ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU

Product Guide

The ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU is a powerful, low-profile GPU for real time ray tracing and AI acceleration. Built on the NVIDIA Ampere GPU architecture, it combines 2,304 CUDA Cores, 72 third-generation Tensor Cores, and 18 second-generation RT Cores, and 8GB of GDDR6 graphics memory. With the RTX A1000 GPU, you can create more compelling visuals, explore new AI-powered workflows, and boost your productivity, all from a small-form-factor solution.

The RTX A1000 GPU delivers the performance, AI capabilities, enterprise reliability, and features professionals need in a small-form-factor solution.

Figure 1. ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU

Did you know?

NVIDIA RTX professional graphics cards are certified for a broad range of professional applications, tested by leading independent software vendors (ISVs) and workstation manufacturers, and backed by a global team of support specialists. Get the peace of mind to focus on what matters with the premier visual computing solution for mission-critical business.

Part number information

The following table shows the part numbers for the RTX A1000 GPU.

Table 1. Ordering information

Part number	Feature code	Description	Controlled GPU status
4X67A96431	C39N	ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU	No

The RTX A1000 GPU is not Controlled which means the GPU is unrestricted and is available in all markets.

The option part numbers includes the following:

- One RTX A1000 GPU
- Full-height (3U) and Low profile (2) adapter brackets
- Documentation flyer

Features

The RTX A1000 GPU is an efficient, single slot professional solution for CAD, DCC, financial service industry (FSI) and visualization professionals in general looking to reach great performance in a compact form factor. Building upon the enhancements from the Turing GPU, the NVIDIA Ampere architecture enhances ray tracing operations, tensor matrix operations, and concurrent executions of FP32 and INT32 operations.

Key features:

- Second-generation RT Cores
- Third-generation Tensor Cores
- PCI Express Gen 4 host interface
- Four Mini DisplayPort 1.4a
- AV1 decode support
- DisplayPort with audio
- NVIDIA RTX Experience
- NVIDIA RTX Desktop Manager software
- NVIDIA RTX IO support
- HDCP 2.2 support
- NVIDIA Mosaic technology

Key workloads:

- Design and Visualization
- Digital Content Creation
- Computer-Aided Design
- Multi-Display Work Environments
- Edge Computing Applications
- Productivity Applications

Technical specifications

The following table lists the specifications of the RTX A1000 GPU.

Table 2. RTX A1000 GPU specifications

Feature	Specification
GPU Architecture	NVIDIA Ampere Architecture
GPU Memory	8 GB GDDR6
Memory Interface	128-bit
Memory Bandwidth	192 GB/s
ECC	Yes
NVIDIA CUDA Cores	2,304 Ampere CUDA Cores
NVIDIA Tensor Cores	72 third-generation Tensor Cores
NVIDIA RT Cores	18 second-generation RT Cores
Peak Single-Precision Performance	6.7 TFLOPS (peak)
Peak RT Core performance	13.2 TFLOPS (peak)
FP16 Tensor Performance	53.8 TFLOPS (peak) (with sparsity)
INT8 Tensor Performance	107.8 TOPS (peak) (with sparsity)
NVLink support	No
Host Interface	PCI Express 4.0 x8
Power Consumption	50 W
Thermal Solution	Active cooling
Form Factor	2.7” H x 6.4” L (Low Profile), single slot
Display Connectors	4x Mini DisplayPort (mDP) 1.4a
Maximum simultaneous displays	4x 4096 x 2160 @ 120 Hz, 4x 5120 x 2880 @ 60 Hz, 2x 7680 x 4320 @ 30Hz
Encode / Decode Engines	1x encode, 2x decode (+AV1 decode)
VR Ready	No
Graphics APIs	DirectX 12, Shader Model 6.6, OpenGL 4.6, Vulkan 1.3
Compute APIs	CUDA 11.6, DirectCompute, OpenCL 3.0

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 3. Server support (Part 1 of 4)

Part Number	Description	AMD V3				2S Intel V3/V4						4S 8S Intel V3			Multi Node V3/V4			1S V3			
		SR635 V3 (7D9H / 7D9G)	SR655 V3 (7D9F / 7D9E)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	ST650 V3 (7D7B / 7D7A)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR630 V4 (7DG8 / 7DG9)	SR650 V4 (7DGC / 7DGD)	SR650a V4 (7DGC / 7DGD)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	ST45 V3 (7DH4 / 7DH5)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
4X67A96431	ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU	N	N	N	N	N	N	8	N	N	N	N	N	N	N	N	N	N	N	1	1

Table 4. Server support (Part 2 of 4)

Part Number	Description	GPU Rich					Edge						Super Computing						
		SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SE100 (7DGR)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	SC750 V4 (7DDJ)	SC777 V4 (7DKA)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)
4X67A96431	ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU	N	N	N	N	N	1	N	N	N	N	N	N	N	N	N	N	N	N

Table 5. Server support (Part 3 of 4)

Part Number	Description	1S Intel V2			2S Intel V2			AMD V1					Dense V2				4S V2		8S
		ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR655 Client OS	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)	SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)
4X67A96431	ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support (Part 4 of 4)

