

S.N.	CSIR SAN Tender Features	CSIR Tender Description	Queries	CSIR Response
CSS				
2.	Front end ports	The storage system shall be configured with at least 8 front end FC ports which can be scaled upto 24 FC ports and 6 iSCSI ports or higher.	provide the details of the requirements due to which CSIR intends to have so much scalability in FC and or iSCSI ports . As CSIR is already procuring SAN switches having 48 ports we suggest to lower the FC ports requirements to 16 X 4 GBPS FC ports and 4 X1 Gig iSCSI ports . Also we suggest that the array should support 8 Gbps FC ports and 10 Gig iSCSI ports for higher throughput .	iSCSI ports are very essential because it allows the organization to consolidate storage into data center storage arrays while providing hosts (such as database and web servers) with the illusion of locally-attached disks
4.	Cache	The storage system should at least be proposed with 32GB cache . All cache shall be available as write or read cache dynamically as per application requirement.	the specification favour only one OEM . We suggest to reduce the cache required to 6 Gb as the available storage arrays in the industry which have around 120 Tb or more scalability supported around 6 Gb cache . Additionally the storage array should be able to destage the data to disk for complete cache data protection . battery backed cache would not be able to provide complete protection to data if power is lost for extended duration .	Cache requirement is very essential keeping in view of the CSIR Enterprise application which involves extensive Transaction Processing
5.	Storage	The storage system shall be configured with at least 25TB Usable capacity to handle future expansion upto a maximum limit of 100TB. Highest capacity FC and SATA disk available should be used.	Please specify the disk drives to be used like FC/ DSATA and the RPM for the disks and the storage capacity required on FC drives and SATA drives ? As all the leading storage OEMs support intermixing of Flash , FC and SATA disk drives we suggest CSIR to incorporate the same .	It is vendor's choice to quote for either Fiber Channel Disk or SATA disk. But the highest capacity disk with optimum RPM which would provide highest performance, throughput and failsafe should be quoted.

6.		The data should be spread across all the disks available in the storage. The data should be written in a way that there should be no hot spots. At any point in time, all the disks should participate in the I/O operation. When Storage expansion happens, the new additional resources have to be used optimally to balance the load across the new resource and available resources automatically without any user intervention.	the propriaty implementation of one storage OEM .It is not recommended to spread data in all disks in the array as whenever a disk will fail all disks involved in the rebuilding process which will fall all the disks would be involved in the industry standard process which will take a lot of time to complete . The disks which only would be involved in rebuliding process . this is a limtaion of one particular storage array which operates only in this fashoin (ie spreading data in all disks) hwich is severe limitation putting the complete data at risk whenever a disk fails .	Since all disks are to be used concurrently, rebuilding process will be very fast and would provide highest performance.
8.	data high avallability	The data should be mirrored in a way that at any point in time there should always be 2 copies of the data available in the storage. During failures, the storage should automatically be able to create another copy of the lost data through the mirrored copy without any user intervention.	please clearly specify whwther raid 1/0 is only required or the solution can be configured using raid 5	This is the minimum tender requirement.Mirroring is required .
11.	Snapshots	There should not be any performance penalty for Server I/O when the snapshot is enabled. In case performance degrades during snapshot because of copy on write mechanisms, then atleast twice the number of disks should be supplied than that required as per capacity sizing to offset the IO load on the production due to copy on write snapshots.	this is refeffering to a particular mechanism of snapshots creation . Actulally copy on write mechanism helps reduce the recorded . the production area do not need to e amount of I/Os happening on the production storage as it only stores the data on first wite (Copy of first write) and all subsequent writes to hence it saves a lot of spec requiremnet and reduces the laod on production volumes s . we suggest CSIR to not to penalise the vendor providing a spsce efficientr and system putting lessload on production volumes . Please remove this specification.	No performance overhead for read operations and minimal overhead during write operation(5-10%)

25.	Management SW	Storage infrastructure Software will at least have SAN Management Software, Local and Remote Replication software and migration software.	is the software for local and remote replication to be provided in the bid . Also please specify whether synchronous or asynchronous replication or both needs to be provided . If remote replication softwares need to be quoted then please also specify that the vendors should also quote FCIP converters or any other hardware requires for remote replication.	All requisite licences are required . FCIP Router , if required will be procured in phase II
Targus				
2.	Front end ports	The storage system shall be configured with at least 8 front end FC ports which can be scaled upto 24 FC ports and 6 ISCSI ports or higher.	the storage system shall be configured with atleast 9 front end FC ports which can be scaled upto 24 FC ports	ISCSI ports are very essential because it allows the organization to consolidate storage into data center storage arrays while providing hosts (such as database and web servers) with the illusion of locally-attached disks
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HCL Comnet				
5.	Storage	The storage system shall be configured with at least 25TB Usable capacity to handle future expansion upto a maximum limit of 100TB. Highest capacity FC and SATA disk available should be used.	Kindly confirm on the breakup of 25TB which b needs to be configured on FC and SATA	It is vendor's choice to quote for either Fiber Channel Disk or SATA disk. But the highest capacity disk with optimum RPM which would provide highest performance, throughput and failsafe should be quoted.
13.	GUI - storage management tools	The Storage system shall be configured with GUI-based Storage Management Software Tools for Management. A single command console shall be used for the entire storage system	How many windows servers would be there .	25 servers
26.	Replication	The storage system shall support hardware based data replication to a remote site.	Kindly confirm whether we need need to configure storage with replication software or not .	All requisite Licences required

