

Responded to Pre Bid Query : RFP1264 - Storage PROCUREMENT, INSTALLATION, COMMISSIONING AND MAINTENANCE OF STORAGE SOLUTION					
Sl. No	RFP Page No	RFP Clause No	Existing Clause	Query/Suggestions	Banks Response
1	61	4. Number of Racks- Controllers	Number of Racks Controller s7- The proposed solution model should have at least 40+40 (PR+DR) Storage Controllers or maximum 10% more at each site in scale out architecture on day one which should be divided in not more than 4 storage clusters per site.	Different vendors have different technology to meet the performance and the controller count to support, since bank has already defined the number of controllers required, Limiting to only 4 clusters would be OEM specific, where a particular OEM has an advantage. There should not be any limit to cluster count as long as we are meeting the number of controller count, performance and rack space criteria. We request Bank to remove the number of cluster count or increase the cluster count to 6.	Please refer corrigendum No. 3
2					No change, as per RFP.
68		Point No.65	65. The proposed solution should have provision to protect and recover data in case of ransomware or malware attack for SAN & NAS workloads. Any license required should be provided on Day one for full capacity of system	Bank has asked for Enterprise storage with less than 1 ms response time. We can't get less than 1 ms response in any of the NFS env. Hence this req is contradictory to the performance claim ray and would request bank to segregate the Block & File workloads.	Combining file and block storage enhances efficiency, as it eliminates the need to declare the size of individual requirements on day one. This interoperability offers flexibility while improving efficiency and return on investment (ROI).
3				Regarding Gbps/IOPS numbers are not matching in forward and reverse, and out of bandwidth and controller count, which parameter bank will prefer and can it be amended to a smaller number of controllers?	No change, as per RFP.
4			Client references and contact details (email/ landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)		TPNC clarified that bidder to consider throughput or IOPS whichever is higher for supply.
56		Annexure B, Sl No 7	Client references and contact details (email/ landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)	Pl clarify if we have to provide references of multiple (2 or more) customers with aggregate total installed base of 5 petabytes. Kindly elaborate.	No change, as per RFP.
5					References from Minimum 2 customers required for total 5 PB)
56		Annexure B, Sl No 7	Client references and contact details (email/ landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)	We request you to reduce this criteria to 3PB instead of 5PB.	No change as per RFP.
6			In the event of Bank engaging the services of CDAC/any other party for inspection and testing of the supplied material, the bidder should ensure the presence of OEM engineer.	Phase share the testing criteria	No change, as per RFP.
84		1 Description of Services	The bidder has to rope-in expert team from OEM for designing, planning and documenting the storage implementation (it should include, migration plan from existing setup, optimal configurations, performance oriented design, SAN switch zoning and configuration) in consultation with bank.	Please share the existing setup from which migration to be done so that we can identify the tool required for migration	The hardware should comply with technical specifications mentioned in Appendix-C of this RFP.
7					No change, as per RFP.
84		1 Description of Services	Bidder has to get the complete initial implementation, commissioning including management, monitoring and integration with existing solution done through OEM engineers.	phase share the existing setup details which need to be integrated with storage system	The existing setup is VMware and migration will be within VMware setup.
8			Bidder has to ensure a neat, labelled and high standard implementation. All works related to implementation like cable laying, tagging, lifting, shifting and all relevant activities as per data centre norms are in scope of bidder during the entire contract period.	Please confirm it is a one time activity or need to be done later as well if yes please confirm the occurrence of the activity.	No change, as per RFP.
84		1 Description of Services			This will be one time activity.
9					No change, as per RFP.
84		1 Description of Services	In case if movement of racks (new/existing), cabling etc. to be done, Bidder has to take the responsibility of end to-end implementation.	Please confirm it is a one time activity or need to be done later as well if yes please confirm the occurrence of the activity, as bidder is not aware of existing rack's network connectivity, requesting to remove the existing word from the clause.	Generally it is one time activity, however in case of rack movement bidder has to arrange for cabling.
10					No change, as per RFP.
84		1 Description of Services	Bidder should arrange yearly review from OEM's SME on efficiency, operations, utilization and areas of improvement.	Phase share the testing criteria and parameter	This will be as per OEMs standards and ongoing operations.
11					No change, as per RFP.
85		1 Description of Services	Flash Wear warranty: Flash read/write wear out should be covered under warranty.	Please let us know the Flashwear performance acceptable values of the parameters.	Any damage or malfunction caused by normal wear and tear of flash memory should be included in the warranty.
12					No change, as per RFP.
85		1 Description of Services	Bank will procure minimum 40% of the quantity mentioned in first year.	please share the timelines for procurement of remaining 60% quantity	Bank may order remaining hardware within three years from the date of Purchase order
13					No change, as per RFP.
85		2 Description of Deliverables	Eight onsite manpower resources on all days of the week for management, maintenance and support on 24x7x365 basis.	please confirm eight resources required everyday, also confirm the shift timings and resources required in per shift	No change, as per RFP.
14			All FC cables, Ethernet cables & any other accessories required to establish connectivity between Storage, SAN Switch and respective hosts, LAN switches to be provisioned by bidder. FC Patch panel work need to be done by Bidder.	FC Patch panel also need to be given by bidder and cabling will be within rack or between different racks. What about LAN switches it will be provided by banks or bidder have to provide	Eight resources required everyday, with two each in Morning, General, Evening and Night shifts.
15					No change, as per RFP.
86		2 Description of Deliverables	Bidder has to arrange for evaluation of the proposed storage setup through OEM SME on yearly basis and submit a whitepaper providing performance benchmarking, optimization measures etc.	What will be the performance benchmarking criteria and parameter	Networking switches will be provided by Bank.
16					No change, as per RFP.
86		2 Description of Deliverables	New storage solution should be integrated with existing cloud setup without any additional cost to the Bank.	Please share the details of existing cloud setup, is their any requirement for any tool for integration wit existing cloud	Generally it is one time activity, however in case of rack movement bidder has to arrange for cabling.
17					No change, as per RFP.
86		3 Third-Party Components	Bidder has to arrange for migration of storage from existing setup to new hardware as guided by the Bank.	Please share the details of existing setup from where migration is to be done so that we can plan for the tools and skills required for migration	The existing setup is VMware and migration will be within VMware setup.
18					No change, as per RFP.
87		6 Integration / Migration Requirements with existing systems			The existing setup is VMware and migration will be within VMware setup.
19					No change, as per RFP.
85		2 Description of Deliverables	Bidder must arrange for delivery, installation, power on, necessary cabling, etc. clause pg#85 "Eight onsite manpower resources on all days of the week for management, maintenance and support on 24x7x365 basis." - and Pg#87 "Minimum 6 Manpower resources on daily basis to be onboarded within 10 weeks of PO. Remaining manpower can be onboarded within 14 weeks."	Clarification is required - Arrange for "power on". Whether bidder has to provide UPS with power cabling in case of power connection or Bank will provide that?	Bank will provide standard data centre fitouts like space, power, cooling, overhead cable trays, DC network connectivity etc. Bidder has to power on and configure the setup.
20					No change, as per RFP.
86		2 Description of Deliverables	Bank may place higher or lower quantities or manpower order as per requirement.	We are ok provide higher or lower daily resources. How ever we request you to provide the upper & lower limit of the number of additional people by +/- percentage.	Timelines provided for onboarding of Manpower.
21					No change as per RFP.
86		2 Description of Deliverables			
22					No change as per RFP.
107		For performance and support: pt 5	If any production LUN/volume went offline any point of time due to any Human error monitoring Negligence/Software bug	We request you to remove this penalty clause.	
23			7. The proposed solution model should have at least 80+80 (PR+DR) Storage Controllers or maximum 10% more at each site in scale out architecture on day one which should be divided in not more than 8 storage clusters per site.	Different vendor has different technology to meet the performance and the controller count to support, since bank has already define the number of controllers required, Limiting to only 8 cluster would be OEM specific, where a particular OEM has an advantage. There should not be any limit to cluster count as long as we are meeting the number of controller count, performance and rack space criteria. We request Bank to remove the number of cluster count or increase the cluster count to 12.	No change as per RFP.
60		Appendix-C, A: Production Storage (Category 1):	5. Maximum size of each NVMe storage drive should be less than 30.xx TB with TLC or QLC drives.	Since Bank is asking for huge capacity, we feel using 30TB Drives will lead to longer re-build time and in case of multiple drive failure there are chances of RAID groups going to de-grade mode which might leads to higher latency, impact in the performance and chance of data loss. Hence, we request bank to limit the drive size to 18 TB or lesser like production storage.	No change as per RFP.
24					No change as per RFP.
61		B. Non-production Storage (Category 2):	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NL-SAS and 20% NVMe TLC drive based Object Storage for two sites.	Please change the clause to allow both NL-SAS/SATA and drive type as both TLC/QLC.	
25					No change as per RFP.
71		Object Storage Specifications(Category 3): Capacity			
26			Sustained Read Throughput: 30 GB/s (Gigabytes per second) or higher per site for object size of 4 MB. Sustained Write Throughput: 20 GB/s or higher per site for object size of 4 MB.	For sequential workloads like backup and archival, average object size is generally larger and a higher object size like 10 MB to 200 MB can yield better performance numbers. Is there a specific reason for the 4MB object size, if not can a higher object size be considered say 100 MB? Is this throughput aggregated throughput of NVMe and NL-SAS/SATA or the throughput asked is all from high performance drives? Generally the write throughput in node based architectures is approximately half of read throughputs, since a higher throughput of write is asked, please specify if this throughput is based on workload or can a lower write throughput like 15 GB/sec be considered?	No change as per RFP.
