year Pro support: Next Business Day onsite Services, support should provide 24x7x365 with min 6 hrs response time. ICGEB will not return faulty HDD/SSD.	

II.	Infra Node	Minimum 1 Nos. Physical Nodes / Warranty: 05 Years	
Sr.	<b>Per Physical Node Technical Specification:</b>		Compliance (Yes/No)
1	Processor(s)/ Core(s)	Each node must provide at least 24 physical cores operating @ 2.0G or higher. Note : nodes/cores to be used for infrastructure management / administration job must be provided thru s dedicated separate node. Processor must of latest Intel / AMD platform, the same must be confirmed thru compliance submitted	
2	RAM	At least 256GB Populated with (8 x 32GB) or above with DDR4 DIMMs or higher.	
3	Booting Volume	2 x 480GB or above NVMe / SATA SSD s	
4	Storage Volume	3 x 800GB or above SAS /SATA HDDs	
5	Storage Controller	RAID Controller, Support RAID Levels, 0,1,5 Etc. RAID Levels	
6	Network Ports	2 x Dual Port 10/25Gb Ports (/SFP+ SR)	

7	Graphics	Graphics using on board graphics controller or dedicated professional add on graphics controller	
8	Management	On-board IPMI 2.0 or equivalent with dedicated LAN and KVM over LAN support with all feature activation license	
9	Performance Benchmark	1.Specrate2017_fp_base >90 2.Specrate2017_int_base >90 System OEM must have listed SPEC benchmark score as afore mentioned in www.spec.org with the same node model or a model from the similar series, with same CPU configuration as quoted in the bid.	
10	I/O slots	At least 6 nos. of PCIe 4.0 Expansion slots	
11	Chassis	Rack mounted with sliding rails, for standard rack	
12	Accessories	Accessories if any required must be supplied with the system	
13	P. Supply	(N+1) Platinum/Titanium rated (Redundant) Hot Plug Supply Kit or above with Power Cord	
14	OS Certification	Node /Server model should be certified for Operating system. Certificate copy must be attached with bid documents.	
15	Virtualization certification	Node /Server model should be certified for virtualization. Certificate copy must be attached with bid documents.	
16	Support	5 Year Pro support: Next Business day onsite Services. support should provide 24x7x365 with min 6 hrs response time. ICGB will not return faulty HDD/SSD.	

III.	<b>Interconnects Switch</b>	Warranty: 05 Years	
Sr.	Technical Specification		Compliance (Yes/No)
Primary Interconnect	24 Ports or more, 10/25Gbps Fiber SFP+ SR Switch for Primary Communication. All required cables, transceivers must be supplied with solution.		
Secondary	24 Port ,1 Gbps Ethernet Switch for Secondary /Management Communication Purpose. All required cables must be supplied with solution.		

IV.	Backup Activity	Compliance (Yes/No)
Backup Activity	Backup of all VMs has to take in proposed Unified Storage with Parallel computing Solution. Backup connectivity should be included in offer.	
Backup Applications supports	Proposed Solution must support leading industry Virtual and Physical backup applications from day one for future upgrade.	

## **Optional Items to be quoted separately:**

### **Cloud Storage Solutions (50 TB, and scalable in multiples of 10 TB)**

Descriptions	Compliance (Yes/No)
Cloud storage with a robust automated backup system. which may be scaled as and when requirement increases. Rates for additional storage should be mentioned separately in the price bid.	
Leverage automated backup capabilities to streamline and optimize the data transfer process, ensuring efficiency and reliability.	
Ensure client access to data at any given point in time, promoting accessibility and responsiveness to operational requirements.	
Data centre should maintain data redundancy to eliminate any risk of outage, thereby guaranteeing uninterrupted data availability and system reliability.	
Data validation on large uploads/download will be done by application / client.	
Availability of necessary credentials and access permissions, implement automated backup schedules using the custom script, Set up monitoring and alerting for backup jobs should be defined and scripted. Web based management for ICGEB systems administrator.	
Details of default access bandwidth should be defined, any VPN, private link, or Bandwidth required to connect Storage cloud services should be configured by bidder.	
Uphold an enterprise-level Service Level Agreement (SLA) to assure clients of the highest standards in data protection, accessibility, and system performance.	