27.	Data Migration	The storage should be configured with data migration feature.	Kindly confirm details regarding data migration feature has been asked in storage.	The best data migration features should be factored

Progressive

1.		The Storage System(s) shall have no single point of failure. To name a few but not limited to Non- disruptive component replacement, hot-replacement of Interfaces, Disk controllers, Disk drives, Cache memory cards, Micro-code, Power supplies, Battery systems, Fan subsystems, FC controller and ports, etc. There shall be no performance degradation due to any single failure in the storage.	if controllers are active - active increases the performance in normal circumstances , the performance incase of failure of a component is bound to happen. If CSIR requieres Active - Passive controllers please specify .	Please refer to the original specification
2.	Front end ports	The storage system shall be configured with at least 8 front end FC ports which can be scaled upto 24 FC ports and 6 ISCSI ports or higher.	how many total ports calabilty is required 30 including FC and iSCSI . Please specify . What is the ratio of current required ports between FC and iSCSI performanc of the controllers increses with additional storage shelf but this increase in the performance is always upto a certain limit beyond which performnce will remain stagnant or decrease . Please ex[plain in detail .	Specification cleary mentions the requirement
3.		The proposed array would be preferred with a modular architecture. This would enable us to increase performance as well with an upgrade of every additional storage shelf.	performanc of the controllers increses with additional storage shelf but this increase in the performance is always upto a certain limit beyond which performnce will remain stagnant or decrease . Please explain in detail .	Please refer to the original specification
5.	Storage	The storage system shall be configured with at least 25TB Usable capacity to handle future expansion upto a maximum limit of 100TB. Highest capacity FC and SATA disk available should be used.	Please specify the capcity with FC and SATA HDD along wiyth thre required RAD levels	It is vendor's choice to quote for either Fiber Channel Disk or SATA disk. But the highest capacity disk with optimum RPM which would provide highest performance, throughput and failsafe should be quoted.

6.		The data should be spread across all the disks available in the storage. The data should be written in a way that there should be no hot spots. At any point in time, all the disks should participate in the I/O operation. When Storage expansion happens, the new additional resources have to be used optimally to balance the load across the new resource and available resources automatically without any user intervention.	This is generally depends upon the no of RAID groups defined . Please elaborate this pointy .	Since all disks are to be used concurrently, rebuilding process will be very fast and would provide highest performance.
26.	Replication	The storage system shall support hardware based data replication to a remote site.	shouds data replication software be quoted reight now or it should be procured b CSIR in future as per requirments .	All requisite Licences required
27.	Data Migration	The storage should be configured with data migration feature.	shouds data migration software be quoted reight now or it should be procured b CSIR in future as per requirments .	All requisite Licences required
28.	Thin Provisioning	The storage should support Thin Provisioning. There should be hard and soft limits set to the storage pools. The snapshots should not be included in the soft size limit.	should Thin provisioning software be quoted reight now or it should be procured b CSIR in future as per requirements .	All requisite Licences required

Huawei

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HCL Infosystems

2.	Front end ports	The storage system shall be configured with at least 8 front end FC ports which can be scaled upto 24 FC ports and 6 iSCSI ports or higher.	provide the details of the requiremnets due to which CSIR intends to have so much scaabiltiy in FC and or iSCSI ports . As CSIR is already procuring SAN swithches having 48 ports we suggest to lower the FC ports requiremNSTs to 16 X 4 GBPS FC ports and 4 X1 Gig iscsi ports . Also we suggest that the array should support 8 Gbps FC ports and 10 Gig iSCSI ports for higher throughput .	CSIR Enterprise application requires high scalability
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8.	data high availability	The data should be mirrored in a way that at any point in time there should always be 2 copies of the data available in the storage. During failures, the storage should automatically be able to create another copy of the lost data through the mirrored copy without any user intervention.	please clearly specify whwther raid 1/0 is only required or the solution can be configured using raid 5	This is the minimum tender requirement.Mirroring is required .

11.	Snapshots	There should not be any performance penalty for Server I/O when the snapshot is enabled. In case performance degrades during snapshot because of copy on write mechanisms, then atleast twice the number of disks should be supplied than that required as per capacity sizing to offset the IO load on the production due to copy on write snapshots.	this is refeerring to a particular mechanism of snapshots creation . Actulally copy on write mechanism helps reduce the recorded . the production area do not need to e amount of I/Os happening on the production storage as it only stores the data on first wite (Copy of first write) and all subsequent writes to hence it saves a lot of spec requiremnet and reduces the laod on production volumes s . we suggest CSIR to not to penalise the vendor providing a spsce efficientr and system putting lessload on production volumes . Please remove this specification.	No performance overhead for read operations and minimal overhead during write operation(5-10%)
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