



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

**PR No.: 1000015559/ Rfx no.: 6100000413**

**Technical Specifications for Server:**

**Requirement of Bill of Material:**

**1. Main Server:**

Form Factor/Height	1U/2U rack server
Processors	Min. 32 Cores supporting Up to 2x second-generation Intel® Xeon® Platinum processors, up to 125W. Processor series allowed is Cascade lake.
Memory	Min. 192 GB supporting Up to 768GB in 12x slots, using 64GB DIMMs; 2666MHz / 2933MHz TruDDR4
Drive	2x 480GB SSD in mirroring supporting up to 8x 2.5" hot-swap SAS/SATA; or 4x 3.5" hot-swap SAS/SATA; or 4x 3.5" simple-swap SATA; up to 2x M.2 boot (optional RAID 1)
Expansion Slots	Up to 3x PCIe 3.0, via multiple riser options (either all-PCIe, or PCIe and ML2)
HBA/RAID Support	HW RAID with flash cache
Security/Availability	ThinkShield, TPM 1.2/2.0; redundant PSUs; front-access diagnostics via dedicated USB port, Predictive failure alerts for HDDs, Memory, CPU, Fans, Power Supply Fans etc
Network Interface	2x 1GbE ports + 1x dedicated 1GbE management port (standard); optional modular LOM supports 2x 1GbE Base-T or 2x 10GbE with Base-T or SFP+
Power	2x hot-swap/redundant (Energy Star 2.1): 550W/750W 80 PLUS Platinum; or 750W 80 PLUS Titanium
Systems Management	XClarity Controller, XClarity Administrator, XClarity Integrator plugins, and XClarity Energy Manager
OSes Supported	Microsoft Windows Server, SUSE, Red Hat, VMware vSphere
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5
Certified	BIS Certified System, OEM should also be ISO Certified
Others	FANs, HDDs and Power supplies should be hot swappable

**2. Backup Server with Storage:**

Form Factor/Height	1U rack server
Processors	Min. 16 Cores supporting Up to 2x second-generation Intel® Xeon® Platinum processors, up to 125W. Processor series allowed is Cascade lake.
Memory	Min. 32 GB supporting Up to 768GB in 12x slots, using 64GB DIMMs; 2666MHz / 2933MHz TruDDR4
Drive	2x 2TB 7.2K SATA HDD in mirroring supporting up to 8x 2.5" hot-swap SAS/SATA; or 4x 3.5" hot-swap SAS/SATA; or 4x 3.5" simple-swap SATA; up to 2x M.2 boot (optional RAID 1)

Expansion Slots	Up to 3x PCIe 3.0, via multiple riser options (either all-PCIe, or PCIe and ML2)
HBA/RAID Support	HW RAID with flash cache
Security/Availability	ThinkShield, TPM 1.2/2.0; redundant PSUs; front-access diagnostics via dedicated USB port, Predictive failure alerts for HDDs, Memory, CPU, Fans, Power Supply Fans etc
Network Interface	2x 1GbE ports + 1x dedicated 1GbE management port (standard); optional modular LOM supports
Power	2x hot-swap/redundant (Energy Star 2.1): 550W/750W 80 PLUS Platinum; or 750W 80 PLUS Titanium
Systems Management	XClarity Controller, XClarity Administrator, XClarity Integrator plugins, and XClarity Energy Manager
OSes Supported	Microsoft Windows Server, SUSE, Red Hat, VMware vSphere
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5
Certified	BIS Certified System, OEM should also be ISO Certified
Others	FANs, HDDs and Power supplies should be hot swappable

Proposed storage must have minimum 12 G SAS Drive side connectivity, 12 G SAS internal data bus, 12 G SAS expansion ports. EonStor series.

1. Proposed storage should have Single ctrl. Which can be upgradeable to Dual (**symmetric active-active**) controllers, with dual PSU and dual FAN module.
2. Each controller should have 1x Intel (4 core) or higher CPU
3. Default memory 8GB, able to upgrade to up to 32GB (per controller) without having to add change or add additional controller
4. Each controller should have 4x1 GbE
5. Should have at least one number of replaceable modular Card Slot per ctrl., Below Cards should be supported in each slot and possible to inter change the card without the need to change or upgrade the storage controller
  - 2 x 40 Gb/s iSCSI
  - 4 x 16 Gb/s FC
  - 2 x 12 Gb/s SAS
  - 2 x 10 Gb/s iSCSI (RJ45)
  - 4 x 1 Gb/s iSCSI
  - Converged host board with 4 x 8Gb/s FC ports, or 2 x 16Gb/s FC ports, 4 x 10Gb/s iSCSI, or 4 x 10Gb/s FcoE
7. Proposed storage system should have support below port expansion combination per ctrl.
  - 2x 12Gb/s SAS
  - 4x 1Gb/s iSCSI
  - 2x or 4x 10Gb/s iSCSI (SFP+)
  - 4x 10Gb/s iSCSI (RJ-45)
  - 4x 10Gb/s FcoE
  - 4x 8Gb/s Fibre Channel
  - 2x 16Gb/s Fibre Channel

