

ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter Product Guide

The ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter is a high-performance advanced RAID-on-chip (ROC) adapter for connectivity to drives internal to the server. This adapter is NVMe optimized and is based on a new architecture with an optimized data path which results in higher IOPS and bandwidth and lower latency and provides for faster rebuild times.

The RAID 960W-32i adapter support RAID levels 0, 1, 10, 5, 50, 6 and 60, and include an extensive list of security and management features. The adapter supports NVMe drives (no SAS or SATA support) with each drive having a PCIe 5.0 x2 host connection.

The ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter is shown in the following figure.

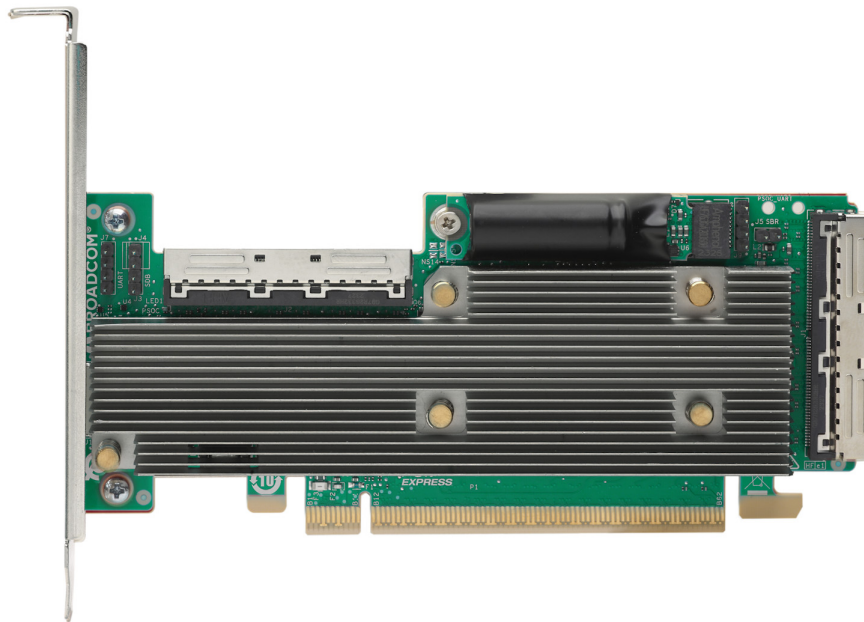


Figure 1. ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter

Did you know?

Unlike previous Broadcom MegaRAID generations that required an external DDR cache device and a separate CacheVault module, the RAID 960W-32i adapter integrates RAID cache directly into the controller chip and incorporates onboard energy backup protection. This innovative design reduces component count, improves reliability, frees valuable server space, and enables a compact low-profile form factor without sacrificing performance.

Part number information

The following table provides the ordering information for the ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter.

Table 1. Part number information

Part number	Feature code	Description
4Y37B11710	CECC	ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter

Technical specifications

The ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter has the following specifications:

- PCIe 5.0 x16 host interface
- 32 PCIe lanes with connectivity to up to 16 NVMe drives each with a x2 connection
- Based on the Broadcom 9760W-32i adapter with a SAS5132W controller chip
- Supports NVMe U.2 drives (PCIe 5.0 or PCIe 4.0)
 - No support for NVMe U.3 drives
 - No support for SAS or SATA drives
- Integrated flash-backed cache with onboard CacheVault cache protection (pluggable module)
- Two 2x SFF-TA-1016 x16 connectors
- Support for RAID 0, 1, 10, 5, 50, 6 and 60 standard
 - RAID-1 is 2 drives only
 - RAID-6 requires at least 4 drives
 - No RAID Level Migration (RLM) support
- Support for JBOD (non-RAID) drive state
- Support for up to 16 virtual drives per controller, 8 virtual drives per drive group
- Support for logical drive sizes greater than 2 TB
- 64KB stripe size (fixed)
- Advanced security:
 - Hardware Secure Boot
 - Cache Offload (COL) encryption
 - SPDM 1.2 attestation support
 - CNSA 2.0 compliant security architecture
 - Firmware integrity verification and authentication
 - Secure firmware update support
- Support for SED secure erase with PSID (Physical Security Identifier)
- No support for Legacy boot
- S.M.A.R.T. support
 - SMART polling
 - SMART information show
 - SMART self test

- Configuration with Lenovo and Broadcom tools:
 - XClarity Controller
 - XClarity Provisioning Manager (planned support)
 - XClarity Administrator (planned support)
 - XClarity OneCLI (planned support)
 - StorCLI command-line interface (storcli2)
 - LSI Storage Authority (LSA) GUI interface
 - UEFI Human Interface Infrastructure (HII)

The following table summarizes the specifications of the RAID 960W-32i adapter.

