



UNIVERSITY OF KERALA

Thiruvananthapuram, Kerala, India – 695034

(Established as University of Travancore by the Travancore University Act in 1937 and reconstituted as University of Kerala by the Kerala University Act of 1957 and presently governed by the Kerala University act of 1974 passed by the Kerala State Legislative Assembly)

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TENDER

Competitive Tenders are invited from reputed manufacturers/authorized distributors for the supply of one number of SAN Storage System for use in the University.

The detailed technical specifications for the item and other conditions can be downloaded from the website www.keralauniversity.ac.in.

The sealed tenders should be addressed to the undersigned superscribing “Tenders for the supply of SAN Storage System”.

Supply of SAN Storage System on 30.12.2013 is hereby extended upto 07.01.2014 (4 pm). Tenders shall be opened on the same day at 4.30 p.m.

Sd/-

REGISTRAR

SAN Storage Specification

1	Storage Architecture	
	a)	Proposed Storage System should have no single point of failure. The storage system should be upgrade to unified with file support in future. The Management of both SAN and NAS environments should be through in-build Single Management tool
	b)	The offered Storage System should have dedicated resources with 6Gbps SAS architecture for Backend Disk connectivity. The system must support dual-ported Disks. The architecture should allow modular upgrades of hardware and software for investment protection.
	c)	Array should be equipped with minimum dual controllers for High availability. Each array controller must be equipped with dual/Quad core processors for enhanced performance. Array should be supplied with minimum 16 GB DRAM Cache/Memory in each of the RAID Controllers
	d)	Firmware upgrade on system should not cause array cache/memory to go into write through mode.
	e)	Proposed system should have minimum 8 number of backend SAS lanes/controller each operating at 6Gbps for backend disk connectivity
	f)	Must keep write cache persistent during fault conditions, i.e. Single power supply failure / single fan failure
2	Host Connectivity	
	a)	The storage arrays shall minimum support native 8Gbps FC, 1Gbps iSCSI, 10Gbps iSCSI, CIFS & NFS over 1/10Gbps interface for host connectivity. The storage system should be configured with 4 x 8 Gbps FC, 2 x 1 Gbps iSCSI ports per controller. The system should also be configured with 4 x 1 Gbps ports for CIFS & NFS protocols.
3	Scalability	
	a)	The proposed array should be scalable to higher model within the offered family to future meet capacity growth and TCO.
4	Drive Support	
	a)	The solution must support 2nd generation 6Gbps SAS drives. Proposed system should support 300, 600, 900GB 10K SAS disks, 300 15K SAS disks, 1/2/3/4 TB NL-SAS Disks, and 200GB,400GB Flash/SSD disks
5	Protocols Supported	
	a)	The array should support block protocols like FC, iSCSI
	b)	The array should support file protocols like NFS v2, v3,v4 & v4.1 and CIFS (SMB 1, SMB2 and SMB3)
6	Usable Capacity Required	
	a)	Array should be configured with 4 TB of usable capacity in RAID5 (8D+1P) using 300 GB 15K RPM SAS disks and 50 TB of usable capacity in RAID6 using 2 TB or more 7.2K RPM NL-SAS disks. The proposed disk should support expandability of 350 disks or more
7	Storage Availability Features	
	a)	Array Cache/ Memory should be mirrored between the Active-Active controllers using separate Inter controller paths

	b)	Array must support fully automatic de-staging of cache contents to disks in order to prevent possible data loss during extended power outage
	c)	Raid Controller must provide end-to-end data protection using industry standard mechanism such as parity checking, checksum and background disk scrubbing etc.
	d)	The system design should provide data integrity features for stringent reliability and Five 9's availability.
8	Hot Spare Drives	
	a)	Proposed Storage should be configured with 1 global hot spare disks for every 30 data diskover and above the required capacity. System should have the capability to designate global hot spares that can automatically be used to replace a failed drive anywhere in the system.
	b)	Disk replacement process should be non-disruptive and not cause any other disk to go offline for replacing failed drive.
9	RAID Level Support	
	a)	Must support hardware RAID levels, 0,1+0, 5 and 6.
	b)	Different type of RAID levels should co-exist within the same array simultaneously to match the different protection requirements of storage.
10	Storage Pool/Group	
	a)	Array should support Storage pools/ Disk groups which allow intermixing of disk types such as Flash/SSD, SAS and NL-SAS within same Storage pool / Disk group
	b)	Array should support different Raid Levels within a pool for each of disk type. E.g. Raid-5 for Flash disks, Raid1 for SAS disks and Raid-6 for NL-SAS disks.
	c)	Storage should be able to add additional disks on the fly to expand the Storage Pool capacity
	d)	Array should be capable to support automated rebalancing of pools post addition of new disk drives in the pool.
11	Auto -Tiering	
	a)	Array should support automated Sub-LunTiering across all three supported tiers i.e. Flash/SSD, SAS and NL-SAS
	b)	Array should support Lun level Tiering policies with option to hold newly created data on SSD disks first and subsequently move data to other tiers based on access patterns.
12	Volume/LUN Migration	
	a)	Must be able to migrate data from one RAID type or set of drives to another online without impacting applications within the same system enabling administrators to seamless relocate data from one RAID group to another and across storage tiers, resulting in the highest cost efficiency and application performance.
13	LUN Masking	
	a)	Must support array-based hardware LUN masking for highest security. It should not be host-based or switch-based feature. Storage must support LUN masking or Selective storage visibility for different hosts or clusters
	b)	Bidder should provide required licenses if any for LUN Masking to support maximum supported hosts on respective array

14	Array Management	
	a)	Easy to use GUI based and web enabled administration interface for configuration, storage management. Storage Management software must include both GUI and CLI tools.
	b)	It must be able to centrally manage the vendor's same class of arrays over the network.
	c)	It must support event auditing for security, the date, time, and nature of the action must also be logged.
	d)	Provide management control of SNMP, email and phone home notification
	e)	Array management software must be capable to create different roles based access for array management tasks
	f)	Must provide multiple levels of access control including role-based security and auditing capability.
15	Thin Provisioning	
	a)	Array Must be configured with required licenses to enable thin provisioning, cloning/mirroring, snapshots. This license should be configured for entire supported capacity of the array.
16	Compression and De-duplication	
	a)	The arrays should support de-duplication for file services.
17	Local Replication	
	a)	The array should support controller based functionality for creation of pointer based snap copies as well as full physical copies.
	b)	Pointer based snap copies should require minimal space for creation of snapshot. The snapshot must be a read/write enabled that can be mounted by a separate host for back up and /or testing.
	c)	The full physical copy may require a target LUN of same size as parent. The full copy should support incremental updates (delta resynchronization). The full copy must be an independently usable copy that allows parallel processing without impacting the performance of the production volume.
	d)	The software for array based full copies, Snapshots and restoration from full copies & Snapshots should be licensed for the maximum capacity of the entire array from day one.
	e)	Both Snap and full copy feature should support instantaneous restore so that production can resume from source while the reverse copy happens in background.
18	Remote Replication	
	a)	Array should support storage based remote replication of both file and block data to remote site storage.
19	Performance and Monitoring	
	a)	The array should be configured with required software for performance monitoring
20	SAN Switch	
	a)	One number of SAN switches with at least 8 active ports of 8 Gbps FC with scalability to 24 ports and adequate number of LC-LC fiber cables should be configured.