Lenovo ThinkSystem Powered by RAIDIX 4.X

Mid-Range Data Storage Systems (252 drives) for Video Surveillance Infrastructures

Lenovo ThinkSystem Powered by RAIDIX is compliant with video surveillance requirements: effective processing of streaming workloads, flexibility, easy customization, low maintenance costs caused by network growth and archive depth increasing, stability in case of heavy emergency workload.



Storage server: **Lenovo ThinkSystem SR650**
Disk platform: **Lenovo Storage D3284**
Storage Software: **RAIDIX 4.7.0-L**

Support up to **8500 FullHD cameras**
Activity: **average**
FPS 25, codec H264 (camera bitrate — 4 MBps)
Storage period: **7 days**

Joint Solution Highlights

- Significant TCO reduction in large installation
- Flexible solution scale-out with change of archive volume
- Effective multi-threads mode processing
- Parallel read operations with stable performance for smooth operation of analytical software
- Performance loss at sequential workloads in data recovery mode: Less than 10%
- No data stream loss in case of emergency and hardware failure
- Certain recovery of event based on video data integrity
- Easy customization and system configuration for the tasks of various complexity

Lenovo ThinkSystem Powered by RAIDIX 4.X

Low storage cost and high speed workflow for video streams

High Performance during Peak Workloads

Algorithms of vector calculation from RAIDIX and features of Lenovo hardware provide top-notch performance for streaming write and read operations. Adaptive read-ahead, write-back caching and software architecture allow for simultaneous processing of hundreds of heavy data streams.

Availability and Integrity for High Data Volume

Due to high storage density, Lenovo disk platforms provide significant storage volume for video data storage embedded in minimum physical space. To maintain high availability and data integrity in such condition, RAIDIX software employs best-in-class speed of array reconstruction and levels RAID 7.3, RAID N+M with advanced reliability.

Active-Active dual controller configuration removes single point of failure while Protection from Silent Data Corruption gives additional value for keeping data integrity in case of hardware errors.

Storage Cost Optimization

RAIDIX operating system and Lenovo server hardware provide solution with significant TCO reduction by means of high-density disk platforms and software data storage capabilities.

The key benefit for data storage optimization is RAID 7.3 developed in RAIDIX in-house lab. RAID 7.3 is similar for RAID 6, but has highest grade of reliability due to 3 checksum calculation at once. RAID 7.3 substantially decrease probability of drive failure while reducing hardware redundancy and keeping array performance.

Easy Customization for Complex Installation

Lenovo software-defined storage powered by RAIDIX 4.X gives wide range of opportunities for customization and system configuration for the tasks of various complexity. A large number of PCIe ports and plenty software options allow to perform “flexible server” principle, which is necessary for outsized and complex projects.

Solution Specification

Storage Software	RAIDIX 4.7.0-L
Storage Server	2 x Lenovo ThinkSystem SR650
Disk Enclosure	3 x Lenovo Storage D3284

Lenovo ThinkSystem Powered by RAIDIX 4.X

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 5115
Synchronization connectivity	4 x 100Gb IB sync port
Maximum Drives Supported	252

Lenovo ThinkSystem Powered by RAIDIX 4.X

Storage Capacity	Up to 3.024 PB (252x 12 TB)
Drive technology	SAS or NL SAS HDDs SAS SSDs (only for L2 cache)
Cache (per system)	256 GB
Performance*	6.5 GBps sequential read throughput 6.5 GBps sequential write throughput
Form Factor (controller)	2 x 2U rack mount
Form Factor (enclosure)	4U 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.

Phone: +41 41 508 75 41
request@raidix.com
www.raidix.com