#### **Warranty clause:**

1. Warranty: 5Yr 24x7 4Hr Response + HDD Retention (defective HDDs will not be returned back to Vendors/ OEM)
2. OEM / Bidder have to submit their Support Escalation Matrix
3. Training: Bidder/OEM have to provide 2 days training on HCI, 2 days training for HPC & 1 day training on overall solution.

#### **Other Tender condition:**

4. HPC & HCI Server and Storage should be from same OEM.
5. Offered Nodes should be compliant for VMware/Nutanix, RHEL and Microsoft for future expandability.
6. HCI Node should be of Intel / AMD Platform.
7. HCI Node should be supplied with hardware management platform / nodes which will support full integration with software stack for management purposes.
8. HCI Nodes should be available as an Appliance or solution and nodes will be compliant on VMWare/Equivalent HCI Stack
9. Bidder to provide complete details about Schematic Diagram, Rack layout, Power & Cooling requirement, Electrical infrastructure requirement and anything else required at ICGEB. Special instructions for site preparation if any should be clearly mentioned in the technical bid.

10. The bidder must submit the product catalogues, literature of the proposed product in solution.
11. Point by point compliance to all the above mentioned features should be provided by the firm. There should not be any deviation and if any, should be stated clearly
12. Bidders must mention GST and HSN/SAC codes of all the items quoted

**Bidder/OEM PQ:**

13. Bidder / OEM should have at least two (2) entry in the latest list (July 2023) of “Indian Supercomputer List.
14. Bidder/OEM to provide complete details about Schematic Diagram, Rack layout, Power & Cooling requirement, Electrical infrastructure requirement. Special instructions for site preparation if any should be clearly mentioned in the technical bid.
15. The bidder /OEM must have experience of supplying 3 similar orders of HPC within the past for any Govt. organization preferably to Educational and R&D organizations. The documentary evidence in this regard must be attached.
16. OEM /Bidder Installations in India in past with Bidders details must be submitted with bid details.
17. The bidder and OEM must not be blacklisted any other university/institution/Government department not even for a small duration. An undertaking to this effect must be submitted.
18. OEM must have at least one installations/entries in latest list of India's Supercomputing List or in Top 500 supercomputing list.
19. OEM should have listing on [www.spec.org](http://www.spec.org) on the quoted CPU Model.
20. Bidder /OEM should be an ISO certified Organization.
21. OEM /Bidder should have executed at least one HPC order above 100TF or minimum 2 orders above 50TF each in past. The details of the same to be provided
22. The bidder /OEM should have a turnover of at least Rs 20 Crore each year during last 3 years.
23. Compute Hardware OEM and bidder should have direct local sales & support office in India. Details must be submitted.
24. The firms are required to quote branded make only( Refurbishment /assemble hardware not allowed)
25. Point by point compliance to all the above-mentioned features should be provided by the firm. There should not be any deviation and if any, should be stated clearly.
26. Full Server configuration as listed above should be tested and integrated at OEM manufacturing plant which includes all major components, power supply, cooling fan cabinet etc. No local site integration of server components will be allowed. No rebranded product /OEM would be considered.
27. The 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.

**Scope of Supply, Installation, training, and Integration with Existing Setup:**

28. Before acceptance and installation of any item, the quality, specification, and quantity will be verified by ICGEB.



29. Installation of items part of this tender will have to be carried out by the vendor. Any specific requirement of vendor regarding installation of above-mentioned items must be mentioned in the technical bid so that ICGEB can provide the resources for the same.
30. Migration of existing Physical Servers and Virtual Machines (included Linux, Windows XP, Vista, and higher Ver. Operating systems) to proposed Virtualization solution, without any additional charges.

