Technical Specification of Physical and Virtual Tape Library Annexure 10A - Minimum Technical Requirement for Disk based Backup (Virtual Tape Library)			
Sr. No.	**Required Minimum Specifications**	**Bidder's Compliance (Yes/No)**	**Detail description how the solution/ component would be compliant**
1	The appliance should be sized to handle the backup of source system capacity of 200TB in 8 hours backup window and maintain the media retention for 3 months data to be available on disk system i.e. 6 Daily, 5 Weekly & 3 monthly backup copies. The proposed appliance should have at least **minimum** raw storage capacity of 600TB. The appliance configuration and capacity should be factored based on the above requirement.		
2	Should be able to interface with different server platforms and operating systems simultaneously via NFS v3, CIFS and FC.		
3	Should support LAN and SAN ~~& NDMP~~ backup solutions simultaneously.		
4	Should have a vertical headroom of 50% for future capacity augmentation by having scalability without any performance degradation.		
5	The proposed appliance must support inline data duplication technology at block level using variable block length technology.		
6	~~Must support both LAN, VTL & SAN based D2D and D2D2T backup at the same time~~ Must support both LAN and SAN based D2D & D2D2T backup. The appliance should be provided with necessary Catalyst / **OST** / VTL Licenses		
7	Must support single management pane for managing multiple appliances ~~storage arrays~~ for ease of management.		
8	Must have the ability to perform different backup or restore jobs simultaneously.		
9	Must support replication of data over Local or Wide Area Network. Only unique data of the overall deduplicated data should be encrypted and replicated.		
10	Must support ~~10/40Gb Ethernet~~ **at least** 10/20Gbps FC **Ethernet** connectivity.		
11	Must support communications and data transfers through ~~16GB~~ **minimum** 16Gbps SAN, ~~10/40 Gb~~ **and at least** 10/20Gbps Ethernet LAN.		

12	Should support capacity on demand feature that allows the storage allocation associated with a virtual tape cartridge to be consumed upon write, and not creation or should support disk based backup software having the ability to create backup to disk volumes.		
13	The proposed appliance should be hardware compatible with various existing storage arrays (HPE XP/P9500/EVA/3PAR & NetApp FAS) and SAN switches (Brocade 16Gbps SAN fabric). ~~FC cables (MPO-LC) for connectivity to SAN switch (QSFP ports) should be provided as part of solution.~~		
14	Should support **single** / multiple storage pools to provide segregation based on data type and, ~~**load balancing across**~~ **in case of multiple storage controllers, load balancing should happen across all controllers.**		
15	Should support different retentions for primary and DR backup storage.		
16	Must protect against lost data in power fail and software crashes.		
17	Must support data compression using standard data compression methodologies.		
18	Must support schedule throttle of network bandwidth depending on the utilization of the WAN bandwidth.		
19	Must preferably support replication process **simultaneously** while backup is running.		
20	Should support bi-directional, many-to-one, one-to-many, and one-to-one replication.		
21	Should support recovery from replica.		
22	Must support ACL/Authentication for CIFS/NFS/telnet/http/https/ftp/ssh.		
23	Must support minimum ~~50~~ **64** virtual tape libraries, ~~500~~ **540** virtual drives, 64,000 slots & 10,00,000 virtual tapes and should have ability to backup to disk folders and manage it.		
24	Should support Link Aggregation Control Protocol (LACP) and should support backup across LAN and WAN.		
25	Should have SNMP and command line **& GUI** support.		
26	~~Should support IP aliasing/across IP network.~~		
27	Should support 256 bit AES encryption at rest and in flight to provide protection against unauthorized access to data through a stolen, discarded or replaced disk.		
28	~~Should comply with Standard FIPS 140-2 level 2 or above.~~		