71		Object Storage Specifications(Category 3): Throughput			No change as per RFP.
27			Latency for Small Objects (<1MB): < 10 milliseconds (ms) for both read and write operations per site. Latency for Large Objects (>100MB): < 100 ms for read operations.	Most of the unstructured object based workloads are throughput based and so is the benchmarking/sizing. Proving the latency numbers for object storage other than a TPS or MB/sec is not straight forward. This is more of a block storage concept for OLTP workloads. For smaller objects a Transaction per second is a better parameter to measure the performance.	No change as per RFP.
71		Object Storage Specifications(Category 3): Latency (Response Time)			No change as per RFP.
28			Small Object IOPS (e.g., 4KB): 5,00,000 IOPS or higher for mixed read/write workloads. Large Object IOPS (e.g., 1MB): 50,000 IOPS or higher for sequential read/write workloads.	Transactions Per Second (TPS) is a better measure for object storage. IOPS is more of a block storage/FC based criteria for OLTP workloads. Can this be interpreted as TPS for 4 KB Object size? For mixed workloads, please specify the read/write ratio. 50000 IOPS of 1 MB = 50000 MB/sec = 50 GB/sec. Is this read or write number? Also, this doesn't match with the throughput number asked above. Which number should the bidder be complying with?	No change as per RFP.
71		Object Storage Specifications(Category 3): IOPS (Input/Output Operations Per Second)			No change as per RFP.
29			Each data drives should have a maximum capacity of 16.xx TB 7.2k RPM NL-SAS HDD and maximum of 16.xxTB capacity drive in SSD.	Denser Capacity drives are available with many OEMs, this can help reduce the data center footprint of the solution still providing capacity and performance asked. Can we allow higher capacity drives to be quoted?	No change as per RFP.
71		Object Storage Specifications(Category 3): Disk Size	The object storage must be enterprise class object storage that provides no single point of failure, high resiliency, and redundant components with 99.9999% data availability and uptime guaranteed on yearly basis.	Please help to relax this to 5 9's of availability as that is the published number for the bidder. Both node and disk level failure is taken care with 5 9's of availability.	No change as per RFP.
30				A node based multi-controller EC based architecture should be able to mitigate both node and disk level failures. Also, lower level of failure protection for higher number of nodes will not match the availability criterion stated in previous clause. Hence request to amend the clause to both node and disk level protection.	No change as per RFP.
71		Object Storage Specifications(Category 3): Resiliency			
31			Erasure coding algorithm provided must support data protection against 3 or more simultaneous nodes / disks failures across the storage nodes.		No change as per RFP.
72		Object Storage Specifications(Category 3): 10.			

32	72	Object Storage Specifications(Category 3): 12	Erasure coded data must be encoded efficiently, regardless of object size. Object Storage shall allow any object to be accessed from any node at any site with most recent version of data always available.	We recommend to mention strongly consistent architecture in this clause as some legacy object architectures prefers availability over consistency.	No Change, as per RFP No Change, as per RFP
33	72	Object Storage Specifications(Category 3): 16	The object storage platform shall support data disks with all SSD for performance required application.	Please explain what this clause means as the first clause asks for 20% NVMe and 80% NLAS/SATA. With 3 disk failure asked along with erasure coding, minimum number of nodes required in each NVMe and SATANL/SAS nodes is 4, this sums upto minimum 8 nodes. What is the rationale behind asking 28 nodes? If a vendor can meet availability and performance with less number of nodes and higher capacity drives and having models with more number of drives, that can considerably help to reduce data center footprint and power consumption as well. There is no bifurcation given for minimum number of nodes in NVMe and NLAS/SATA as well. Can we rather mention minimum 5 nodes in each type i.e. NVMe and NLAS/SATA?	NVMe will be needed for applications requiring performance
34	73	Object Storage Specifications(Category 3): 28	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 28 nodes per site should be provided for user data access with minimum 4 numbers of 25Gbps LAN Ports on each node. Each node should have a separate appliance or physical server.	The LB should be compatible with storage throughput asked. Hence LB throughput should also be mentioned.	No Change, as per RFP
35		Object Storage Specifications(Category 3): 36	Two Load Balancers of 25Gbps x 4 throughput should be provided for each Cluster Data Center in HA mode	80% + taxes of the storage solution (hardware, software and warranty) will be released on delivery of hardware.	No Change, as per RFP
36		Appendix-E- Scope of Work and Payment Schedule- Payment schedule- 89	50% + taxes of the storage solution (hardware, software and warranty) will be released on delivery of hardware. Remaining 50% + taxes of the storage solution (hardware, software and warranty) will be released on verification of bill of material, storage capacity and performance as given in the RFP by Bank/CDCAC/Third party and commissioning of storage solution as well as submission of PBG.	Remaining 20% + taxes of the storage solution (hardware, software and warranty) will be released on verification of bill of material, storage capacity and performance as given in the RFP by Bank/CDCAC/Third party and commissioning of storage solution as well as submission of PBG.	No Change, as per RFP
37		Site readiness	Sonata Dependencies	1) Assurance of Site readiness at CDC/DR Or Near DR. 2) Network Switched should be in active state. 3) Confirmation of Cabelino readiness.	No Change, as per RFP No change, as per RFP.
38	64	6. Architecture & Processing power	FC Ports : 29. Each controller Storage solution must have minimum 8 (4 primary and 4 Secondary) 32Gbps SAN FC ports dedicated for serving SAN requests of Host. Additionally, these ports should also support NVMe over fabric protocol	We request bank to clarify if each controller with primary 4 and secondary 4 refer to the HA pair or single controller.	Each Controller must have minimum 8 ports(4 primary and 4 secondary)
39	60	Performance Disk Size	Maximum size of each NVMe storage drive should be less than 18.xx TB with TLC (Triple Level Cell) drives only.	Kindly allow the Drive size as per the recommended best practise sizing of the Storage OEM to meet the performance and availability asks	No change, as per RFP
40	61	Performance Disk Size	5. Maximum size of each NVMe storage drive should be less than 30.xx TB with TLC or QLC drives.	Kindly allow the Drive size as per the recommended best practise sizing of the Storage OEM to meet the performance and availability asks	No change, as per RFP
41	56	Appendix-B Bidder's Eligibility Criteria	7.Client references and contact details (email/landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)	"We hereby request you to confirm whether we can submit multiple POs for the same customer with the same OEM and upgrade PO."	Yes but total quantity should be minimum 5 PB
42	56	Appendix-B Bidder's Eligibility Criteria	8.At least 2 Client references along with contact details (email/ landline/ mobile) with install base of minimum 10 Peta Bytes storage total in India of the storage OEM, whose products being proposed as part of this RFP.	"We hereby request you to confirm whether we can submit multiple POs for the same customer with the same OEM and upgrade PO."	No change, as per RFP. Yes.
43	72	C. Object Storage Specifications(Category 3): Point 23	User portal login should provide multi-factor authentication.	To be enabled via the SAML authentication provider.	No change, as per RFP.
44	74	SI No.39	Five years Warranty and 2 years AMC - 24x7 comprehensive onsite support from OEM with maximum 6 hours response time including part replacement, access to OEM support portal, OEM technical support on 24X7X365 basis. Highest Level of Proactive and Reactive support covering Half yearly Firmware analysis, and Proactive Health analysis.	6 hours response time	No change, as per RFP.
45	73	Object Storage Specifications(Category 3): 25	Object storage must be supplied with ability to tier objects from local disk to external cheaper storage tier like S3 compliant storage, Public Cloud.	The object storage is being used for archive workload, which is generally the last tier in data movement for long term retention. Please change the word tiering to copy or replication.	No Change, as per RFP
46	73	Object Storage Specifications(Category 3): 26	Tiering should be able to set based on Object Size or policy on age of data.	The object storage is being used for archive workload, which is generally the last tier in data movement for long term retention. Please change the word tiering to copy or replication.	No Change, as per RFP
47		Object Storage Specifications(Category 3): 39	Five years Warranty and 2 years AMC - 24x7 comprehensive onsite support from OEM with maximum 2 hours response time with 6 hours Call to Resolution including part replacement, access to OEM support portal, OEM technical support on 24X7X365 basis. Highest Level of Proactive and Reactive support covering Half yearly Firmware analysis, and Proactive Health analysis.	6 hours response time	No Change, as per RFP
48	77	D. SAN Switch Specifications:	SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection.	Kindly modify the clause as " SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection. Also the SAN switches proposed as part of this RFP should integrate with the existing SAN Switches at SBI environment seamlessly"	No change, as per RFP.
49	86	Appendix-E Scope of Work and Payment Schedule 4.	Term of the Project - Project Schedule; Milestones and delivery locations Delivery of total hardware and software should be completed within 6 weeks.	Change Request: Term of the Project - Project Schedule; Milestones and delivery locations Delivery of total hardware and software should be completed within 10 weeks.	No change, as per RFP.
50		Appendix-B Bidder's Eligibility Criteria 6.	The Bidder (including its OEM, if any) should either be Class-I or Class-II local supplier as defined under this RFP.	Please Remove this Clause	No change, as per RFP.
51	55	3	The Bidder must have an average turnover of minimum Rs. 250 Crore during last 03 (three) financial year(s) i.e. FY2021-22, FY2022-23 and FY2023-24.	The Bidder must have an average turnover of minimum Rs. 250 Crore during last 03 (three) financial year(s) from the business of IT /ITES i.e. FY2021-22, FY2022-23 and FY2023-24.	No change, as per RFP.
52	56	7	Client references and contact details (email/landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)	Client references and contact details (email/landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 Projects with client references of total 5 Peta Bytes are required) The Client should Be Govt / BFSI / PSU.	No change, as per RFP.
53	56	8	At least 2 Client references along with contact details (email/landline/ mobile) with install base of minimum 10 Peta Bytes storage total in India of the storage OEM, whose products being proposed as part of this RFP.	Request to remove point of specific proposed OEM from experience clause and change to Bidder should have experience relevant to solution proposed or asked by the bank.	No change, as per RFP.
