Annexure 06: Scope of Work

1. Detailed Scope of work :

The brief scope of Work of the successful bidder is to Supply, Installation & Maintenance of Mid-Range Storage. The services covered as part of the vendor includes, but not limited to the following:

- Supply, Installation & Maintenance of Mid-Range Storageas per Bank's requirement with coordination of Bank's identified teams at Bank's identified location.

- Bank reserves the right to shift the Mid-Range Storage to new location/s services will continue to be in force at the new location.

- The Successful vendor should have support for a minimum period of 5 years from the date of announcement of end of sale/end of life.

- The Successful vendor need to design the Setup Architecture including physical infrastructure and logical design as per bank's need.

- The successful vendor shall co-ordinate with Bank's identified team to support for configuration issues, hardware replacement etc.

- The successful vendor will configure, install, de-install, re-install, re-configure (in case Bank need any configure change) at no extra cost during the entire contract period.

- Supply, commission, install, test, configure, integrate with existing system and maintain the Mid-Range Storage and add on components, which are approved by the bank.

- Break-fix support of supplied Mid-Range Storage and OS/ firmware upgrades for the appliance.

- The successfully shall provide patches/ upgrades of OS/ firmware during warranty and AMC period without any extra cost to Bank. The successful vendor will provide timely proactive deployment of latest firmware versions / security patches in coordination with Bank's identified team.

- The resolution/replacement time for any issue shall be 4 hours. There should be 24x7x365 support for any technical issue for all the supplied products through this RFP directly from the OEM and the vendor.

- Bank shall freeze installation setup, configuration and schedule in mutual consultation with the successful vendor and Bank's identified teams.

- Confidentiality of the Bank's setup must be maintained by vendor.

- Engineer from vendor must have adequate knowledge for handling the installation, configuration and support & services for supplied hardware.

- Successful vendor need to provide complete call logging details along with escalation matrix.

- The successful vendor need to specify various infrastructure requirements which need to be provided for commissioning and smooth functioning of the equipment.

- If any services, functions or responsibilities not specifically described in this scope but are an inherent, necessary or customary part of the services and are required for proper performance or provision of the services in accordance with the scope, they shall be deemed to be included within the scope of the services, as if such services, functions or responsibilities were specifically required and described in this scope

and shall be provided by the vendor at no additional cost to the Bank.

- After installation the successful vendor need to provide OEM authorized certification/training program to Bank's identified people, regarding installation, configuration, operation, basic troubleshooting etc as per Bank's requirement.

- Vendor is expected to provide post installation support to the Bank. The successful vendor will provide the assistance whenever required. Warranty and AMC support will be provided by the successful vendor.

- Vendor should provide the complete documentation including technical, operations, user manual, etc.

- Following documents should be delivered by the Vendor to the Bank including user manuals, installation manuals, operation manuals, design documents, process documents, technical manuals, technical specification, system configuration documents, debugging/diagnostics documents etc

- **Vendor should provide the required accessories/elements for connecting the storage to switch (Cisco 2960 – X). Bidder should include the required cost for the accessories/elements as part of their commercial proposal, which would be considered for TCO calculation.**

Technical Specification for Storage System

Storage Technical Specifications				
Quantity Required: Gift City, Gandhinagar - 1 No				
Sr. No.	Parameter	Functionality	Bidder's Compliance (Yes/No)	Detail description how the solution/ component would be compliant
1	Converge / Unified Storage	1. **Offered Storage shall be a true converge/Unified storage with support for File, Block & Object services respectively.**		
		2. Offered Storage array shall be end-to end minimum 12Gbps enabled which means that both Front-end Fibre channel ports and Back-end engines shall be operated at minimum 12Gbps speed.		
		3. **Offered Storage shall be supplied with minimum Dual Controllers and scalable to Higher Configuration controllers either by**		

		addition or replacing the controllers.		
2	Operating System & Clustering Support	The storage array should support industry-leading Operating System platforms including: *Windows Server 2012 / 2016, VMware, Solaris, HPE-UX and IBM-AIX etc.*		
3	Capacity & Scalability	1. The Storage Array shall be offered with minimum 2 controllers on Day 1 with 100% controller scalability for future growth.		
		2. **The Storage Array shall be offered with 100TB RAW Capacity using 1.8 TB SAS disk drive with 10K RPM.**		
		3. Storage must connect to minimum 4 servers with HA configuration on storage.		
		4. **Offered Array shall be scalable to at-least minimum of 200 numbers of Drives and shall be scalable to more than 2000 TB of raw capacity.**		
4	Cache	1. Offered Storage Array shall be given with at least 64 GB usable cache across pair of controllers scalable to 128 GB with 4 controllers. If cache is provided in any additional hardware for the storage solution, then cache must be over and above 64GB.		
		2. Cache shall be used only for Data and Control information. OS overhead shall not be done inside.		
		3. **Offered Storage shall also be offered with Additional 1 TB(at least)**		

		Flash cache or SSD Disk Capacity per controller Pair with RAID 1.		
5	Processing Power	1. Offered Storage architecture shall be based on purpose built ASIC, XOR engine so that there shall be no load on the storage CPU during Raid Parity calculations. Bidder shall provide the documentary proof for same.		
		2. In case bidder doesn't have above ASIC functionality then additional 16 GB cache shall be supplied for read and write operations to balance out the performance.		
6	No Single point of Failure	Offered Storage Array shall be configurable in a No Single Point of configuration including Array Controller card, Cache memory, FAN, Power supply etc.		
7	Disk Drive Support	1. The storage array should support SAS - NL of 2TB / 4TB / 6TB drives.		
		2. All offered drives shall be provided with minimum of 3 years unconditional warranty.		
8	Raid Support & Virtualization	1. **Offered Storage Subsystem shall support Raid 1,0,10, 5, 6 or equivalent.**		
9	Protocols	Offered Storage array shall support all well-known protocols like FC, ISCSI etc. natively.		
10	Host Ports, Back-end Ports and Volumes	1. Offered Storage shall also natively support 16Gbps FC ports, 10Gbps ISCSI ports without using any external device.		