### **Eligibility Criteria and Other Terms:**

1. Mandatory requirements for a bidder and OEM (as applicable) to qualify as a participant in this tender:
2. The bidder and The Server OEM should have executed at least 3 HPC Cluster projects either directly or thru any system integrators (at least one cluster of the size 100TF either only CPU-CPU performance or CPU-GPU performance added together) during last 10 years in India using an architecture and technologies similar to this tender at organizations in India. Details of the same must be submitted with technical bid. Credential of an OEM will also be considered if supply done by their authorized partner.
3. OEM must have deployed atleast 2 solutions or Private Cloud solutions at Govt Organizations in past, PO Copy to submit with bid
4. OEM and Bidder must not be put on a holiday period or banned or debarred by any govt organization for >3 months during last 5 years.
5. Complete Solution (Parallel Computing, Virtual Computing and Storage Systems) should be from same OEM.
6. OEMs can authorize multiple bidders to participate with their products.
7. Bid Specific OEM MAF for Server Nodes & Storage must be attached with the bid.
8. All warranty and support must be provided by the bidder / OEM.
9. The bidder should clearly specify make and model in both Technical and Financial bid.
10. 5 Years Comprehensive supports (Hardware + Software update and upgrades + service) on complete solution from OEM / Bidder.
11. OEM must have their own registered Service and support center in Consignee State. Details must be listed on OEM Website. And OEM must provide documentary evidence issued by Govt department.

**Rack Layout for Proposed HPC and HCI Solution**

Customer Data centre Server Rack		
42	HPC Primary Switch	Network for HPC
41	HPC Secondary Switch	
40		
39	HCI Primary Switch	Network for HCI
38	HCI Secondary Switch	
37		
36		
35		
34		
33	HPC Master Node	HPC Nodes
32	HPC Compute Node-1	
31	HPC Compute Node-2	
30	HPC Compute Node-3	
29	HPC GPU Node-1	
28		
27		
26		
25		
24		
23		
22		
21		
20		
19	HCI Compute Node-1	HCI Nodes
18	HCI Compute Node-2	
17	HCI Compute Node-3	
16	HCI Compute Node-4	
15	HCI -Infra Node-1	
14		
13		
12		
11		
10		
9		
8		
7		
6		
5	Unified Storage	Storage System
4		
3		
2		
1		

Figure: Prototype of 42U Rack

# Server Rack



HPC- Network Switches

HCI - Network Switches

HPC Nodes

HCI Nodes

Unified Storage

**Fig: Physical Layout of the proposed Solution**

**Bill OF Material (BOM) of offered Solution:**

Bill of Material for Parallel Computing Solution (HPC)		
S.N.	Product Details	Qty
1	Master cum Log in Node (Each node with 56 CPU Cores, 128GB Memory, 1TB SSD in RAID, 14TB SSD in RAID 5)	1
2	Compute Nodes (Each node with 56 Cpu Cores, 256GB Memory, at least 1 SSD )	3
3	GPU / Accelerator Node (Each node with 32 CPU Cores, 1TB Memory, 1x Nvidia A100,80GB GPU and at least 1 SSD)	1
4	Workload Manager	1
5	OS and Job Scheduler	1
6	Node Management Software	1
7	Primary Switch on 10G Network	1
8	Secondary Switch on 1G Network	1
9	100TB or more Unified Storage System	1
10	42U Standard Server Rack with KVM Console and accessories as per bid document	1
11	Software's Support for 5 Years	1
12	Hardware Supports for 5 years	1
13	Onsite Installation	1
14	Onsite Training	1

Bill of Material for Virtual Computing thru Hyper Converged Solution		
S.N.	Product Details	Qty
	Useable resources minimum 200 CPU Cores, 8.5GB Per Core Memory, 20TB NVMe SSD Storage with RF3	
1	Compute Nodes	4
2	Infra Node	1
3	Primary Switch on 10G Network	1
4	Secondary Switch on 1G Network	1
5	Virtual Compute Licenses	1
6	Backup of All Virtual Machines has to take in offered Storage of Parallel Computing Solution	1
7	Software's Support for 5 Years	1
8	Hardware Supports for 5 years	1
9	Onsite Installation	1
10	Onsite Training	1

**Optional Items price to be quoted separately**

1	Cloud Storage Solutions of 50 TB, scalable in multiples of 10TB on pro-rata basis. Price Should be quoted separately from other Solutions. The price of the Additional requirement of multiples of 10TB storage should be mentioned.	1
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**Site Visit Certificate/ Undertaking**

This is to certify that we have visited the site for work of **Installation of HPC and HCI Cluster System at ICGEB Campus, New Delhi Component** on ..... and assessed the actual situation & nature of site. We will be able to complete the above work within stipulated time as per site conditions.

We further undertake that no extra cost will be claimed by us later-on for any difficulties/ modifications involved during the execution of works. We understand that work is to be executed in an already operational/ functional institute.

Computer System Administrator  
ICGEB New Delhi

Authorized Signatory  
Name & Address of the firm with seal