

SPECIFICATION FOR PURCHASE OF NETWORK BASED SAN STORAGE

Existing Infrastructure:

Following components are currently available in datacenter. The

Sl. No.	Items	Qty	Specification
1.	IBM DS3400	2	4GBPS FC, 12 TB capacity with SATA Drive
2.	Fiber SAN Switch in IBM Blade Chassis-H.	2	Speed: 4GBPS FC FRU No: 46C7010 Part No: 43W6728 Product ID: 130 Manufacture ID: 203001 Product Name: QLogic Intelligent 4GB Pass-Thru Fiber Channel Module Description: Fiber Channel SM Hardware version 5 Manufacturer: Qlogic Note: The compatibility matrix for Cisco, Brocade and Q-logic SAN switches is attached.
3.	IBM HS22 server blades with Dual Port HBA card in each blade	10	4GBPS FC
4.	Fiber Pass-thru module in IBM Chassis-E	2	Speed: 2GBPS FRU No: 44W3323 PART No: 39Y9156 Manufacturer: IBM
5.	HS21 server blades with dual port HBA card	6	2GBPS FC
6.	TSM		TSM 5.5

Procurement Required:

Please provide a technical compliance chart for each of the points mentioned against each hardware/ software being quoted. This should be mentioned chronologically as per the specification details given here.

1. SAN Switches (2 nos)

Sl. No.	Items	Description
1.	Ports details with Speed	FC: 24 active ports (each with minimum 8Gbps speed with compatibility for 4Gbps and 2Gbps operation)
2.	Features	a) Should support multiple OS. b) Non-disruptive subsystem maintenance. c) Should have dual Fans and Hot plug power supplies switching and service modules.

Sl. No.	Items	Description
		<p>d) Should have web based management software for administration and configuration.</p> <p>e) Non-disruptive microcode / firmware upgrades and hot code activation.</p> <p>f) Switch shall support in built diagnostics, power on self test, command level diagnostics, online and offline diagnostics.</p> <p>g) Should support hardware ACL based Port security, Port Zoning and LUN Zoning.</p> <p>h) Should support Secure Shell (SSH) encryption to provide additional security for Telnet sessions to the switch.</p> <p>i) Should support multilevel security on console access prevent unauthorized users from altering the switch configuration</p> <p>j) Should support Fibre Channel trace route and Fibre Channel Ping for ease of troubleshooting and fault isolation</p> <p>k) Should support Applications for device management and full fabric management.</p>
3.	Compatibility	It should be fully compatible with existing SAN switch mentioned in item no. 2 in existing infrastructure.
4.	Warrantee	3 years comprehensive warrantee with 8x5 support
5.	AMC	Firm should quote AMC cost on yearly basis for 4 th 5 th and 6 th years respectively. The payment for each year will be paid at beginning of the respective year. <u>AMC will be signed with OEM.</u>

The SAN switches supplied by the firm should be integrated with the Intelligent SAN Pass-Thru Module for existing IBM Blade Chassis-H

SAN STORAGE

Sl. No.	Items	Description
1.	Total Capacity	<p>Total approximate storage capacity required at day-1 is 50 TB. Hence, the firm has to show the disk striping across 50TB as a single RAID volume after the disks are formatted (or multiple raid volumes total being 50TB).</p> <p>The system should be expandable to 75TB (50% of current capacity) with addition of disks only in proportion of disks supplied as per details given in following point (Sl no.2.). The system should be capable of providing at least 150TB storage with additional expansion box.</p>
2.	Drives Supported	<p>a) SAS: 20TB - 40% of total capacity (600GB 15K RPM disks only - 35nos) (If not supported, other forms of 15K RPM disks can be used. Total capacity of disks should be 20TB. Number of empty slots should be 50% of filled slots.)</p> <p>b) NL SAS: 30TB – 60% (7200 RPM, 2TB disks only 16nos): In case companies hardware does not support this 1TB disks can be used.</p> <p>c) All SAS drives should be one type and all NL SAS drives should be one type.</p> <p>d) Supported drives/system per tray capacity of different hard disk drive within same storage expansion module</p>

Sl. No.	Items	Description
		<p>e) Expansion tray should be provided to support SSD drives and storage should be fully ready to support this drives if required in future.</p> <p>f) Support for SSD drives should be available. Price for SSD drives should be provided. NIT will have the option of buying these if need arises within three years at the price quoted by the firm now. If any other extra hardware/ software/ license is needed it should also be quoted here.</p> <p>g) Empty slots should be 50% of filled slots.</p> <p>Note: The price of each variety of HDD (SDD, SAS and NL SAS) should be quoted individually. The price should be valid for 3 years. Institute has the option of purchasing additional HDD within 3 years.</p>
3.	Host Interface	8GB/s FC, 10 GBPS iSCSI
4.	Host Connectivity	FC, iSCSI
5.	Protocol Support	8 Gb/s FC, iSCSI (1 and 10 Gbps)
6.	Other Protocol Support	The System should support SNMP, Address resolution protocol, Network Time Protocol, LDAP
7.	Front End Fiber Channel Ports	The storage should be configured with min of 4 nos of 8Gbps FC ports.
8.	Front End iSCSI Ports	Some of the non-critical servers would have the option of connecting to iSCSI ports. 2nos of 10Gbps ports should be provided for the same.
9.	Client connectivity	License for 128 client side connection should be included in the storage. This should be independent of disk type used.
10.	Form Factor	19" rack mount Note: 42U rack is already existing hence, firm should not quote for Rack
11.	Operating System	OS should be based on Unix/ Linux kernel.
12.	Controller	System should be unified storage which should be configured with dual controller. Controller CPU should be based on Intel Xeon/ RISC processor/ ASIC based. The minimum Cache should be 4GB usable per controller scalable up to 8GB usable per controller.
13.	Cache	4GB usable per controller scalable to 8GB usable per controller
14.	Features	<p>a) Should have the ability to expand and shrink LUNS/Volumes on the storage online</p> <p>b) Should have the integrated capability to move sub-LUN data from low performing storage disks to High performing disks</p> <p>c) <u>Thin provisioning</u>, Thin provisioning or Virtual provisioning support helps in allocating more physical resource than is actually available. Thin provisioning allows space to be easily allocated to servers, on a just-enough and just-in-time basis.</p> <p>d) <u>Virtualization integration</u> The Storage array should be VMware ready for server as well as desktop virtualization. The Storage array should be fully certified for all supported protocols to ensure successful deployments into VMware, Microsoft HyperV, and Xen environments. The Storage array should have capabilities so that, the Storage array and VMware administrators can each use their familiar interface to gain full visibility into virtual and physical resources, transparently provision storage, integrate replication, and access and offload all storage functions to the array.</p> <p>e) <u>Effective automated tiering</u> Auto tiering is an important storage efficiency tool which helps with meeting performance demands of applications by automatically allocating hottest data blocks</p>