Table 2. Specifications

Feature	RAID 960W-32i
Adapter type	RAID controller
Part number	4Y37B11710
Form factor	PCIe low profile
Controller chip	Broadcom SAS5132W
Broadcom equivalent	MegaRAID 9760W-32i
Host interface	PCIe 5.0 x16
Port interface	NVMe x2
Number of ports	16
Port connectors	Two x16 SFF-TA-1016
Tri-Mode support	No
Drive interface	NVMe U.2
Drive type	SED, SSD
Hot-swap drives	Yes
Max devices	16
RAID levels	0, 1, 10, 5, 50, 6, 60
JBOD mode	Yes
Cache	Included (size unspecified)
CacheVault cache protection with Flash	Yes
Performance Accelerator (FastPath)	Yes
SSD Caching (CacheCade Pro 2.0)	No
SED support	Yes (SafeStore)

To compare the RAID 960W-32i adapter to other RAID adapters, see the Lenovo ThinkSystem RAID Adapter and HBA Reference

<https://lenovopress.com/lp1288-lenovo-thinksystem-raid-adapter-and-hba-reference>

Features

The ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter has the following standard features:

- **PCIe Gen5 NVMe RAID controller**

Provides high-performance hardware RAID for PCIe Gen5 NVMe SSDs, helping maximize storage performance while reducing CPU overhead. Hardware-based RAID processing enables consistent performance and enterprise-class data protection for demanding workloads such as virtualization, databases, analytics, and AI applications.

- **PCIe 5.0 x16 host connectivity**

Utilizes a PCIe Gen5 x16 host interface to provide the bandwidth required by modern NVMe flash storage. The high-speed host connection helps eliminate storage bottlenecks and supports the full performance potential of next-generation SSDs.

- **Support for up to 16 NVMe U.2 drives**

Enables a single adapter to manage up to 16 NVMe U.2 SSDs, each with a 2-lane (x2) connection, simplifying storage deployment while providing a scalable foundation for high-capacity, high-performance server storage configurations.

- **Comprehensive RAID protection**

Supports RAID 0, 1, 5, 6, 10, 50, and 60, allowing organizations to balance performance, capacity, and fault tolerance according to application requirements. Hardware RAID protection helps improve data availability and business continuity.

- **Integrated RAID Cache technology**

Incorporates RAID cache directly within the Broadcom SAS5132W RAID-on-Chip processor, eliminating the need for the external DDR cache architecture used by previous generations. The integrated design improves efficiency while reducing board complexity.

- **Embedded cache protection**

Features onboard energy backup technology that protects cached data during unexpected power interruptions. The integrated design eliminates the need for a separate external CacheVault module, simplifying installation and serviceability.

- **Advanced security features**

Supports Hardware Secure Boot, SPDM 1.2 attestation, CNSA 2.0-compliant security capabilities. These technologies help verify firmware authenticity, protect against unauthorized modification, and strengthen platform security. Cache Offload (COL) encryption protects the controller's cache data when unexpected system power outage occurs.

- **High-performance RAID architecture**

Powered by Broadcom's ninth-generation RAID-on-Chip technology, which delivers performance increases (2x increase in random reads and 5x increase in random write RAID performance) over previous generations while maintaining low and predictable latency for transactional and data-intensive workloads.

- **PCIe Embedded Analyzer (PEA) support**

Includes integrated PCIe diagnostic capabilities that can simplify troubleshooting and assist with system validation in enterprise environments.

- **Comprehensive management utilities**

Supports Lenovo XClarity management tools and Broadcom management tools enabling

configuration, monitoring, and maintenance throughout the storage lifecycle.