		2. **Offered Storage array shall be supplied with minimum of 4 x 16 GB FC ports and 4 x 10 Gbps Ethernet/SFP+ Ports (should auto negotiate to 1 Gbps, should be configured during implementation). All type of Ports shall be 100% scalable.**		
		3. Offered Storage shall be supplied with at least 12 x 12Gbps Back-end SAS ports / 16 x 12Gbps SAS Lanes.		
11	Host Ports & Back-end Ports Cards	Offered storage shall have separate adapters for Host ports and back-end port cards for better ratio of high availability.		
12	Performance and Quality of service	1. Storage shall be provided with Performance Management Software.		
		2. **Request to mention Either Response time / IOPS / BW in the clause for QOS.**		
		3. Quality of service engine shall allow to define minimum and maximum cap for required IOPS / bandwidth for a given logical units of application running at storage array.		
		4. **It shall be possible to change the Quality of service Response Time / IOPS / Bandwidth Specification on basis of real time.**		
13	Thin Provisioning and Space Reclaim	1. Offered storage array shall have support for Thin provisioning and Thin Re-claim to make the volume thin for an extended period of time.		

14	Maintenance	Offered storage shall support online non-disruptive firmware upgrade for both Controller and disk drives.		
15	Snapshot / Point in time copy / Clone	1. Offered Storage shall have support to make the snapshot and full copy (Clone) on the thin volumes if original volume is created on thick or vice-versa.		
		2. The storage array should have support for both controller-based as well as file system based snapshots functionality.		
		3. Storage array shall have functionality to re-claim the space from Thin Provisioned Deleted snapshot automatically. Bidder shall provision at-least 20% additional space over and above the actual requirements, if space re-claim from thin provisioned deleted snapshot is not possible automatically.		
16	Quota Management and Antivirus Scanning	1. For file services operations, offered storage shall support both user level as well as file level hard and soft quota.		
		2. For file services operations, offered storage shall support integration with industry leading antivirus bidder like Symantec, Trend Micro and MacAfee.		
17	Storage Array Configuration & Management Software	1. Bidder shall provide Storage Array configuration and Management software.		
		2. Software shall be able to manage more than one array of same family.		

18	Storage Tiering	1. Offered storage shall support dynamic migration of Volume from one RAID set to another set while keeping the application online.		
		2. For effective data tiering, Storage subsystem shall support automatically Policy based Sub-Lun Data Migration from one Set of drive Tier to another set of drive Tier.		
		3. Offered storage array shall support Sub-Lun data tiering for both FAT and thin provisioned volumes.		
19	Remote Replication	1. The storage array should support hardware based data replication at the array controller level across all models of the offered family.		
		2. The Storage array shall also support three ways (3 Data Centers) replication to ensure zero RPO natively without using any additional replication appliance.		
		3. The storage array shall support incremental replication after resumption of Link Failure or failback situations.		
~~19~~	~~File Level retention and immutability~~	~~1. For file services operation, offered storage shall support file protection against accidental, premature, malicious deletion and modification of data using file locking mechanism of WORM and Legal hold.~~		
		~~2. Apply of legal hold shall ensure that File cannot be moved, modified, or~~		

		~~deleted regardless of the retention period.~~		
20	Licenses	Storage subsystem shall be supplied with Thin Provisioning, Snapshot, Clone, Performance Monitoring, Online Raid Migration, Online Volume conversion (thin to thin compressed, thin to thin de-dup etc.), Quality of services, Sub-LunTiering and File services on day 1 for the maximum supported capacity of array.		
21	Integration and co-existence	The Storage Subsystem should have capability to move data from existing storage Array to proposed array online without any application downtime. The required hardware and software should be proposed with the array.		
22	Storage virtualization and Federation	The proposed storage array and its software tools support load balancing at will wherein, movement of data and workloads between arrays is initiated without impacting applications, users or services.		
23	Support Services	Proposed Storage array should be configured with Highest Level of support for 3 Years with 4 hours Call To Resolution (CTR).		
24	Management software	1. All the necessary software (GUI Based) to configure and manage the storage space, RAID configuration, logical drives allocation, snapshots etc. are to be provided for the entire		

		system proposed.		
		2. Licenses for the storage management software should include disc capacity/count of the complete solution and any additional disks to be plugged in the future, up to max capacity of the existing controller/units.		
		3. A single command console for entire storage system.		
		4. Management Software should also include storage performance monitoring and management software.		
		5. Management Software should provide the functionality of proactive monitoring of Disk drive and Storage system for all possible disk failures.		
25	Controllers	1. At least 2 Controllers in Active/Active mode Scalable to Four Controllers.		
		2. Storage should be scalable to 4 controllers; all 4 controllers shall be inter connected.		
		3. A single volume shall be striped across all the controllers symmetrical fashion automatically and shall be visible from all the controllers.		
		4. The controllers / Storage nodes should be upgradable seamlessly, without any disruptions / downtime to production workflow for performance, capacity enhancement		

		and software / firmware upgrades.		
26	Redundancy and High Availability	1. The Storage System should be able to protect the data against single point of failure with respect to hard disks, connectivity interfaces, fans and power supplies.		
27	Hardware platform	1.Rack mounted form-factor		
		2.Modular design to support controllers and disk drives expansion		