54	89	14	50% + taxes of the storage solution (hardware, software and warranty) will be released on delivery of hardware. Remaining 50% + taxes of the storage solution (hardware, software and warranty) will be released on verification of bill of material, storage capacity and performance as given in the RFP by Bank/CDCAC/Third party and commissioning of storage solution as well as submission of PBG. No payment will be made on part delivery of ordered hardware. The product should be under warranty for 5(Five) years. Post warranty period, AMC will be for 2 (two) years. AMC charges will be paid on a quarterly basis in arrears only. Manpower charges will be paid on actuals on monthly basis in arrears.	Request to change payment terms as below:- 1) 70% + Taxes of the storage solution (hardware, software and warranty) will be released on delivery of hardware. 2) 30% + Taxes taxes of the storage solution (hardware, software and warranty) will be released on verification of bill of material, storage capacity and performance as given in the RFP by Bank/CDCAC/Third party and commissioning of storage solution as well as submission of PBG.	No change, as per RFP.
55	86	4	All milestones/dates are from the date of purchase order Delivery of total hardware and software should be completed within 6 weeks. Bidder to arrange planning and documentation within 10 weeks. Installation and commissioning should be completed within 10 weeks of purchase order. Delivery locations will be in Navi Mumbai and Hyderabad. Minimum 6 Manpower resources on daily basis to be onboarded within 10 weeks of PO. Remaining manpower can be onboarded within 14 weeks.	All milestones/dates are from the date of purchase order Delivery of total hardware and software should be completed within 8 weeks. Bidder to arrange planning and documentation within 12 weeks. Installation and commissioning should be completed within 12 weeks of purchase order. Delivery locations will be in Navi Mumbai and Hyderabad. Minimum 6 Manpower resources on daily basis to be onboarded within 12 weeks of PO. Remaining manpower can be onboarded within 14 weeks.	No change, as per RFP. Please refer corrigendum No. 3
56	63	4. Number of Racks	17. The proposed solution should accommodate in maximum 630U (maximum 18 racks size i.e. 35U X 18) at each site.	We request bank to clarify if 630U limited to production storage and non production only at each site.	
57	64	6. Architecture & Processing power	Architecture & Processing power : Data Integrity 28. Each controller operating in an active-active cluster environment should have mirroring support for the system's write cache must be battery protected with unwritten data in write cache protected for up to 72 hours in event of power failure. Data integrity must be retained in any case.	Use of battery is a legacy way as the battery may be damaged with time. The technology has evolved over the period and now there are better ways to meet data integrity. 72 Hours battery backup is OEM specific request bank to change this clause with Must have either Cache battery backup or better technology for fully automatic de-stage of cache to disks during power failure to prevent possible data loss.	Please refer corrigendum No. 3
58	64	6. Architecture & Processing power	LAN Port 1 :30. Each controller must have minimum 4 (2 primary and 2 secondary) x 10 Gbps fiber LAN ports or minimum 2 (1 primary and 1 secondary) 25 Gbps or higher fiber/ LAN ports dedicated for serving iscsi and NFS.	We request bank to clarify if each controller requires 4 ports of 10 Gbps / 2 ports of 25 Gbps each for iSCSI and NFS, which is almost 80 – 10Gbps /40 – 25Gbps ports per cluster for Production Storage as per banks calculation. Since bank has already asked for almost 160 FC Ports of 32 Gbps per cluster these many LAN ports requirement seems to be very high and favouring single vendor. Hence, we request bank to please share the workload would be running on NFS and iSCSI or reduce the number of ports recruitment to 4 ports of 10Gbps or 2 ports of 25 Gbps per HA pair.	Please refer corrigendum No. 3
59	64	6. Architecture & Processing power	LAN Port 2 :31. Each controller must have minimum 4 (2 primary and 2 secondary) x 10 Gbps fiber LAN ports or minimum 2 (1 primary and 1 secondary) 25 Gbps or higher fiber LAN ports dedicated for serving data replication.	We request bank to clarify if each controller requires 4 ports of 10 Gbps / 2 ports of 25 Gbps each for replication, which is almost 80 – 10Gbps /40 – 25Gbps ports per cluster for production storage only dedicated for replication, as per banks calculation. Where in bank is considering only 50% of capacity for replication. Hence ports requirement for replication seems to be very high and favouring single vendor. Hence, we request bank to please reduce the number of ports recruitment to 4 ports of 10Gbps or 2 ports of 25 Gbps per HA pair.	Please refer corrigendum No. 3
60	65	6. Architecture & Processing power	Connectivity between HA Pairs :34. Scale out architecture should have at least 100 Gbps bandwidth per controller for backend interconnect switches / InfiniBand switches / pci-e based multilane connectivity between all HA pair. It is required for quick migration of datastores from One HA pair to another HA pair.	We request bank to clarify the need of 100Gbps bandwidth, which is OEM specific and helping particular vendor. Request bank either change and reduce the bandwidth to 50Gbps per controller as it is sufficient for data migration or please share the sizing for 100 Gbps bandwidth requirements per controller for backend connectivity.	Please refer corrigendum No. 3
61	65	6. Architecture & Processing power	Cache Requirements-Data Integrity :37. The storage should dynamically allocate Read Cache and Write Cache from the available cache to accommodate the I/O. The storage architecture should provide battery backup to the entire write cache in case of a disaster i.e. Data in cache should be protected against unexpected power failures for 72 hours of time.	Use of battery is a legacy way as the battery may be damaged with time. The technology has evolved over the period and now there are better ways to meet the data integrity. 72 Hours battery backup is OEM specific request bank to change this clause with Must have either Cache battery backup or better technology for fully automatic de-stage of cache to disks during power failure to prevent possible data loss.	Please refer corrigendum No. 3
62	71	1	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLAS/SAS and 20% NVMe TLC drive based Object Storage for two sites.	We request you to kindly consider NL-SAS/SATA and QLC/TLC.	No change, as per RFP.
63	71	2	Sustained Read Throughput: 30 GB/s (Gigabytes per second) or higher per site for object size of 4 MB. Sustained Write Throughput: 20 GB/s or higher per site for object size of 4 MB.	It is suggested that for object storage object size of 8/16/24MB recommended. However, object size of 4 mb is generally used for NAS storage. Therefore it is requested to amend the clause accordingly .	No change, as per RFP.
64	71	3	Latency for Small Objects (<1MB): < 10 milliseconds (ms) for both read and write operations per site. Latency for Large Objects (>100MB): < 100 ms for read operations.	Defining latency depends on workload, underlying infra. These values are steep for object storage solution	No change, as per RFP.
65	71	4	Small Object IOPS (e.g., 4KB): 5,00,000 IOPS or higher for mixed read/write workloads. Large Object IOPS (e.g., 1KB): 50,000 IOPS or higher for sequential read/write workloads.	Transactions Per Second (TPS) is a better measure for object storage. IOPS is an incorrect parameter for measuring performance in object environment	No change, as per RFP
66	71	6	Each data drives should have a maximum capacity of 16.xx TB 7.2k RPM NL-SAS HDD and maximum of 16.xxTB capacity drive in SSD.	Bidder should be allowed to quote any capacity size drive. Denser Capacity drives are available, this can help reduce the footprint of the solution	No change, as per RFP No change, as per RFP.
67	72	10	Erasure coding algorithm provided must support data protection against 3 or more simultaneous nodes / disks failures across the storage nodes.	28 Nodes with 3 disks/node failure and 6 9's availability is mathematically inaccurate. This needs to be updated to safeguard data as an entity.	OEM can provide additional node if they are not able to meet the prescribed availability requirements.
68	73	25	Object storage must be supplied with ability to tier objects from local disk to external cheaper storage tier like S3 compliant storage, Public Cloud.	Please guide on the purpose of tiering. Generally the Movement of data/cloud to cloud can be considered here.	No change, as per RFP. The purpose of tiering is to optimize storage costs and performance by keeping frequently accessed (hot) data on high-performance, local storage, while moving infrequently accessed (cold) data to more cost-effective external storage, such as on premise NLAS or Public cloud solutions.

69	73	28	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 28 nodes per site should be provided for user data access with minimum 4 numbers of 25Gbps LAN Ports on each node. Each node should be a separate appliance or physical servers.	Request consider if the other parameters are met, so we request minimum note count kindly be omitted.	No change, as per RFP.
70	87	6	Integration / Migration Requirements with existing systems. Bidder has to arrange for migration of storage from existing setup to new hardware as guided by the Bank.	i) Request you to share data volume which is required to be migrated. ii) Please confirm existing platform including make and model and also confirm that it is covered under OEM B2B support incase of any upgradation and support to be required during the migration.	No change, as per RFP. The migration of data will be performed from VMware end, however if any issues are encountered on account of storage, then bidder need to arrange support from OEM.
71	0		General	We understand from the RFP all the Rack and within rack connectivity will be provided by the bidder please confirm all the required space, fiber runner path way, civil work will be provided by the bank. We request the bank to allow the bidder to undertake site survey before submission of bid.	No change, as per RFP. Bank will provide standard data centre fitouts like space, power, cooling, overhead cable trays, DC network connectivity etc will be provided by Bank. The distance between two racks will not exceed 100 meters. Bidder has to provide rack, san switch connectivity cables, within rack connectivity cables within rack and across racks via patch panel (installed by bidder)
72	0		General	No capacity for the migration we need to know how much data we have to migrate, Older hardware should be under OEM support	No change, as per RFP. Approximately 5 PB to start with. It is an ongoing process.
73	0		General	Data migration kindly guide us on existing data size On the time of data migration application team support with OEM support.	No change, as per RFP. Approximately 5 PB to start with. It is an ongoing process.