29	The appliance must do encryption of data at rest for all the stored data ~~Should support enabling encryption on a per store basis~~ and should do ~~capable of~~ encryption of data after it has been deduplicated and prior to writing the data onto disk.		
30	The D2D appliance should do the encryption and key management solution using an external enterprise class key manager device along with required licenses which should comply with Standard FIPS 140-2 level 2 or above. ~~should be considered as a part of D2D Solution.~~		
31	The proposed solution should ~~expect to~~ request encryption keys from external enterprise class key manager using KMIP ~~1.2~~ **1.1** or above protocols for centralized encryption key management. **Also, the bidder should provide roadmap for future support of higher versions of KMIP protocol.**		
32	Proposed solution should protect against unauthorized recovery of deleted data by allowing customers to securely and permanently shred confidential data and ~~it~~ has to ~~be~~ comply with NIST SP 800-88 and can erase with 1-pass or multiple random overwrites of 3, 5 or 7 passes.		
33	~~Should support retention lock feature which ensures that no data is deleted accidently.~~		
34	~~Should have inbuilt NDMP tape server or industry standard equivalent for meeting the requirement.~~		
35	Must support RAID 6 technologies.		
36	The appliance should be able to integrate with BANK's existing backup software (Microfocus Data Protector) or integrated backup to disk and tape solution with deduplication.		
37	The appliance should be configured with all the licenses necessary for the above functionalities.		
38	The proposed appliance should support IPV6, in line with regulatory guidelines.		
39	The proposed appliance must support global data deduplication. The de-duplication appliance must provide a single/multiple de-duplication pool across multiple logical devices eg. across multiple VTL's, multiple NAS shares, CIFS shares, OST devices, etc in order to significantly improve storage utilization and help retain data longer.		

40	The proposed appliance must also provide Single/Multiple Deduplication Pool across multiple data protocols viz. VTL, NAS, OST and CIFS/NFS, etc. in order to significantly improve storage utilization and help retain data longer.		
41	~~Physical and Virtual tape library~~ The proposed appliance should be compatible with Microfocus Data Protector backup software and must support at least N-2 version of the existing backup software **or should provision any equivalent enterprise backup software**.~~7.03 and above versions~~		
42	The proposed appliance should include required licenses to backup and restore data (DB / FS / VM / Integration backup / Granular restoration) either by using existing backup software (i.e. Microfocus Data Protector (DP) & HPE Recovery Manager Central (RMC)) available with the Bank or by provisioning the required licenses as part of the overall solution. Further the bidder has to factor as part of the proposal the requirement for any additional licenses which are required at the time of migration from the existing setup to the new proposed setup. Existing license details available with the Bank is included in Annexure 10 C. Bank currently has HP Storageworks VLS 9000 series of Virtual Tape Library (1 no. each at DC and DR). Both the tape libraries will be replaced with the new appliance.		
43	The proposed appliance should support backup to physical tape library and also disk to disk backup through replication to offsite/remote location **with necessary replication licenses.**		
44	**The external enterprise key manager device should have high availability with redundant components and should support a capacity of 1,000,000 keys and at least 16 client devices with required licences.**		

45	**The external enterprise key manager device shall address the following aspects of key lifecycle within FIPS certified boundary and Key Management with options like;** **a) Key generation** **b) Automated Key distribution** **c) Secure key storage** **d) Key custodians and requirements for two factor authentication.** **e) Key revocation and logging and auditing of key management related and all other activities.** **f) Key update between all key managers (Production – DR), automated without extra hardware for real time key availability.**		

Annexure 10B - Minimum Technical Requirement for Physical Tape Library			
Sr. No.	**Required Minimum Specifications**	**Bidder's Compliance (Yes/No)**	**Detail description how the solution/ component would be compliant**
1	Tape library should support minimum of 12 drives and scalable to 40 drives of LTO8 FC 8Gbps tape drive and minimum of 400 cartridge slots and scalable to 1200 cartridge slots. ~~The~~ Each tape library shall be supplied with 100 Nos. of LTO8 tape cartridges with barcode labels for all drives and ~~10~~ **5** cleaning cartridges. The tape library shall be supplied with the necessary OEM rack and rack mount kit. It shall support LTO6 and LTO7 tape drives with 8 Gbps FC interface.		
2	Tape library shall support Barcode reader and mail slot.		
3	The Tape Library unit shall support upto 12TB native and 30TB compressed capacity for LTO8 Tape Drives/Media (when 2.5:1 compression is used).		
4	Offered LTO8 drive shall have native speed of at least **360 MB/sec** and a compressed speed of at least **900 MB/sec** for 2.5:1 compression.		
5	Tape Library shall have GUI touch panel.		
6	Tape Library shall have web based secure management so that drives and robots can be assigned to clients on requests/demand.		
7	Tape Library shall have a mechanism to hold persistent history and intelligent analysis of events and logs for easy troubleshooting.		
8	The tape library shall support a MSBF (mean swaps between failures) of 2 Million robot load/unload cycles.		
9	Tape Library shall provide remote monitoring capability, hot swap tape drives and redundant hot swap power supplies.		
10	The tape library shall be supplied with dual ~~(redundant)~~ path for robotics ~~for~~ to maintain high availability, Control Path Failover, Data Path Failover, LUN Mapping and Library Partitioning which should support at least 8 partitions.		
11	Tape Library shall be supplied with at- least 24 Import Export Slots scalable upto 48.		
12	The Library should support ~~Unique digital vision camera system which performs~~ continuous calibration and reads bar code using either digital vision camera or barcode scanner.		