Initially Quoted with 4x1GbE + One Host board slot per controller

6. Support drives including SSD, SAS/SATA HDD in the same enclosure
  - 2.5" SAS/SATA SSDs
  - 2.5" 10K rpm SAS HDD
  - 3.5" 7200 rpm NL-SAS/SATA HDD

7. Proposed storage is true unified storage architecture. Each storage controller should be able to support File, Block and Object storage. All these protocols should be supported on each controller and licenses for full storage capacity should be quoted for the duration of the product life cycle NFS, CIFS/SMB, AFP, FTP, SFTP, WebDAV, REST API, 1Gb/s, 10Gb/s and 40 Gb/s iSCSI (RJ-45, SFP+), 10Gb/s FCoE, 8Gb/s, 16Gb/s Fibre Channel, 12Gb/s SAS
8. Proposed storage should be able to separate the File Level share folder control with file protocols for secure file sharing process (like share a folder on HTTP or FTP only and share another on CIFS or AFP only).
9. Automated support request Proposed Storage should have option to automatically create support ticket with relevant logs with the OEM support in case of critical event.
10. Storage Capacity: Should be quoted with at least 20TB after RAID5 + Hot Spare SAS 12Gb/s HDD.
11. System should be scalable to minimum 432 drives without having to add any additional storage controllers and by using 12G SAS connected expansion enclosure. Any additional license if required to connect all 432 drives should be included upfront
12. Support inbuilt file system which can support single volume size up to 2PB. License for full capacity should be quoted upfront
13. Cloud - Support cloud provider: Amazon S3, Aliyun, Microsoft Azure, Openstack Swift, Google Cloud. If any additional hardware is required for cloud integration it should be quoted for the full capacity upfront
14. Cloud Disaster Recovery automatically make the hidden snapshot to cloud, allow administrator to use the last snapshot for roll-back.
15. Support deduplication/compression feature before data migrate to cloud provider
16. Storage should support 4 level Automated Storage Tiering, SSD Cache, Thin Provisioning, Volume Mirror/Copy, Block level Remote replication, File level Remote Replication (Rsync), Snapshot.
17. 80 PLUS-certified power supplies delivering more than 80% energy efficiency
18. Intelligent multi-level drive spin-down

### **3. Software:**

1. Red Hat Enterprise Linux Server, Server (Physical or Virtual Nodes) 2 Sockets, Subscription for 3yr.
2. Backup Software Licenses for backing up the data from Main Server to the external storage automatically.
3. The solution must support multiple instances on the main and the back up server. In case of failure of the main server, the instances should be boot up from the back-up server.

### **4. Other Details:**

There are Multiple Services / Applications running on the main Server which are as below. The setup/ migration of the same to be done by the bidder.

- Mail Services
- File Services
- Web Server
- LDAP
- My SQL
- PHP

- Other Applications

**5. Terms & Condition:**

1. The storage should have all the required ports to connect to the Network switch of IIT Bombay Department such as HBA cards, Transceivers and Cables.
2. The solution should be quoted with comprehensive warranty of 3 Years.
3. The Scope of Work should be delivered strictly as per the requirement and all the configuration and setup needs to be done accordingly.
4. The delivery of the machine should not be more than 5 weeks and the implementation should not take more than 2 weeks of time.
5. All the solution components must have support from the backed support.
6. OEM should have presence/supplied the equipment in at least 5 govt. and educational organizations. The proof of the same should be presented whenever sought by IIT Bombay in future.
7. Bidder should have sales and support office in Mumbai with support personnel to provide on-site support.
8. OEM should have at least 4 entries in India's top supercomputing list, latest.
9. This is a two-bid system. Price bid of Technically qualified bidders will only get opened upon qualification.
10. Installation Services must be quoted separately. Zero amount would not be entertained.
11. Bidder should have certified RHCE engineers inhouse and not a third party. The interview with IITB technical committee should be scheduled upon ask. Their knowledge and experience including expertise pertaining to the requirement should match or else liable for rejection. The details of the expertise of the bidder organisation/engineer should be included in the technical bid itself (part 1). The same would be called for verification.

**6. BOM Summary for Price Bid:**

S.N.	Solution Components	Qty	Unit
1	Head Server	1	No.
2	Backup Server with Storage	1	No.
3	RHEL Lic. (Latest Version)	1	Set
4	Backup Software Lic.	1	Set
5	Installation & Commissioning with Support	1	Job