74	77	D	SAN Switch Specifications: SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection.	Kindly modify the clause as " SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection. Also the SAN switches proposed as part of this RFP should integrate with the existing SAN Switches at SBI environment seamlessly" Kindly amend the RFP point to support interoperability with the existing SAN switches at SBI environment.	No change, as per RFP.
75	33	96	Appendix-L Other Terms and Penalties 4.	OEMs engineering team should be available within one day on call in case of any issues or upon intimation of bank.	No change, as per RFP.
76	21	17.ii	All the Bidders who qualify in the evaluation process shall have to participate in the online reverse auction to be conducted by Bank's authorized service provider on behalf of the Bank.	Request Bank to confirm if there is H1 Elimination before RA ?	No change, as per RFP. As per Gem's rules.
77	55	7	Client references and contact details (email/landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)	Can we understand/interpret this clause : As Bidder can give References of 2 or More clients with Install base of Storage Totalling to 5 PB ?	No change, as per RFP. Bidder can give References of 2 or More clients with total storage capacity put together of 5 PB or more.
78	55	7	Client references and contact details (email/landline/ mobile) of customers for whom the Bidder has executed similar projects in India. (Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)	Can Bidder submit References with HCI Deployed solutions(with Install Base totaling to 5 PB) as HCI Technology is being adopted by many clients and Standalone SAN is now being replaced by HCI at many clients ?	No change, as per RFP. HCI reference will not be considered as this RFP is for SAN storage.
79	0	8	At least 2 Client references along with contact details (email/ landline/ mobile) with install base of minimum 10 Peta Bytes storage total in India of the storage OEM, whose products being proposed as part of this RFP.	Request clarification : if this Clause and supporting PO will be given by OEM proposed by the Bidder ?	No change, as per RFP. This clause pertains to OEM establishing setup of total 10 PB storage running in India.
80	66	43	Submit minimum two (DC+DR) implementation reference configured with cross site replication between sites by the bidder.	Request this clause to be changed to OEM/Bidder	No change, as per RFP. The proposed solution should have cross site replication capability and reference of same should be submitted.
81	84	1	The bidder has to rope-in expert team from OEM for designing, planning and documenting the storage implementation (it should include, migration plan from existing setup, optimal configurations, performance oriented design, SAN switch zoning and configuration) in consultation with bank.	Request clarity On : migration plan from existing setup, optimal configurations, performance oriented design, SAN switch zoning and configuration ? Is Data Migration required by the Bank ? Pls suggest existing Storage Platform from where data to be migrated ?	No change, as per RFP. Data needs to be moved from VMware side from existing Netapp storage to the new storage.
82	32	32.ix	Service Provider shall be agreeable for on-call-on-site support during peak weeks (last and first week of each month) and at the time of switching over from PR to DR and vice-versa.	For OnCall Support : Will Bank give the Partner Remote Access for Trouble shooting ? What is the frequency of switching over from PR toDR and viceversa ?	No change, as per RFP. Bank will give the Remote Access for Trouble shooting only to Technical Support of OEM. The frequency of switching over from PR toDR and viceversa is periodic as well as on demand, as and when required.
83	85	Description of Services -1	6. The price discovered through this RFP will be valid for State Bank Group (SBG)	Request the Point of Valid for the Entire State Bank Group top be Deleted (Because : The Price discovered in this RFP is basis the Qty And is very specific to this RFP) We request this cannot be applied to Group companies of SBI which may have smaller qty of Servers Requirement	No change, as per RFP.
84	86		Delivery of all equipment should be within 6 weeks and installation, testing, commissioning within 10 weeks from date of receipt of order	Request Delivery of 12 Weeks and Implementation of 5 Weeks across Sites	No change, as per RFP.
85	85	Description of Services	The rate determined through this RFP will be applicable to other departments of the bank, as well as its subsidiaries, joint ventures, offices, and foreign subsidiaries. These entities may place separate purchase orders for additional quantities beyond the 125% limit specified in this RFP. Each entity will have its own Service Level Agreement (SLA) and payment cycle based on this RFP & SLA.	Request the Point of Valid for the Entire State Bank Group top be Deleted (Because : The Price discovered in this RFP is basis the Qty And is very specific to this RFP) We request this cannot be applied to Group companies of SBI which may have smaller qty of Servers Requirement	No change, as per RFP.
86	89	13. Training	Bidder need to arrange for OEM manufacturing unit visit, cost of which will be borne by the Bank. Bidder need to arrange for training and certification from OEM for 5 Bank officials. Bidder to provide refresher Training on yearly basis on daily operations, performance optimization, troubleshooting and management of storage solution.	Can this Training be Virtual Training ? Incase Onsite : Will this training be at GITC Belapur	No change, as per RFP. The training will be in Bidder/OEM's Lab/office. However bank may ask for virtual or on premise training.
87	3	Tender Fees	Rs. 25,000/-	Request bank to Remove the Tender Fees	No change, as per RFP.
88	4	EMD	Rs. 2,00 Crore	Request bank to relax the EMD amount upto 50 Lakhs	No change, as per RFP.
89	5	Bank Guarantee	Rs. 3,00,00,000/- (Rs. Three Crore only) Performance Guarantee	Request bank to Relax the PBG upto 1 Crore with 7 Years & 3 months Validity period	No change, as per RFP.
90	19	PERIOD OF BID VALIDITY AND VALIDITY OF PRICE QUOTED IN REVERSE AUCTION (BA).	i. Price quoted by the Bidder in Reverse auction shall remain valid for duration of 36 calendar months from the date of Purchase order.	Request bank to Modify the clause " Price quoted by the Bidder in Reverse auction shall remain valid for duration of 12 calendar months from the date of Purchase order."	No change, as per RFP.
91	55	Eligibility Clause - Point 6	The Bidder (including its OEM, if any) should either be Class-I or Class-II local supplier as defined under this RFP.	Request you to kindly remove this clause	No change, as per RFP.
92	91	Commercial Bid	Point 15 to 19 - Comprehensive annual Maintenance - This cost should be in the range of 8% to 12 % p.a. of the Product cost.	Request you to modify the clause " This cost should be in the range upto 12 % p.a. of the Product cost".	No change, as per RFP.
93	86	Delivery	Point 4 - Delivery of total hardware and software should be completed within 6 weeks.	Request bank to modify the delivery upto 10 weeks	No change, as per RFP.
94	87	Appendix-E	Scope of Work and Payment Schedule (Point 4) - Term of the Project - Minimum 6 Manpower resources on daily basis to be onboarded within 10 weeks of PO. Remaining manpower can be onboarded within 14 weeks.	Bank has requested total 4Nos-L3 & 4 Nos-L2 Engineers i.e Total 8 Nos engineers, Kindly clarify do bank required this 8 nos engineers in roster or bank require 8 Nos of engineers on daily basis (24*7) as per shifts.	No change, as per RFP. Minimum 8 Nos of engineers are required on daily basis (24*7) as per shifts roster.
95	105	Appendix L (Point C)	The maximum response time for a maintenance complaint from the site of installation (i.e. time required for Vendor's maintenance engineers to report to the installations after a request call / fax (e-mail is made or letter is written) shall not exceed 2 (two) hours.	Request you to kindly modify the response time upto 4 hours	No change, as per RFP.
96	105	Appendix L (Point D)	Vendor shall ensure that faults and failures intimated by the Bank as above are set right within 4 (four) hours of being informed of the same.	Request bank to kindly modify the resolution time upto 6 hours	No change, as per RFP.
97	77	D. SAN Switch Specifications:	SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection.	Kindly modify the clause as " SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection. Also the SAN switches proposed as part of this RFP should integrate with the existing SAN Switches at SBI environment seamlessly" Kindly amend the RFP point to support interoperability with the existing SAN switches at SBI environment.	No change, as per RFP.
98	59	1. Usable Capacity	1. Total 18 Peta Bytes (PB) (9 PB at PR site and 9 PB at DR site) usable storage space, NVMe drive based storage array for two sites. Usable storage space means storage calculated after RAID 6 or equivalent and without deduplication/compression and excluding hotspare.	Request Bank to change this clause to usable PB instead of PB as it will provide the exact usable space as seen by the application. PB is less than PIB in terms of actual usable space consumed by the application.	No change, as per RFP.
99	63	3. Management, Monitoring and Thirdparty product integrations	15. Storage should provide dashboard with performance data with per second sampling basis. Capability should be available for providing dashboard access to end users if required	Request the bank to change this clause to " provide dashboard with 1-10 second performance data sampling"	No change, as per RFP.
100	63	4. Number of Racks	17. The proposed solution should accommodate in maximum 630U (maximum 18 racks size i.e. 35U x 18) at each site	Request bank to change this clause to 38U x 18 rack units at each site or 35U x 24 racks units at each site considering the number of controllers and future scalability ask in the RFP. (This is for Production NVMe Storage alone)	No change, as per RFP. Please refer corrigendum No. 3
101	73	28	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 28 nodes per site should be provided for user data access with minimum 4 numbers of 25Gbps LAN Ports on each node. Each node should be a separate appliance or physical servers.	Request bank to clarify if minimum nodes is 28 or 24. As in page 91 in indicative price bid section 24 nodes are mentioned.	No change, as per RFP. minimum nodes is 28.
102	73	32	Object Storage must support encryption of all object data, at rest	Request bank to confirm if the encryption has to have FIPS 140-2 certified encryption or normal encryption with AES 256 bit.	Please refer corrigendum No. 3
103	91	6. Object Storage	Nodes for 10.5 PB of NVMe SSD storage (TLC) with all software, license (Minimum 24 controllers)	Request bank to clarify if minimum nodes is 28 or 24. As in page 73 in technical specifications section 28 nodes are mentioned.	No change, as per RFP. Minimum node is 28
104	92	Point :16,17,18,19	Comprehensive annual maintenance (This cost should be in the range of 8% to 12 % p.a. of the Product cost.)	Request Bank to not put percentage restriction to AMC cost to provide the bank with better commercials.	No change, as per RFP.
