TECHNICAL REQUIREMENTS – ENTERPRISE STORAGE SYSTEMS

1. Detailed technical specifications

Table no.1

No.	Category	Requirement	Specification
1. GENERAL REQUIREMENTS			
1.1	Equipment type	New and non-refurbished equipment	Manufactured min. Q1 2025
1.2	Product level	Enterprise-grade	From recognized international manufacturers – International Brand Name
1.3	Compatibility	Mutually compatible components	Manufacturer certified
1.4	Form factor	Rack-mountable	2U-4U, EIA-310 standard compliant
1.5	Mounting	Complete mounting kit	Rails and brackets included
2. ARCHITECTURE & AVAILABILITY			
2.1	Controller architecture	Symmetric Active-Active	Load balanced operation and failover
2.2	Availability	Minimum guaranteed availability	99.9999% (six nines)
2.3	Cache protection	Write cache remains active during controller failure	Cache mirroring or equivalent mechanism
2.4	Operational continuity	System operational with single controller	50% controller failure tolerance
2.5	Software updates	Non-disruptive updates	No availability impact
3. FAULT TOLERANCE			
3.1	Power line failure	Continuous operation	Single power line failure tolerance
3.2	Controller failure	Automatic failover	Any individual controller failure
3.3	Drive failure	Data integrity maintained	Simultaneous 2 data drive failures
3.4	Port failure	Traffic rerouting	Any FC or iSCSI port failure
4. STORAGE CAPACITY			
4.1	Usable capacity	Minimum usable capacity	200 TB (before data reduction)
4.2	Drive type	Enterprise SSD	TLC/eTLC technology or equivalent
5. CONTROLLERS			
5.1	Controller configuration	Redundant controllers	Minimum 2 in High Availability
5.2	Operation mode	Active-Active configuration	Balanced workload distribution
5.3	Serviceability	Hot-swappable controllers	Replacement without interruption
6. RAID & DATA PROTECTION			
6.1	Mandatory RAID level	RAID 6 support or similar by resiliency	Tolerance for 2 simultaneous disk failures
6.2	Optional RAID	Optional levels	RAID 5, RAID 10 or equivalent protection

No.	Category	Requirement	Specification
7. CACHE (if applicable)			
7.1	Cache capacity	Minimum cache per controller	min. 256 GB
7.2	Cache protection	Protected cache	Mirroring or battery backup in case of power loss or controller failure
7.3	Cache optimization	Performance optimization	Optimized for IOPS and low latency
8. PERFORMANCE			
8.1	IOPS Performance	Minimum IOPS with inline data reduction	300,000 IOPS
8.2	Performance parameters	Evaluation metrics	70% read / 30% write, 16KB block (mandatory), 32 KB and 64 KB(optionall)
8.3	Latency	Maximum latency	1 ms under full load
8.4	Performance validation	Report required with performance results simulation under specified parameters for proposed in the offer configuration of the storage hardware	Vendor benchmark tools
9. SUPPORTED PROTOCOLS			
9.1	Mandatory protocols	Required connectivity	FC and iSCSI
9.2	Optional protocols	Additional connectivity	NVMe/FC, NVMe/TCP, etc
9.3	Multipathing	Path redundancy	Multipath I/O for all protocols
10. REPLICATION & CLUSTERING			
10.1	Synchronous replication	Active-Active configuration	Between 2 locations up to 300m
10.2	Recovery objective	Data consistency	Zero RPO
10.3	Replication flexibility	Volume support	1 or more LUNs
11. DATA REDUCTION FEATURES			
11.1	Inline deduplication	Mandatory feature	Block and volume level
11.2	Inline compression	Mandatory feature	Real-time compression
11.3	Feature compatibility	Unrestricted operation	No impact on other features
11.4	Licensing	Complete licensing on perpetual basis	All features included
12. SNAPSHOTS			
12.1	Snapshot capacity	Minimum per volume	365 snapshots
12.2	Storage efficiency	Delta storage only	Space-efficient snapshots
12.3	Performance impact	System performance	No performance degradation
13. SECURITY			

No.	Category	Requirement	Specification
13.1	Data encryption	Encryption standard	Min. AES-256 for all stored data
13.2	Encryption performance	Hardware acceleration	No performance impact
13.3	Key management	Secure key storage	Protected encryption key management
14. MONITORING & MANAGEMENT			
14.1	Management platform	Interface type	Web-based monitoring and management
14.2	Real-time monitoring	Monitored metrics	Space utilization, data reduction, performance (IOPS, latency, bandwidth), hardware status, snapshot management, etc.
14.3	Predictive analytics (optional)	Capacity planning	Trend analysis and forecasting
14.4	Network requirements	Deployment mode	On-premises operation without mandatory internet
14.5	Licensing	Complete licensing on perpetual basis	All features included
15. CONNECTIVITY			
15.1	Management interfaces	Ports per controller , built-in and included	Min. 1 x 1GbE for management
15.2	Data interfaces	Ports per controller, built-in and included	Min. 2 x 32Gb FC (SFP+ modules included)
15.3	Replication interfaces	Dedicated replication ports per controller, built-in and included	Min. 2 x 32G FC or equivalent
15.4	Connectivity cables	All connectivity cables included	Management: Min. 1 x UTP Cat6/Cat6a cables, min. 1m length Data transfer: Min. 2 x OM4 fiber optic patch cords (LC-LC duplex), min. 3m length Replication: Min. 2 x OM4 fiber optic patch cords (LC-LC duplex), min. 3m length
16. MINIMUM MANDATORY SUPPORTED OPERATING SYSTEMS			
16.1	Windows support	Microsoft platform	Windows Server
16.2	Linux support	Enterprise Linux	Red Hat Enterprise Linux
16.3	Hypervisor support	VMware platform	vSphere/ESXi
17. POWER SUPPLY			
17.1	Power redundancy	Redundant PSUs	Minimum 2 hot-swappable units
17.2	Redundancy configuration	Power configuration	1+1 or N+1 redundancy
17.3	Power cables included	Cable specification	IEC C13-C14, minimum 0.6m

2. Standards and Certifications requirements

Table no.2

No.	Category	Requirement	Specification
18. CERTIFICATION & COMPLIANCE - EU STANDARDS			
18.1	CE Marking	Mandatory EU conformity	CE marking for European Economic Area (EEA) market access
18.2	Declaration of Conformity	EU DoC documentation	Manufacturer's declaration with technical file