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		to high performance disks and the coldest data to lower cost, higher capacity drives. f) <u>Snapshot</u> Snapshot technology helps in taking point in time copies of the data which can be later used for purposes like backup, test/development or for restoration of data. g) <u>Volume copy</u> Volume copy allows users to quickly and easily create multiple disk-based data copies at minimized performance degradation h) <u>Cloning</u> Cloning provides full volumes copies of individual datasets i) <u>Replication support</u> The storage array should be able to replicate the data both locally (within the storage array) and remotely .The storage array should be able to replicate the data remotely, i.e., to a DR location if required through optional software in both synchronous and asynchronous mode. It should support data replication incrementally for changed blocks. (support should be available but not required to be quoted)
15.	Snapshots	The system should be configured with Snapshot licenses, snapshot restore licenses for the entire systems capacity
16.	Clone	The system should be configured with software license for creating clone copy of production LUN /volume accessed by Fibre channel and iSCSI hosts
17.	Replication Support	The storage array should be able to replicate the data to a DR location if required through optional software. It should support data replication incrementally for changed blocks. It should be able to replicate the file data and the block data. (support required but not to be quoted)
18.	TSM Support	Storage should have TSM integration. Any related licenses should be included in offer.
19.	Maximum array capacity	Supports dynamic array expansion where capacity of individual selected LUN/volume in RAID array can be increased
20.	RAID	Should support RAID 1, RAID 5, 6, 10
21.	File system support	Should support NAS, SAN and PFS
22.	Management software support	Web based interface/command line interface to monitor and configure system from anywhere in TCP/IP network
23.	Operating System support	License cost for all these OS should be quoted. <ul style="list-style-type: none"> • Sun Solaris • Microsoft Windows 2003, 2008 • Microsoft Windows 7 • Microsoft Windows Server 2008 HyperV • SUSE Linux 9.0, 10.0 n • Red Hat Enterprise Linux 4.0, 5.0 • VMware ESX 3.0.2 and higher • IBM AIX • HPC support (Linux for HPC)
24.	Compliance	Back end performance bandwidth of minimum 48Gbps
25.	Virtualization Support	It should be possible to manage a the storage from VM using the Storage Management software and hence APIs for VmWare integration to the storage must be present.
26.	Software Licenses	The system should be configured with perpetual licenses for FC, iSCSI, Thin Provisioning, snapshot, cloning, volume copy, Management software

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		license should be for entire system. The system must be configured with perpetual licenses for operation of storage device, iSCSI application along with client agent to be installed on server, backup agent, partitioning and for unlimited number of hosts in high availability. All licenses should be for the full capacity of the array. Multipath and load balancing software for all SAN connected servers shall be provided. The storage box should be licensing ready from day one.
27.	Warrantee	3 years comprehensive warrantee with 24x7 hardware and software support
28.	AMC	Firm should quote AMC cost on yearly basis for 4/5/6 years respectively. AMC will be signed with OEM. The payment for each year will be paid at beginning of the corresponding year.
29.	Field Proven with Installed base	Offered model/ series of product should have been in operation for nearly 1 year worldwide. Firm should have supplied/installed at least 5 units of the model quoted (disk size can be different).
30.	With regional OEM support setup	OEM should have their own support infrastructure in the region (Kolkata/ Bhubaneswar/ Raipur/ Rourkela)
31.	Delivery Schedule	6weeks maximum
32.	Taxes	Taxes should be mentioned in details. Entry tax will be paid on actual. Companies can quote for FE purchase through LC opening/ High sea sales. NIT is eligible for custom duty exemption. F.O.R Kolkata airport. It will be responsibility of the firm to complete the custom clearance and deliver materials at NOT Rourkela. NIT will provide authorization for same.
33.	Installation & Configuration	The storage must be integrated with the existing storage infrastructure mentioned above. They must be Installed and configured by authorized engineer from the manufacturer (not from the vendor).
34.	Training	At least three days training on “ Storage Configuration and Administration ” will be provided by OEM at NIT, Rourkela. Training agenda must be attached in technical bid for providing above training.
35.	Relocation of storage	Firm should provide cost for relocating the hardware in NIT Campus within one year of installation. In case the data center is moved to a different building firm will be required to carry out this work on price quoted here.

Note: Any specification terms found to be vendor specific, may be quoted with equivalent technical specification.