105	85	Onsite Resources	" Eight onsite manpower resources on all days of the week for management, maintenance and support on 24x7x365 basis.	Request Bank to specify whether the onsite resources deployed need to manage the existing storage and the SAN switches inventory in Meghdoot.	No change, as per RFP. They need to manage existing storage and the SAN switches inventory in Meghdoot.
106	77	D. SAN Switch Specifications:	SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection.	Kindly modify the clause as " SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection. Also the SAN switches proposed as part of this RFP should integrate with the existing SAN Switches at SBI environment seamlessly" Kindly amend the RFP point to support interoperability with the existing SAN switches at SBI environment.	No change, as per RFP.
107	60	Block Storage -Cache size	Per controller cache must be minimum of 1 TB in case of 2 controller HA pair	Suggestion - It is requested with Technical Committee to modify the clause to minimum 512GB cache per array/node/HA pair as each Storage OEM have their own architecture and role of cache quantity is independent of the performance given by storage. Limiting cache to particular number will restrict leading storage OEM participation & would favour particular OEMs.	No change, as per RFP.
108	62	Block Storage -Encryption	The Proposed solution should provide self-encrypting drives and Data Encryption at Rest that are AES256, FIPS 140 - 2 and other industry leading encryption algorithm or standards compliant. The proposed encryption should not impact performance.	Suggestion - It is requested with Technical Committee to modify this clause to "The Proposed solution should provide Data at Rest Encryption through controller or self encrypting drives/SSDs and should be compliant to AES-256, FIPS 140-2 and other industry leading encryption algorithm compliant"	Please refer corrigendum No. 3

109	71	Object Storage Capacity	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLSAS and 20% NVMe TLC drive based Object Storage for two sites.	Suggestion - As each Storage OEM have their own architecture It is requested that Technical Committee to amend this clause to use SAS SSD TLC drive instead of NVMe SSD TLC. Using NVMe interface for drive doesn't add any performance benefit as NVMe is not used as end to end protocol & in Object storage the protocol used in S3 so this point is vendor specific and should be considered for modification as asked.	No change, as per RFP.
110	71	Object Storage Throughput	Sustained Read Throughput: 30 GB/s (Gigabytes per second) or higher per site for object size of 4 MB. Sustained Write Throughput: 20 GB/s or higher per site for object size of 4 MB.	With the sustained throughput asked storage will be filled within a two days time. With 30GB/s throughput can write 2.5PB data per day thus filling the entire storage within two days, is this realistic throughput required. Considering the 7 years support and planning would request technical committee to adjust the throughput to 7 GB/s With the sustained throughput asked storage will be filled within a two days time. With 20GB/s throughput can read 1.8PB data per day. Is this realistic throughput required. Considering the 7 years support and planning would request technical committee to adjust the throughput to 3 GB/s	No change, as per RFP.
111	71	Object Storage Latency (Response Time)	Latency for Small Objects (<1MB): < 10 milliseconds (ms) for both read and write operations per site. Latency for Large Objects (>100MB): < 100 ms for read operations.	Latency is the measured used with Block storage the right measure would be TTFB - time to first byte - request technical committee to adjust it to 15ms.	No change, as per RFP.
112	71	Object Storage IOPS (Input/Output Operations Per Second)	Small Object IOPS (e.g., 4KB): 5,00,000 IOPS or higher for mixed read/write workloads. Large Object IOPS (e.g., 1MB): 50,000 IOPS or higher for sequential read/write workloads.	IOPS are measure of Block storage performance & not related to object storage rather TPS is the measure used in it. Even considering IOPS formula which is IOPS = throughput / object size there is discrepancy in the throughput asked versus object size given and IOPS asked in as per point 2 vs ask in point in 4.	No change, as per RFP.
113	73	Object Storage	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 28 nodes per site should be provided for user data access with minimum 4 numbers of 25Gbps LAN Ports on each node. Each node should be a separate appliance or physical servers.	Every OEM has different solution architecture. It is requested that Technical Committee to reduce minimum nodes quantity to 10. All OEMs manufacture enterprise storage products outside of India.	No change, as per RFP.
114	22	Object Storage AWARD CRITERIA AND AWARD OF CONTRACT:	Applicability of Preference to Make in India, Order 2017 (PPP-MII Order)	The SAN switches required for quoting as part of the solution in the tender are also produced outside of India. However, certain services, such as product support and professional services, which are integral to the overall storage solution, are being provided and consumed in India. Therefore, we kindly request the removal of this clause from the tender document	No change, as per RFP.
115	61	Performance IOPS, Throughput and Latency	Storage solution per site should handle minimum 80 iops front end IOPS (8 KB block size, 60% read & 40% write) with maximum 2 ms Server side (initiator) latency with 70% cache hit while having capacity optimization features including snapshot, Replication, deduplication, compression and encryption enabled. (SI along with OEM need to perform the test onsite after delivery with enterprise level IO test tool as part of acceptance of the solution).	PI allow Latency allowance of 2-4 ms for the QLC NVMe option.	No change, as per RFP.
116	63	Number of Racks RAID	19. NVMe disk Raid should be formed with maximum 18 drives in Single RAID Group (16D+2P).	Kindly allow the Drive raid group size as per the recommended best practise sizing of the Storage OEM to meet the performance and availability asks	No change, as per RFP.
117	63	Protocols -23	Storage should be enterprise class (declared in publicly available documentation) high end storage	Is analyst reference allowed to be quoted for this point.	No change, as per RFP.
118	66	Functional Requirement -52	Array should be supplied with one global hot spare disk for every 25 disks of same capacity and speed.	Kindly allow Equivalent of Spare disk or Reserve spare capacity on the system.	No change, as per RFP.
119	67	Functional Requirement	62. The Storage array must provide capability for thin and thick provisioning of LUNs along with automatic space reclamation technology	Kindly allow Thin/Thick LUN	No change, as per RFP.
120	68	Spare	69. System must have capability to designate global hot spares that can automatically be used to replace a failed disk/drive	Kindly allow Equivalent of designate global hot spare disk or Reserve spare capacity on the system.	Please refer corrigendum No. 3
121	69	Operating System and Clustering support	75. Proposed Storage must homogeneously integrate with existing Cloud incorporating Broadcom (VMware) technology stack, Commvault Backup Solution and existing storage environment.	Kindly expand on the integration with existing storage environment	No change, as per RFP.
122	70	Storage Based Replication	86. RPO for storage-based replication must be near Zero. Proposed storage should support synchronous replication with support for Near Zero RPO and RTO	True Sync replication solution is Zero RPO and RTO, near zero doesn't qualify as Sync but semi-sync / continuous replication. Is semi-sync/continuous replication required instead of Synchronous?	No change, as per RFP.
123	71	Capacity	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLSAS and 20% NVMe TLC drive based Object Storage for two sites.	Kindly allow High capacity/High density QLC drives instead of NL-SAS drive as well for the solution to have better performance and efficiency.	No change, as per RFP.
124	71	Disk Size	Each data drives should have a maximum capacity of 16.xx TB 7.2k RPM NL-SAS HDD and maximum of 16.xxTB capacity drive in SSD.	Kindly allow High capacity/High density QLC drives, for the solution to have better performance, TCO and efficiency, while delivering the asked resiliency, availability and Performance.	No change, as per RFP.
125	71	Ports	The Storage nodes in the object storage must be provided with redundant physical controllers. Minimum 4 numbers of 25Gbps LAN Ports on each node should be provided. Each node should be a separate appliance or physical servers.	Kindly allow OEM to size the required bandwidth at the system/controller level to deliver the asked throughput/Performance instead of limiting, lower node ports.	No change, as per RFP.
126	72	Ports	Erasure coded data must be encoded efficiently, regardless of object size. Object Storage shall allow any object to be accessed from any node at any site with most recent version of data always available	The RFP ask-Object Storage shall allow any object to be accessed from any node at any site with most recent version of data always available/ ports to inter site/global ensure coding that is not applicable here as the deployment is for less than 3 sites- here there are only 2 sites in RFP ask-which points to replication. Kindly clarify.	No change as per RFP.
127	72	Ports	The Object storage proposed should be integrable solution with scale out architecture. Entire solution should be from Single OEM and must provide single point of support for all levels of issues/escalations for Object Storage.	Kindly expand on the details and level of integration required, also Please allow bidder to quote best of breed solution for Primary as well as Object storage by relaxing the clause of Single OEM for Primary and Object storage solution.	There will be minimum four sites.
128	73	Ports	Tiering should be able to set based on Object Size or policy on age of data.	Is the bank looking to tier data to Hyperscaler cloud, kindly share details of the Hyperscaler cloud solution.	No change, as per RFP.
129	73	Ports	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 28 nodes per site should be provided for user data access with minimum 4 numbers of 25Gbps LAN Ports on each node. Each node should be a separate appliance or physical servers.	1. Kindly allow nomenclature as- Nodes/blade/controllers. 2. Please allow OEM to size the required bandwidth at the system/controller level to deliver the asked throughput/Performance instead of limiting to per node ports. 3. Each node definition should be relaxed to allow latest generation future proof storage design and architecture's.	Bank may setup integration with AWS, AZURE, Google, oracle cloud etc in future.
130	73	Ports	Two Load Balancers of 25Gbps x 4 throughput should be provided for each Cluster Data Center in HA mode	Latest generation Object storage architecture may not need additional third party external load balancers. Kindly allow the relaxation on this clause for architecture/solutions that do not require external load balancers.	No change, as per RFP.