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 3. Server support - Current servers (Part 1 of 2)

Part Number	Description	AMD V3					2S Intel V3/V4					1S V3			4S 8S Intel V3/V4						
		SR635 V3 (7D9H / 7D9G)	SR655 V3 (7D9F / 7D9E)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	SD535 V3 (7DD8 / 7DD1)	ST650 V3 (7D7B / 7D7A)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR630 V4 (7DGG8 / 7DGG9)	SR650 V4 (7DGC / 7DGD)	SR650a V4 (7DGC / 7DGD)	ST45 V3 (7DH4 / 7DH5)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SR850 V4 (7DJT / 7DJS)	SR860 V4 (7DJQ / 7DJN)
4Y37B11710	ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N

Table 4. Server support - Current servers (Part 2 of 2)

Part Number	Description	AI Servers					Edge		Super computing		
		SR675 V3 (7D9Q / 7D9R)	SR680a V3 B200 (7DM9)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SR680a V4 (7DMK)	SE100 (7DGR)	SE455 V3 (7DBY)	SC750 V4 (7DDJ)	SC777 V4 (7DKA)	SD665 V3 (7D9P)
4Y37B11710	ThinkSystem RAID 960W-32i NVMe PCIe Gen5 Adapter	N	N	N	N	N	N	N	N	N	N

Operating system support

The following table lists the supported operating systems.

Tip: These tables are automatically generated based on data from [Lenovo ServerProven](#).

Table 8. Operating system support for ThinkSystem RAID 960W-32i PCIe Gen5 Adapter, 4Y37B11710

Operating systems	SR630 V4	SR650 V4/SR650a V4
Microsoft Windows Server 2022	Y	Y
Microsoft Windows Server 2025	Y	Y
Red Hat Enterprise Linux 9.6	Y	Y
Red Hat Enterprise Linux 9.7	Y	Y
Red Hat Enterprise Linux 10.0	Y	Y
Red Hat Enterprise Linux 10.1	Y	Y
SUSE Linux Enterprise Server 15 SP6	Y	Y
SUSE Linux Enterprise Server 15 SP7	Y	Y
SUSE Linux Enterprise Server 16	Y	Y
Ubuntu 24.04 LTS or later with HWE kernel	Y	Y
VMware vSphere Hypervisor (ESXi) 9.0	Y	Y
VMware vSphere Hypervisor (ESXi) 9.1	Y	Y

Warranty

The adapters carry a 1-year limited warranty. When installed in a supported ThinkSystem server, the adapter assumes the server's base warranty and any warranty upgrades.

Operating environment

The adapters are supported in the following environment:

- Operating:
 - Temperature: 10°C to 55°C (50°F to 131°F)
 - Relative humidity: 20% to 80% (non-condensing)
- Storage
 - Temperature with package: -40°C to 105°C (-40°F to 221°F)
 - Relative humidity: 5% to 95% (non-condensing)

Agency approvals

The RAID 960W-32i adapter has the following agency approvals:

- USA FCC (47 CFR Part 15, Subpart B, Class A)
- USA / Canada Safety (UL 62368-1, CAN/CSA C22.2 No. 62368-1)
- Canada EMC (ICES-003 Class A)
- Australia / New Zealand RCM (AS/NZS CISPR 32 Class A)
- European Union CE (EN 55032, EN 55035)
- Korea RRL (KN32/KN35)
- Taiwan BSMI (CNS15663, CNS15936)
- CB Scheme Safety (IEC/EN 62368-1)
- Japan VCCI (VCCI-CISPR 32)
- Morocco CMIM

Related publications and links

For more information, see the following documents:

- Broadcom MegaRAID 9760W-32i product web page
<https://www.broadcom.com/products/storage/raid-controllers/megaraid-9760w-32i>
- Broadcom 9700 Series MegaRAID Adapters Product Brief:
<https://docs.broadcom.com/doc/9700-Series-PB>
- Broadcom 9700 Series User Guide:
<https://docs.broadcom.com/docs/97xx-pcie-5-0-24g-sas-megaraid-and-hba-storage-adapters-user-guide>
- Lenovo ThinkSystem RAID Adapter and HBA Reference
<https://lenovopress.com/lp1288-lenovo-thinksystem-raid-adapter-and-hba-reference>
- Lenovo ThinkSystem product publications:
<https://pubs.lenovo.com/>
- ServerProven hardware compatibility:
<https://serverproven.lenovo.com/>

Related product families

Product families related to this document are the following:

- [RAID Adapters](#)

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