Lenovo ThinkSystem Powered by RAIDIX 4.X

High End Data Storage Systems
(672 drives) for Backup Infrastructures

Software-defined storage Lenovo based on RAIDIX 4.X software is a viable solution for backup tasks: high availability and data recovery speed can protect from significant system downtime, improve RTO (recovery point objective) and RPO (recovery time objective). Storage system proves low costs of ownership and high level of availability, especially for large volumes of data.

Storage server: **Lenovo ThinkSystem SR650**

Disk platform: **Lenovo Storage D3284**

Storage Software: **RAIDIX 4.7.0-L**

Joint Solution Highlights

- Significant RTO and RPO Reduction
- Effective multi-threads mode processing
- Additional Data Protection with Remote Replication
- Flexible solution scale-out with change of archive volume
- Solutions performance proves significant reduction of time required for regular backup testing (for Health Check and other technologies of similar type)
- Performance loss at sequential workloads in data recovery mode: Less than 10%
- Easy customization and system configuration for the tasks of various complexity
- Significant TCO reduction

High Speed Backup Processing with Best Administrative Costs

Significant RTO and RPO Reduction

Guaranteed high level of performance for sequential workload provides significant reduction of RTO (recovery point objective) and RPO (recovery time objective). This is achieved by developed algorithms of vector calculation, unique SSD caching, and technical characteristics of hardware platform.

Availability and Data Integrity for Large Storage Volume

Backup systems are the final stage of data protection — data loss at this point is totally unacceptable. Therefore, backup infrastructure storage must ensure maximum availability and data integrity.

Required level of availability in the proposed solution is ensured by record recovery speed of software array, and guaranteed reliability of Lenovo hardware. Utilizing unique levels of RAID 7.3, RAID N+M in conjunction with Partial Reconstruction feature allows to solve error of latent sector error that occurs with large storage volumes.

Additional data protection is provided by synchronous and asynchronous replication that allow you to create and store a copy in remote data center.

Optimization of Storage Costs

Lenovo drive platforms with high storage density are capable of providing significant space for backups with minimum hardware needed. Unique features of RAIDIX software are aimed at effective work with large volumes of data while ensuring minimum redundancy of hardware components.

Key technology for storage optimization and reduction of TCO is RAID 7.3, developed by RAIDIX company. It is an analogue to RAID 6 but more reliable, thanks to calculation of three checksums. RAID 7.3 significantly reduces risk of disk failure keeping performance at the same level.

Solution Specification

Storage Software	RAIDIX 4.7.0-L
Storage Server	2 x Lenovo ThinkSystem SR650
Disk Enclosure	8 x Lenovo Storage D3284
Controller Configuration	Dual controller (Active-Active)
Speed Acceleration	Proprietary RAID Engine Advanced Reconstruction Adaptive read-ahead SSD cache QoSmic (Automatic QoS)

Data Availability	Proprietary RAID Engine Synchronous and Asynchronous Replication Silent Data Corruption Protection Partial Reconstruction Dual Controller Mode (Active-Active) RAID 5, RAID 6, RAID 7.3, RAID N+M Flexible HotSpare Settings
Data Integrity	Silent Data Corruption Protection Dual Controller Mode (Active-Active) NVDIMM Write-back Cache Protection
Disaster Recovery	Synchronous and Asynchronous Replication
Storage Cost Optimization	RAID 7.3 (Wide Striping)
Maintenance Optimization	Partial Reconstruction QoSmic (Automatic QoS)
Infrastructure Integration	SAN Optimizer for External Storage Virtualization Block Access Protocols: FC, SAS, iSCSI, SRP File Access Protocols: NFS 4, SMB, AFP, FTP MS Active Directory and LDAP authentication for NAS users Lun Masking
Customization and Adjustment Opportunities	Wide Range of File and Block Access Protocols Cluster-in-a-Box functionality Administrative Service Automatization by CLI and API
RAID Levels	RAID 0, 1, 5, 6, 7.3, N+M and 10
CPU (per node)	2 x CPU Intel Xeon Gold 6126
Synchronization connectivity	4 x 100Gb IB sync port
Maximum Drives Supported	672
Storage Capacity	Up to 8.064 PB (672 x 12 TB)
Drive technology	SAS or NL SAS HDDs SAS SSDs (only for L2 cache)
Cache (per system)	512 GB
Performance*	13 GBps sequential read throughput 10.5 GBps sequential write throughput

Form Factor (controller)	2 x 2U rack mount
Form Factor (enclosure)	5U rack mount
Supported Host OS	Mac OS X 10.7, 10.8, 10.9, 10.10 Microsoft Windows Server 2008R2, 2012, 2012R2, and 2016 Red Hat Enterprise Linux (RHEL) 6 and 7 SuSE, ALT Linux. CentOS Linux, Ubuntu Linux VMware vSphere 5.0, 5.1, 5.5,6.0, 6.5
Warranty	3-year limited warranty with optional upgrades available
Support	Lenovo single point of contact for 24/7

*Internal performance measurements with multiple RAID6 of 24 HDDs 7.2K RPM

Why Lenovo

Lenovo is a leading provider of systems for the data center. The portfolio includes rack, tower, blade, dense, and hyperconverged systems, and provides enterprise class performance, reliability, and security. Lenovo also offers a full range of networking, storage, software, and solutions, as well as comprehensive services that support business needs throughout the IT life cycle.

About RAIDIX

RAIDIX is a software developing company specializing in storage solutions for data intensive workloads. Technology innovations including proprietary RAID engine and unique algorithms of parallel calculations create core value of company's products that root in deep mathematical research and scientific intelligence of in-house lab. RAIDIX data storage solutions are tailored for needs of Media & Entertainment, Video Surveillance, HPC, Technical Computing and other data-rich industries.

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