131	49	EXEMPTION OF EMD		Bit Submission for the subjective RFP is on GEM Portal. & As per GEM GTC - Bidder/vendor who have Turnover more than 500 crores they have examined to submit EMD on GEM portal. Request you to kindly confirm the same.	Please refer corrigendum No. 3
132	22	AWARD CRITERIA AND AWARD OF CONTRACT:	Applicability of Preference to Make in India, Order 2017 (PPP-MII Order)	All OEMs produce their enterprise storage products outside of India. Similarly, the SAN switches required for inclusion in the tender solution are also manufactured outside of India. However, key services such as product support and professional services, which are crucial to the overall storage solution, are delivered and utilized in India. In light of this, we respectfully request the removal of this clause from the tender document.	No change, as per RFP.
133	71	Capacity	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLSAS and 20% NVMe TLC drive based Object Storage for two sites.	It is requested that the Technical Committee amend this clause to specify the use of SAS SSD TLC drives instead of NVMe SSD TLC as each Storage OEM has its own architecture. The use of the NVMe interface does not provide any performance benefit, as NVMe is not employed as an end-to-end protocol, and in object storage, the protocol used is S3. Therefore, this point is vendor-specific and should be revised as requested.	No change, as per RFP.
134	71	Throughput	Sustained Read Throughput: 30 GB/s (Gigabytes per second) or higher per site for object size of 4 MB. Sustained Write Throughput: 20 GB/s or higher per site for object size of 4 MB.	With a 30GB/s throughput, 2.5PB of data can be written per day, which would fill the entire storage within two days. Is such a high throughput realistically required? Considering the 7 years of support and long-term planning, we request that the Technical Committee adjust the throughput to 7GB/s. Similarly, with the requested sustained throughput of 20GB/s, 1.8PB of data can be read per day, which raises the same concern about the realism of this requirement. In light of the 7-year support period and planning considerations, we request that the Technical Committee adjust the throughput to 3GB/s	No change, as per RFP.
135	71	IOPS (Input/Output Operations Per Second)	Small Object IOPS (e.g., 4KB): 5,00,000 IOPS or higher for mixed read/write workloads. Large Object IOPS (e.g., 1MB): 50,000 IOPS or higher for sequential read/write workloads.	IOPS are a measure of block storage performance and are not relevant to object storage, where TPS (Transactions Per Second) is the appropriate metric. Even if we apply the IOPS formula (IOPS = throughput / object size), there is a discrepancy between the requested throughput, the given object size, and the IOPS specified in point 2 versus the request in point 4.	No change, as per RFP.
136	60	Cache size	Per controller cache must be minimum of 1 TB in case of 2 controller HA pair	It is requested that the Technical Committee modify the clause to specify a minimum of 512GB cache per array/node/HA pair, as each Storage OEM has its own architecture, and the amount of cache does not impact the performance provided by the storage. Limiting the cache to a specific amount would restrict participation from leading storage OEMs and potentially favor certain OEMs.	No change, as per RFP.
137	77	D. SAN Switch Specifications:	SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection.	Kindly modify the clause as " SFPs proposed along with switches should be compatible with any generation of SAN switches for investment protection. Also the SAN switches proposed as part of this RFP should integrate with the existing SAN Switches at SBI environment seamlessly" Kindly amend the RFP point to support interoperability with the existing SAN switches at SBI environment.	No change, as per RFP.
138	80	F. Rack Enclosure	Rack Sizing		No change, as per RFP.
139	81	F. Rack Enclosure	Environmental Monitoring	Please Specify the Dimension of the Rack & etc	Bidder has to provide sufficient racks to install all supplied equipment and should be standard size of 42U.
140	81	F. Rack Enclosure	Intelligent Power Distribution Units (PDUs)	Please specify controller based or IPDU based environmental monitoring solution	No change, as per RFP.
141	81	F. Rack Enclosure	Intelligent Power Distribution Units (PDUs)	Please let us know type of the PDU need to consider Single Phase or three phase IPDU	IPDU should be three phase
142	71	C. Object Storage Specifications(Category) 3: Capacity	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLSAS and 20% NVMe TLC drive based Object Storage for two sites.	Switching with outlet level monitoring or only outlet level monitoring required	No change, as per RFP.
143	71	C. Object Storage Specifications(Category) 3: Throughput	Sustained Read Throughput: 30 GB/s (Gigabytes per second) or higher per site for object size of 4 MB. Sustained Write Throughput: 20 GB/s or higher per site for object size of 4 MB.	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLSAS/SATA and 20% NVMe TLC/QLC drive based Object Storage for two sites.	No change, as per RFP.
144	71	C. Object Storage Specifications(Category) 3: Latency (Response Time)	Latency for Small Objects (<1MB): < 10 milliseconds (ms) for both read and write operations per site. Latency for Large Objects (>100MB): < 100 ms for read operations.	Sustained Read S3 bandwidth of 30 GB/s (Gigabytes per second) or higher per site for object size above 4 MB. Sustained Create S3 Bandwidth of 10 GB/s or higher per site for object size above 4 MB.	No change, as per RFP.
145	71	C. Object Storage Specifications(Category) 3: IOPS (Input/Output Operations Per Second)	Small Object IOPS (e.g., 4KB): 5,00,000 IOPS or higher for mixed read/write workloads. Large Object IOPS (e.g., 1MB): 50,000 IOPS or higher for sequential read/write workloads.	Latency for Small Objects (<1MB): < 10 milliseconds (ms) for both read and write operations per site. Latency for Large Objects (>100MB): < 100 ms for read operations.	No change, as per RFP.
146	71	C. Object Storage Specifications(Category) 3: Disk Size	Each data drives should have a maximum capacity of 16.xx TB 7.2k RPM NL-SAS HDD and maximum of 16.xxTB capacity drive in SSD.	Small Object S3 TPS (e.g. 1 MB): 50000 or higher for mixed read/write workloads. Large Object S3 TPS (e.g. 200MB): 60000 or higher for sequential read/write workloads.	No change, as per RFP.
				Each data drives should have a capacity of 16.xx TB or higher, 7.2k RPM NL-SAS/SATA HDD and maximum of 16.xxTB or higher capacity drive in SSD.	No change, as per RFP.

147	71	C. Object Storage Specifications(Category 3): Resiliency	The object storage must be enterprise class object storage that provides no single point of failure, high resiliency, and redundant components with 99.9999% data availability and uptime guaranteed on yearly basis.	The object storage must be enterprise class object storage that provides no single point of failure, high resiliency, and redundant components with 99.9999% data durability and uptime guaranteed on yearly basis.	No change, as per RFP.
148	72	C. Object Storage Specifications(Category 3): Point 10	Ensure coding algorithm provided must support data protection against 3 or more simultaneous nodes / disks failures across the storage nodes.	Ensure coding algorithm provided must support data protection against 3 or more simultaneous disks or single node failures across the storage nodes.	No change, as per RFP.
149	72	C. Object Storage Specifications(Category 3): Point 12	Erasure coded data must be encoded efficiently, regardless of object size. Object Storage shall allow any object to be accessed from any node at any site with most recent version of data always available.	Erasure coded data must be encoded efficiently, regardless of object size. Object Storage shall allow any object to be accessed from any node at any site with most recent version of data always available with strong consistency	No change, as per RFP.
150	73	C. Object Storage Specifications(Category 3): Point 25	Object storage must be supplied with ability to tier objects from local disk to external cheaper storage tier like S3 compliant storage, Public Cloud.	Object storage must be supplied with ability to copy objects from local disk to external cheaper storage like S3 compliant storage, Public Cloud.	No change, as per RFP.
151	73	C. Object Storage Specifications(Category 3): Point 26	Tiering should be able to set based on Object Size or policy on age of data.	Copy of object to cloud should be able to set based on Object Size or policy on age of data.	No change, as per RFP.
152	73	C. Object Storage Specifications(Category 3): Point 28	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 28 nodes per site should be provided for user data access with minimum 4 numbers of 25Gbps LAN Ports on each node. Each node should be a separate appliance or physical servers.	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 4 numbers of 25Gbps LAN Ports must exist on each node. Each node should be a separate appliance or physical servers.	No change, as per RFP.
153	74	C. Object Storage Specifications(Category 3): Point 39	Five years Warranty and 2 years AMC - 24x7 comprehensive onsite support from OEM with maximum 2 hours response time with 6 hours Call to Resolution including part replacement, access to OEM support portal, OEM technical support on 24x7x365 basis. Highest Level of Proactive and Reactive support covering Half yearly Firmware analysis, and Proactive Health analysis.	Five years Warranty and 2 years AMC - 24x7 comprehensive onsite support from OEM with maximum 6 hours response time including part replacement, access to OEM support portal, OEM technical support on 24x7x365 basis. Highest Level of Proactive and Reactive support covering Half yearly Firmware analysis, and Proactive Health analysis.	No change, as per RFP.
154	89	Payment Schemude	50% + taxes of the storage solution (hardware, software and warranty) will be released on delivery of hardware. • Remaining 50% + taxes of the storage solution (hardware, software and warranty) will be released on verification of bill of material, storage capacity and performance as given in the RFP by Bank/CDAC/Third party and commissioning of storage solution as well as submission of PBG. • No payment will be made on part delivery of ordered hardware. • The product should be under warranty for 5(Five) years. Post warranty period, AMC will be for 2 (two) years. AMC charges will be paid on a quarterly basis in arrears only. • Manpower charges will be paid on actuals on monthly basis in arrears.	80% on delivery, 10% on PBG & 10% on Sign off.	No change, as per RFP.
155	55	Sl. No. 3 of Bidder's Eligibility Criteria	The Bidder must have an average turnover of minimum Rs. 250 Crore during last 03 (three) financial year(s) i.e. FY2021-22, FY2022-23 and FY2023-24.	To increase the participation, request you to please change the clause to "The Bidder must have an average turnover of minimum Rs. 100 Crore during last 03 (three) financial year(s) i.e. FY2021-22, FY2022-23 and FY2023-24."	No change, as per RFP.