Part Number	Description	4S V1			1S Intel V1				2S Intel V1								Dense V1			
		SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)	ST550 (7X09 / 7X10)	SR530 (7X07 / 7X08)	SR550 (7X03 / 7X04)	SR570 (7Y02 / 7Y03)	SR590 (7X98 / 7X99)	SR630 (7X01 / 7X02)	SR650 (7X05 / 7X06)	SR670 (7Y36 / 7Y37)	SD530 (7X21)	SD650 (7X58)	SN550 (7X16)	SN850 (7X15)
4X67A96431	ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU	N	N	N	N	N	N	N	N	N	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 7. Operating system support for ThinkSystem NVIDIA RTX A1000 8GB PCIe Gen4 Active GPU, 4X67A96431

Operating systems	SR250 V3	ST250 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)
Microsoft Windows 10	N	N	Y	Y
Microsoft Windows 11	N	N	Y	Y
Microsoft Windows Server 2022	Y	Y	Y	Y
Microsoft Windows Server 2025	Y	Y	Y	Y
Red Hat Enterprise Linux 9.4	Y	Y	Y	Y
Red Hat Enterprise Linux 9.5	Y	Y	Y	Y
Ubuntu 22.04 LTS	N	N	Y	Y
Ubuntu 22.04.3 LTS	N	N	N	Y
Ubuntu 22.04.5 LTS	Y	Y	N	N
Ubuntu 24.04 LTS	Y	Y	Y	Y
Ubuntu 24.04.2 LTS	Y	Y	N	N

NVIDIA GPU software

This section lists the NVIDIA software that is available from Lenovo.

- NVIDIA HPC Compiler Software

NVIDIA HPC Compiler Software

Table 8. NVIDIA HPC Compiler

Part number	Feature code 7S09CTO6WW	Description
HPC Compiler Support Services		
7S090014WW	S924	NVIDIA HPC Compiler Support Services, 1 Year
7S090015WW	S925	NVIDIA HPC Compiler Support Services, 3 Years
7S09002GWW	S9UQ	NVIDIA HPC Compiler Support Services, 5 Years
7S090016WW	S926	NVIDIA HPC Compiler Support Services, EDU, 1 Year
7S090017WW	S927	NVIDIA HPC Compiler Support Services, EDU, 3 Years
7S09002HWW	S9UR	NVIDIA HPC Compiler Support Services, EDU, 5 Years
7S090018WW	S928	NVIDIA HPC Compiler Support Services - Additional Contact, 1 Year
7S09002JWW	S9US	NVIDIA HPC Compiler Support Services - Additional Contact, 3 Years
7S09002KWW	S9UT	NVIDIA HPC Compiler Support Services - Additional Contact, 5 Years
7S090019WW	S929	NVIDIA HPC Compiler Support Services - Additional Contact, EDU, 1 Year
7S09002LWW	S9UU	NVIDIA HPC Compiler Support Services - Additional Contact, EDU, 3 Years
7S09002MWW	S9UV	NVIDIA HPC Compiler Support Services - Additional Contact, EDU, 5 Years
HPC Compiler Premier Support Services		
7S09001AWW	S92A	NVIDIA HPC Compiler Premier Support Services, 1 Year
7S09002NWW	S9UW	NVIDIA HPC Compiler Premier Support Services, 3 Years
7S09002PWW	S9UX	NVIDIA HPC Compiler Premier Support Services, 5 Years
7S09001BWW	S92B	NVIDIA HPC Compiler Premier Support Services, EDU, 1 Year
7S09002QWW	S9UY	NVIDIA HPC Compiler Premier Support Services, EDU, 3 Years
7S09002RWW	S9UZ	NVIDIA HPC Compiler Premier Support Services, EDU, 5 Years
7S09001CWW	S92C	NVIDIA HPC Compiler Premier Support Services - Additional Contact, 1 Year
7S09002SWW	S9V0	NVIDIA HPC Compiler Premier Support Services - Additional Contact, 3 Years
7S09002TWW	S9V1	NVIDIA HPC Compiler Premier Support Services - Additional Contact, 5 Years
7S09001DWW	S92D	NVIDIA HPC Compiler Premier Support Services - Additional Contact, EDU, 1 Year
7S09002UWW	S9V2	NVIDIA HPC Compiler Premier Support Services - Additional Contact, EDU, 3 Years
7S09002VWW	S9V3	NVIDIA HPC Compiler Premier Support Services - Additional Contact, EDU, 5 Years

Auxiliary power cables

The RTX A1000 GPU does not require an auxiliary power cable.

Regulatory approvals

The RTX A1000 GPU has the following regulatory approvals:

- RCM
- BSMI
- CE
- FCC
- ICES
- KCC
- cUL, UL
- VCCI

Operating environment

The RTX A1000 GPU has the following operating characteristics:

- Ambient temperature
  - Operational: 0°C to 50°C (-5°C to 55°C for short term*)
  - Storage: -40°C to 75°C
- Relative humidity:
  - Operational: 5-85% (5-93% short term*)
  - Storage: 5-95%

* A period not more than 96 hours consecutive, not to exceed 15 days per year.

Warranty

One year limited warranty. When installed in a Lenovo server, the GPU assumes the server's base warranty and any warranty upgrades.

Related publications

For more information, refer to these documents:

- ThinkSystem and ThinkAgile GPU Summary:
  https://lenovopress.lenovo.com/lp0768-thinksystem-thinkagile-gpu-summary
- ServerProven compatibility:
  https://serverproven.lenovo.com/
- RTX A1000 GPU product page:
  https://www.nvidia.com/en-us/design-visualization/rtx-a1000/

Related product families

Product families related to this document are the following:

- GPU adapters

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