

**NATIONAL CENTRE FOR SUSTAINABLE COASTAL MANAGEMENT**

Ministry of Environment and Forests (MoEF)

Koodal Building, Anna University Campus

Chennai – 600025

## Specification for Unified Storage System

**Supply, Installation, testing, commissioning and training for Unified Storage System with 3year warranty**

S. No	Related Services	Technical Specification
1	Storage Capacity	The storage shall be supplied with 200 TB (in ratio 40% SAS {10K RPM}, 60% NLSAS/SATA {Min 7.2K RPM}) of net usable data capacity on SAS/SATA disks after removing the drives required for (a) Parity/Mirror, (b) hot spares. The storage shall support SAS, SATA (7.2K, 10K, 15K RPM) and SSD disks on the proposed controller. 400x500GB or 200 X 1TB or Higher
2	Protocols Supported	The storage must be configured with FCoE, FCP, NFS protocols with provision to work with iSCSI and CIFS protocols in future. Any hardware/software required for this functionality shall be supplied along with it in No Single Point of Failure mode.
3	Non-Disruptive Volume Movement	The solution shall ensure movement of entire volume/LUN as a whole non-disruptively between the nodes or between different tiers of disks to optimize the system for capacity utilization and performance. This feature shall also be used for seamless hardware upgrades i.e., there should be no downtime for the Server / Host / User during this movement of entire LUN / Volume.
4	Cache required	The system should have at least 24GB of cache across the proposed controllers with an ability to protect data on cache if the system fails and it results into controller failure. System should be configured for 500GB of Flash / SSD based Cache or equivalent mechanism, with provision to extend it to 1TB
5	Front-End & Back-End connectivity	The Storage should be configured End to End with SAS 2.0 with Back-End throughput of 48Gbps (4 lanes X 2 Ports or 1 lane X 8 Ports). The Storage should be configured with minimum of 8 X 8Gbps FC Front Ports, 2* 10 Gbps Ethernet Ports and 2*1 Gbps Ethernet Ports across proposed controllers.
6	Storage Controller	The Storage system must have at least two controllers running in an active-active mode with automatic failover to each other in case of one controller failure. The vendors who propose gateway architecture should factor the necessary hardware required to meet this criteria for NAS and SAN. When more drives or controllers are added, storage system should automatically load balance the data across the old and new drives & controllers.
7	Storage built-in functionality	The storage shall have the ability to expand LUNS/Volumes on the storage online and instantly. The storage should also support shrinking of volumes/LUNs without any downtime. The storage shall have the ability to create logical volumes. The license required for the same shall be quoted separately for the maximum supported capacity of the offered storage model. It should be possible to convert a thin volume/LUN into a thick volume/LUN without downtime and without any data migration. The storage shall support quality of service by allocating system resource priority on the corresponding LUNS/Volumes through priority allocation or by use of cache partitioning. The storage shall support standard storage (SAN & NAS) security features. Storage Should Support following features 1. Automatic Data Migration across different storage disk types. 2. Data Duplication / Compression. 3. System should have redundant hot swappable components like controllers, disks, power supplies, fans etc.
8	RAID configuration	The system should support RAID 1, 4/5, RAID1+0, RAID6 or equivalent. The RAID implementation on the storage will be such that it is able to protect against two drive failing in the same RAID Group simultaneously. It should be possible to assign multiple raid arrays to single pool and it should be possible to define a volume which spans across all the disks in the pool.
9	Storage Scalability	If the no. of drive is 400 X 500GB then scalable to at least 1000 drives or no. of drive is 200 X 1TB then scalable up to 500 drives or higher
10	Snapshot	The Proposed Storage should be configured with Snapshot License with both create & restore functionality.

11	Management	Easy to use GUI based and web enabled administration interface for configuration, storage management. The vendor must also quote necessary tools for Real Time performance analysis, Monitoring and Reporting. The tool should be able to report parameters - both physical (ports utilisation%, CPU % ,disk%) and also logical(LUN level latency) on the controller. There should be a provision to completely automate the storage provisioning and necessary data protection requests.
12	Requirements	IOZONE benchmarks with proposed storage must be submitted during submission of tenders. The Benchmark should run all 13 types of Test (Eg: - Read, Write, Re-Read, Re-Write etc). The benchmark needs to be demonstrated with the help of IOZONE at the time of installation of system. Storage provided should support Boot from SAN option. The Vendor is responsible in carrying out the installation & integration of storage with Network & Servers as per the architectural diagram. Vendor must accept and adhere to operating environment before the supply of hardware. Vendor must clearly indicate the Space (Dimension), power & cooling requirements. All supplied hardware should be compatible with IPv6 standard.
13	OS support	Support for industry-leading Operating System platforms including: LINUX , Microsoft Windows, HP-UX, SUN Solaris, IBM-AIX, etc
14	Warranty	3 years comprehensive warranty & support should be provided for the entire storage hardware, software from the date of acceptance of the same. During the warranty period, the vendor shall replace the defective parts free of charge, including to and fro transportation cost of the items.
15	Racks	42U OEM racks with adequate rack accessories and PDU should be provided. If it does not conform to this size, then the exact dimensions of the racks and the number of tiles occupied by the rack should be mentioned. The rack height should not exceed 42U. 1. Cabling for all the power and network connectivity should be neatly structured.2. The weight of computing system must not exceed 1000 kg/sq.m per rack. 3. The proposed Racks must be quotes separately.
16	Documentation	Complete and legal documentation of all hardware, operating systems, monitoring and management tools and other supplied software should be provided.
17	Training	The vendor should give training in two sessions (Pre-Installation & Post Installation) to a group of NCSCM personnel on hardware, operating system, system software and development tools including API. The training must be arranged at NCSCM, Chennai.