156	56	Sl. No. 7 of Bidder's Eligibility Criteria	Names and contact details (email/landline/mobile) of customers for whom the Bidder has executed similar projects in India.(Start and End Date of the Project to be mentioned) in the past (At least 2 client references of total 5 Peta Bytes are required)	We have one PO (Purchase Order) of 6 PB Storage and second PO of 4.9 PB storage. We request you to consider these POs as a compliance of this clause.	No change, as per RFP.
157	66	Point 8	43. Submit minimum two (DC+DR) implementation reference configured with cross site replication between sites by the bidder.	?	No change, as per RFP.
158	71	SI No.1 Capacity	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLSAS/SATA and 20% NVMe TLC/QLC drive based Object Storage for two sites.	Please update this to reflect : NL-SAS/SATA and QLC/TLC	No change, as per RFP.
159	71	SI No.2 Throughput	Sustained Read S3 bandwidth of 30 GB/s (Gigabytes per second) or higher per site for object size above 4 MB. Sustained Create S3 Bandwidth of 10 GB/s or higher per site for object size above 4 MB.	Higher object size is advantageous. Is there a specific reason for the 4MB object size based on workload?	The choice of a 4 MB object size is based on optimizing throughput and latency for our specific workloads.
160	71	SI No.3 Latency (Response Time)	Latency for Small Objects (<1MB): < 10 milliseconds (ms) for both read and write operations per site. Latency for Large Objects (>100MB): < 100 ms for read operations.	Defining latency depends on workload, underlying infra. These values are steep for object storage solutions for archive and tertiary workloads	No change, as per RFP.
161	72	SI No.10	Erasure coding algorithm provided must support data protection against 3 or more simultaneous disks or single node failures across the storage nodes.	28 Nodes with 3 disks/node failure and 6 9's availability is mathematically inaccurate. This needs to be updated to safeguard data as an entity and not individual disks.	No change, as per RFP.
162	72	SI No.12	Erasure coded data must be encoded efficiently, regardless of object size. Object Storage shall allow any object to be accessed from any node at any site with most recent version of data always available with strong consistency	Strong consistency methodology of data access	No change, as per RFP.
163	73	SI No.25	Object storage must be supplied with ability to copy objects from local disk to external cheaper storage like S3 compliant storage, Public Cloud.	Why would tiering be required? The object storage is being used for archive workload, which is the last tier in data movement for long term retention. Movement of data/copy to cloud can be considered here.	No change, as per RFP.
164	73	SI No.27	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 4 numbers of 25Gbps LAN Ports must exist on each node. Each node should be a separate appliance or physical servers.	Why specifically this number? If the other parameters are met, and can be accomplished with less number of nodes?	No change, as per RFP.
165	89	Payment schedule	50% + taxes of the storage solution (hardware, software and warranty) will be released on delivery of hardware.	We request you to revise this clause as "75% + taxes of the storage solution (hardware, software and warranty) will be released on delivery of hardware."	No change, as per RFP.
166	81	Payment schedule	Remaining 50% + taxes of the storage solution (hardware, software and warranty) will be released on verification of bill of material, storage capacity and performance as given in the RFP by Bank/CDAC/Third party and commissioning of storage solution as well as submission of PBG	We request you to revise this clause as "Remaining 25% + taxes of the storage solution (hardware, software and warranty) will be released on verification of bill of material, storage capacity and performance as given in the RFP by Bank/CDAC/Third party and commissioning of storage solution as well as submission of PBG	No change, as per RFP.
167	60	SI No.2, Performance -IOPS, Throughput and Latency	3. Storage solution at each site should handle minimum 300 lacs front end IOPS (8 KB block size, 60% read & 40% write) with maximum 1 ms Server side (initiator) latency with 70% cache hit while having capacity optimization features including snapshot, Replication, deduplication, compression and encryption enabled. (SI along with OEM need to perform the test onsite after delivery with enterprise level IO test tool as part of acceptance of the solution).	Like all thing performance , depends on various environmental factors , hence it is technically not feasible to commit by a Storage vendor in isolation, For Ex. a slow host can not drive a storage to deliver low latency , or if there is synchronous replication for the Storage Volumes , the latency would directly depend on the intersite RTT which can not be better than speed of light. Performance quoted should be with encryption and compression enabled. If for example vendor offers 2:1 compression guarantee, the price to be paid by the customer will significantly come down while meeting stated performance requirements. While the above statement are to be taken into consideration , IBM Storage can deliver consistent <1ms response time with HW based Compression/encryption without any scalability challenges.	No change, as per RFP.
168	60	SI No.3, Performance - Cache size	4. Per controller cache must be minimum of 1 TB in case of 2 controller HA pair. If 4 controller HA pair system is proposed, then global cache must be minimum 2 TB.	This clause should be removed as setting a low minimum value is making vendors quote lower end boxes rather than quoting the top of line storage with minimal controllers thereby 1) ensuring better load handling of peaks due to large size 2) less movement of data from one controller to another. Also while above statement are to be taken into consideration IBM can offer building blocks with a family of enterprise class dual redundant controllers with >1TB Cache per Node & multiple generation to be federated as a single manageable unit for ease of administration and data movement , including AI assisted placement, while keeping fault domains completely isolated. Removal or changes to the clause modified as above would help more Storage OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
169	60	SI No.2, Performance - Disk size	5. Maximum size of each NVMe storage drive should be less than 18.xx TB with TLC (Triple Level Cell) drives only	IBM has been supplying High performance/Capacity NVMe QLC based enterprise Flash Drives called FlashCore Modules which delivers best in class performance, sustainability thanks to advance HW only data path of this computational storage. It programs dynamically programs QLC in SLC mode to maintain high performance and durability. The performance requirement asked can easily be met with QLC which is already 5 years old and can offer superior price performance.	No change, as per RFP.
170	60	SI No.4, Number of Racks - Controllers	7. The proposed solution model should have at least 80+80 (PR+DR) Storage Controllers or maximum 10% more at each site in scale out architecture on day one which should be divided in not more than 8 storage clusters per site.	It would be desirable if the restriction on the spindle size and the drive type is modified as above which would help more OEMs to participate thereby giving advantage to the bank with more options and better price. The no of controllers being asked for is excessive considering similar requirements. In essence for 9 PB of storage, 80 controllers translates to less than 100 TB per controller. This will lead to vendors offering low end storage, more complex SAN network, and high operational cost to manage this setup including data movement for peak loads. Today top of the line controllers support 1 PB+ with compression and encryption enabled. This will outdone the SAN switch requirements also significantly. IBM will be happy to present its point of view with more details on a face to face session, if bank is not convinced on IBM POV. Since the Pre bid queries are public and will be circulated to all vendors and hence it will be not appropriate to put in all the details here.	No change, as per RFP.
171	61	SI No.2, Performance -IOPS, Throughput and Latency	3. Storage solution per site should handle minimum 80 lacs front end IOPS (8 KB block size, 60% read & 40% write) with maximum 2 ms Server side (initiator) latency with 70% cache hit while having capacity optimization features including snapshot, Replication, deduplication, compression and encryption enabled. (SI along with OEM need to perform the test onsite after delivery with enterprise level IO test tool as part of acceptance of the solution).	Like all thing performance , depends on various environmental factors , hence it is technically not feasible to commit by a Storage vendor in isolation, For Ex. a slow host can not drive a storage to deliver low latency , or if there is synchronous replication for the Storage Volumes , the latency would directly depend on the intersite RTT which can not be better than speed of light. Performance quoted should be with encryption and compression enabled. If for example vendor offers 2:1 compression guarantee, the price to be paid by the customer will significantly come down while meeting stated performance requirements. While the above statement are to be taken into consideration , IBM Storage can deliver consistent <2ms response time with HW based Compression/encryption without any scalability challenges.	No change, as per RFP.
172	61	SI No.2, Performance - Cache size	4. Per controller cache must be minimum of 512 GB in case of 2 controller HA pair. If 4 controller HA pair system is proposed, then global cache must be minimum 1 TB.	This clause should be removed as setting a low minimum value is will make vendors quote lower end boxes , rather than quoting the top of line storage with minimal controllers thereby 1) ensuring better load handling of peaks due to large size 2) less movement of data from one controller to another. Also while above statement are to be taken into consideration IBM can offer building blocks with a family of enterprise class dual redundant controllers with >512 TB Cache per Node & multiple generation to be federated as a single manageable unit for ease of administration and data movement , including AI assisted placement, while keeping fault domains completely isolated.	No change, as per RFP.
173	61	SI No.2, Performance - Disk size	5. Maximum size of each NVMe storage drive should be less than 30.xx TB with TLC or QLC drives.	It would be desirable if the restriction on the spindle size and the drive type is modified as above which would help more OEMs to participate thereby giving advantage to the bank with more options and better price. If this clause is removed bank will benefit from the engineering advancements in this field to get a better cost /performance benefit & better alignment towards suitability goals.	No change, as per RFP.
174	61	SI No.1, Reliability and Availability - Data Loss	1. The storage solution should support NO data loss in any case.	No Storage OEM can promise this. For Example, in case say for Draid 6 if more than 2 disks fail there would be chance of data loss as the same is factor of fault tolerance of a particular Raid config chosen. And not only IBM storage, any other Storage OEM in the industry will face the same situation. Request to Review this point and modify it suitably for the tolerance offered for the particular Raid Level sought.	No change, as per RFP.