13	Tape library should be provided ~~proposed along~~ with Analytic software which ~~does~~ should be capable of doing: a) Automated scheduling for scanning tapes b) Status information on the drive and system c) System configuration operations and reporting d) System error and status logs e) Library and drive firmware upgrade capabilities f) Diagnostic tests and information g) Cartridge movement for maintenance and management purposes h) Cleaning cartridge support i) Security and access control j) SNMP support k) IPv6 and IPv4 network protocol support Any other software required to manage the tape library shall be included as part of the solution with required licenses.		
14	Tape library should be provided ~~proposed~~ along with Analytic software with required licenses which provides proactive health status, alerts for tape drives, libraries and media. Analytic software and Library Management software should provide Web Based UI.		
15	Redundant 230V AC power supply.		
16	The proposed tape libraries should be ~~are capable of operation using KMIP 1.2 or above protocols and should be~~ capable of working with all the external enterprise key manager solutions **using KMIP 1.1 or above protocols. Also, the bidder should provide roadmap for future support of higher versions of KMIP protocol.**		
17	Library encryption licenses should be provided ~~will be needed~~ based on the protocol of choice KMIP ~~1.2~~ **1.1** or above.		
18	~~Physical and Virtual tape library~~ The proposed appliance should be compatible with Microfocus Data Protector backup software and must support at least N-2 version of the existing backup software **or should provision any equivalent enterprise backup software**.~~7.03 and above versions~~		
19	The proposed appliance should be hardware compatible with various existing storage arrays (HPE XP/P9500/EVA/3PAR & NetApp FAS) and SAN switches (Brocade 16Gbps SAN fabric). ~~FC cables (MPO-LC) for connectivity to SAN switch (QSFP ports) should be provided as part of solution.~~		

20	The proposed appliance should include required licenses to backup and restore data (DB / FS / VM / Integration backup / Granular restoration) either by using existing backup software (i.e. Microfocus Data Protector (DP)) licenses available with the Bank or by provisioning the required licenses as part of the overall solution. Further the bidder has to factor as part of the proposal the requirement for any additional licenses which are required at the time of migration from the existing setup to the new proposed setup. Existing license details available with the Bank is included in Annexure 10 C. Bank currently has HP ESL 712e Ultrium Tape Library (2 nos. each at DC and DR). 1 no. each at DC and DR will be replaced with the new appliance. Please note that Bank will be retaining 1 no. of existing Tape Library each at DC and DR locations hence the licenses for implementing the new solution need to be factored accordingly as part of the proposal.		
21	**The external enterprise key manager device should have high availability with redundant components and should support a capacity of 1,000,000 keys and at least 16 client devices with required licences.**		
22	**The external enterprise key manager device shall address the following aspects of key lifecycle within FIPS certified boundary and Key Management with options like;** **g) Key generation** **h) Automated Key distribution** **i) Secure key storage** **j) Key custodians and requirements for two factor authentication.** **k) Key revocation and logging and auditing of key management related and all other activities.** **l) Key update between all key managers (Production – DR), automated without extra hardware for real time key availability.**		

	ANNEXURE 10C - LICENCSES AVAILABLE WITH BANK				
Tape Library	**License Name**	**DC**		**DR**	
		Part No.	**No. of Licenses**	**Part No.**	**No. of Licenses**
Physical Tape Library	Drive Extension for SAN / all platforms (Data Protector)	B695 3AA	43	B695 3AA	45
	Extension for ONE Unlimited Slot Library (Data Protector)	B695 8BA	2	B695 8BA	2
Virtual Tape Library	Recovery Manager Central (3 PAR Storage)	**NA**	1000 TB	**NA**	1000 TB
	Advanced backup to disk (Data Protector) - Multiples of 1 TB	B703 8AA	75	B703 8BA	65

Existing Backup environment details

Backup server details	No of cell manager	1
	No of media server	4
Hypervisor used in virtualization	VMware ,RHVM, Hypervisor	