175	61	SI No.1, Reliability and Availability - Availability	2. Storage Solution should be an enterprise storage array with 99.9999% data availability and uptime guaranteed with per HA Pair/Quad architecture on yearly basis.	Calculating Uptime Per HA Pair / Quad Architecture is Vendor Specific term . Request bank to make it vendor neutral that will allow for more vendor to participate . IBM Storage with dual redundant controller does offer a 99.99999 or 7 Nine's of availability .	No change, as per RFP.

176	62	SI No.1. Reliability and Availability - Scalability	3. The Proposed solution array must allow online expansion of existing RAID Groups / Storage Disk Pools	Raid expansion of existing array would not be good practice , this would require a re-stripping of data across the whole storage and same might lead to perf issue. Request to Review this point and modify it suitably . Technically IBM Storage does support this req.	No change, as per RFP.
177	62	SI No.1. Reliability and Availability - Data Durability	5. There should not be any data loss in any condition even during failures and disasters	No Vendor can promise this. For Example, in case say for Draid 6 if more than 2 disks fail there would be chance of data loss as the same is factor of fault tolerance of a particular Raid config chosen. And not only IBM storage, any other vendors in the industry will face the same situation. Request to Review this point and modify it suitably for the tolerance offered for the particular Raid Level sought.	No change, as per RFP.
178	63	Point No. 13	13. Storage solution must include necessary storage plugins (CSI) and licenses for use with container and Kubernetes based workloads. This must be supported for both block-based and NFS based storage presented from the storage solution.	Beyond block interface this req is asking for file interface too. Request bank to segregate req for Block & File (Posix / SMB) separately into File Storage requirement. The change suggested above would allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
179	63	Point No.18	18. The proposed storage solution must be fully compatible with Commvault Backup and Broadcom (VMware) software's as well as other industry leading backup, virtualization and cloud software's during the entire contract period. The bidder will be completely responsible for end-to-end integration of the proposed solution with the existing setup	The Scope of the RFP is for supply and integration of the Storage with the existing setup of the bank. k For Commvault backup and VMware the Bidder/System integrator would configure the storage arrays as per the vendors best practices. The configuration changes required on Commvault/VMWare and other applications in the bank are to be performed by the respective Vendors. The configuration changes required on Storage array would be addressed by the bidder. The end-to-end configuration of CV, VMware and any unknown industry standard software with storage is inappropriate. It will be a collaborative effort, we will recommend implementation best practices however the implementation of configuration is to be done by Bank or vendor supporting deployment of those software. Kindly confirm the understanding.	No change, as per RFP.
180	63	Point No.19	19. NVMe disk Raid should be formed with maximum 18 drives in Single RAID Group (16D+2P).	Many of our global clients including top banks & enterprises shares with us requirements only in terms of performance & throughput desired. They do not insist on components are used internally to attain the stated objectives. Hence requesting bank to share or request only the desired performance or throughput objectives considering the variety of different storage architectures followed by divergent storage OEM's	No change, as per RFP.
181	64	Point No.25	25. The storage solution must support non-disruptive upgrade of core software, firmware, snapshot, clone, remote mirroring, and management software without shutting down the storage system. All hosts (initiators) and NFS clients attached to the storage solution must be fully operational during system level or maintenance upgrade procedures and be able to access the storage in full capacity	Beyond block interface this req is asking for file interface / Posix interface too. Request bank to segregate req for Block & File (Posix / SMB separately into File Storage req. The change suggested above would allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
182	64	Point No.28	28. Each controller operating in an active-active cluster environment should have mirroring support for the system's write cache must be battery protected with unwritten data in write cache protected for up to 72 hours in event of power failure. Data integrity must be retained in any case.	In IBM Architecture , the Write cache data is written down to a section of the persistent boot drives (again dual redundant) using controller battery backup , and the nodes shutdown gracefully to help a quick restart when power returns. When full redundancy is NOT available for any reason , controller uses write-through mode , disabling write cache to reduce risk, while activates full read-cache to maintain read performance.	No change, as per RFP.
183	64	Point No.30	30. Each controller must have minimum 4 (2 primary and 2 secondary) x 10 Gbps fiber LAN ports or minimum 2 (1 primary and 1 secondary) 25 Gbps or higher fiber LAN ports dedicated for serving iscsi and NFS.	Bank has asked for Enterprise storage with less than 1ms response time . We can't get less than 1 ms responses in any of the NFS env. Hence this is contradictory to the performance claim req and would request bank to segregate the Block & File workloads. The change suggested above would allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
184	65	Point No.34	34. Scale out architecture should have at least 100 Gbps bandwidth per controller for backend interconnect switches / InfiniBand switches / pci-e based multilane connectivity between all HA pair. It is required for quick migration of datastore from One HA pair to another HA pair.	IBM offers something called as FlashGrid, Flash Grid is a collection of single IO group Flash System or SVC systems that looks and feels like a single storage solution, providing single pane of glass management and non-disruptive migration IBM will be happy to present its point of view with more details on a face to face session, if bank is not convinced on IBM POV. Since the Pre bid queries are public and will be circulated to all vendors and hence we cannot put in all the details here. The change suggested above would allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
185	65	Point No.37	37. The storage should dynamically allocate Read Cache and Write Cache from the available cache to accommodate the I/O. The storage architecture should provide battery backup to the entire write cache in case of a disaster i.e. Data in cache should be protected against unexpected power failures for 72 hours of time.	In IBM Architecture , the Write cache data is written down to a section of the persistent boot drives (again dual redundant) using controller battery backup , and the nodes shutdown gracefully to help a quick restart when power returns. When full redundancy is NOT available for any reason , controller uses write-through mode , disabling write cache to reduce risk, while activates full read-cache to maintain read performance. Request to remove low level implementation related specificity from the RFP.	No change, as per RFP.
186	65	Point No.41	41. The proposed storage solution must be fully compatible with Broadcom (VMware) Virtualization portfolio and Commvault Stack. The bidder and OEM will be responsible for end-to-end integration of the proposed solution with the existing VMware setup	The Scope of the RFP is for supply and integration of the Storage with the existing setup of the bank. For Commvault backup and VMware the Bidder/System integrator would configure the storage arrays as per the vendors best practices. The configuration changes required on Commvault/VMWare and other applications in the bank are to be performed by the respective Vendors. The configuration changes required on Storage array would be addressed by the bidder. The end-to-end configuration of CV, VMware and any unknown industry standard software with storage is inappropriate. It will be a collaborative effort, we will recommend implementation best practices however the implementation of configuration is to be done by Bank or vendor supporting deployment of those software. Kindly confirm the understanding.	No change, as per RFP.
187	66	Point No.52	52. Array should be supplied with one global hot spare disk for every 25 disks of same capacity and speed.	New Age Performant storages like one provided by IBM use advanced RAID Distributed Raid or DRAID technologies. DRAID6 is advanced format as compared to traditional raid . Here a particular disk is not wasted as hot spare . the space required for hot spare capacity is sliced across all the disks in array. This helps to speed up the rebuild in case any disk failure, so instead of writing to one disk as in traditional raid the spare capacity would be written to all available disks in array and rebuild much faster. The change suggested above would allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
188	68	Point No.65	65. The proposed solution should have provision to protect and recover data in case of ransomware or malware attack for SAN & NAS workloads. Any license required should be provided on Day one for full capacity of system	Bank has asked for Enterprise storage with less than 1 ms response time . We can't get less than 1 ms response in any of the NFS env. Hence this req is contradictory to the performance claim req and would request bank to segregate the Block & File workloads.	No change, as per RFP.
189	69	Point No.72	72. At each site minimum 15 spare disks as per the supplied type of disk, to be kept in storage area. Upon failure of disk, replacement will be done from onsite spare. The spare will be replenished upon consumption of the spare disk by the OEM.	In New age Enterprise storages, rate of disk failure is very low. IBM offers patented & class leading FCM Flash Core Module disks that perform through the life of the storage without failure. Bank to recheck this req for req onsite spare disks	No change, as per RFP.
190	71	SI No.1 Capacity	Total 10.5 Peta Bytes (PB) (5.25 PB at PR site and 5.25 PB at DR site) usable storage space, 80% NLSAS and 20% NVMe TLC drive based Object Storage for two sites	Requesting bank to only indicate for the end performance numbers. As Every vendor would have a different design. Moreover on performance front the RFP is clearly defining the performance requirement. The Flash Drives could be either TLC / QLC or combination of TLC & QLC.	No change, as per RFP.
191	71	SI No.3 Latency (Response Time)	Latency for Small Objects (<1MB): < 10 milliseconds (ms) for both read and write operations per site. Latency for Large Objects (>100MB): < 100 ms for read operations.	The Large object / Small object definition is vendor specific and its capacity definition is very low. There is contradiction in the total throughput required as stated in earlier throughput required and the object size mentioned in this point. Suggest bank to recheck this req and modify as applicable.	No change, as per RFP.
192	71	SI No.8 Ports	The Storage nodes in the object storage must be provided with redundant physical controllers. Minimum 4 numbers of 25Gbps LAN Ports on each node should be provided. Each node should be a separate appliance or physical servers.	Bank should only request for the end performance no . Every vendor would have a different design. Moreover on performance front the RFP is clearly defining the performance requirement. The req stated that each node should be an appliance or Physical server. Bank should review the same to allow to allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
193	72	SI no. 13	Object Storage shall provide an efficient way to store small object and large object automatically	Requesting bank to only indicate for the end performance numbers. As Every vendor would have a different design. Bank should review the same to allow to allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.
194	73	SI no. 28	Proposed Object based storage should be fully distributed, symmetrical and scale-out architecture. Minimum 28 nodes per site should be provided for user data access with minimum 4 numbers of 25Gbps LAN Ports on each node. Each node should be a separate appliance or physical servers.	Requesting bank to only indicate for the end performance numbers. As Every vendor would have a different design. Bank should review the same to allow to allow multiple OEMs to participate thereby giving advantage to the bank with more options and better price.	No change, as per RFP.