ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU
Product Guide

Industries are embracing accelerated computing and AI to tackle powerful dynamics and unlock transformative possibilities. Generative AI is reshaping the way professionals create and innovate across various domains, from design and engineering to entertainment and healthcare.

The ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU is a powerful single-slot GPU for professionals, delivering acceleration for AI, real-time rendering, graphics, and compute workloads. Built on the NVIDIA Ada Lovelace architecture, RTX 4000 combines 48 third-generation RT Cores, 192 fourth-generation Tensor Cores, and 6,144 CUDA cores with 20GB of graphics memory to effortlessly handle large datasets and complex visual workloads.

Figure 1. ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU

Did you know?

Certified with 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, NVIDIA RTX is the visual computing solution of choice for demanding enterprise deployments.

Part number information

The following table shows the part numbers for the RTX 4000 Ada GPU.

Table 1. Ordering information

Part number	Feature code	Description	Controlled GPU status
4X67A97287	C4S1	ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU	No

The RTX 4000 Ada GPU is not Controlled which means the GPU is unrestricted and is available in all markets.

The PCIe option part numbers includes the following:

- One RTX 4000 Ada GPU with full-height (3U) adapter bracket attached
- Documentation

Features

Experience fast, interactive performance—powered by the latest NVIDIA Ada Lovelace architecture—with ultra-fast, onboard graphics memory technology and optimized software drivers for professional applications. The Shader Execution Reordering (SER) system allows on-the-fly organization and reordering workloads by grouping similar performing threads for the SM and RT Core to operate more efficiently.

The ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU offers the following features:

- PCIe Gen4
- Four DisplayPort 1.4a connectors
- AV1 encode and decode support
- DisplayPort with audio
- 3D stereo support with stereo connector
- NVIDIA GPUDirect for Video support
- NVIDIA GPUDirect remote direct memory access (RDMA) support
- NVIDIA Quadro Sync II compatibility
- NVIDIA RTX Experience
- NVIDIA RTX Desktop Manager software
- NVIDIA RTX IO support
- HDCP 2.2 support
- NVIDIA Mosaic technology

Technical specifications

The following table lists the specifications of the RTX 4000 Ada GPU.

Table 2. RTX 4000 Ada GPU specifications

Feature	Specification
GPU Architecture	NVIDIA Ada Lovelace Architecture
GPU Memory	20 GB GDDR6
Memory Interface	160-bit
Memory Bandwidth	Up to 360 GB/s
ECC	Yes
NVIDIA CUDA Cores	6,144 Ada Lovelace Architecture-Based CUDA Cores
NVIDIA Tensor Cores	192 fourth-generation Tensor Cores
NVIDIA RT Cores	48 third-generation RT Cores
Peak Single-Precision Performance	26.7 TFLOPS (peak)
Peak RT Core performance	61.8 TFLOPS (peak)
Peak Tensor Performance	327.6 TFLOPS (peak)
NVLink support	No
Host Interface	PCI Express 4.0 x 16
Power Consumption	130 W
Thermal Solution	Active cooling
Form Factor	4.4" H x 9.5" L (FHFL), single slot
Display Connectors	4x DisplayPort (DP) 1.4a
Maximum simultaneous displays	4x 4096 x 2160 @ 120 Hz, 4x 5120 x 2880 @ 60 Hz, 2x 7680 x 4320 @ 60 Hz
Encode / Decode Engines	2x encode, 2x decode (+AV1 encode and decode)
VR Ready	Yes
Graphics APIs	DirectX 12, Shader Model 6.7, OpenGL 4.6, Vulkan 1.3
Compute APIs	CUDA 12.2, 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)
4X67A97287	ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU	N	N	N	N	N	N	N	N	4	N	N	N	N	N	N	N	N	N	N	N

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)
4X67A97287	ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU	N	N	N	N	N	N	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)
4X67A97287	ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe 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)
4X67A97287	ThinkSystem NVIDIA RTX 4000 Ada 20GB PCIe Active GPU	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

NVIDIA GPU software

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

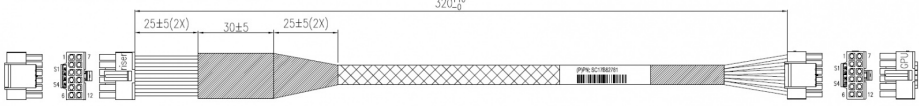- NVIDIA HPC Compiler Software

NVIDIA HPC Compiler Software

Table 7. 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 4000 Ada GPU option part number does not ship with auxiliary power cables. Cables are server-specific due to length requirements. For CTO orders, auxiliary power cables are derived by the configurator. For field upgrades, cables will need to be ordered separately as listed in the table below.

Table 8. Auxiliary power cables for RTX 4000 Ada GPU

Auxiliary power cable needed with the SR650 V4
320mm 16-pin (2x6+4) cable **Feature**: C3QU **SBB**: SBB7A87740 **Base**: SC17B82781 **FRU**: 03NY679 **Option**: SR650 V4: ThinkSystem SR650 V4 Full Length GPU Thermal Option Kit, 4X67B04303* * The option part numbers are for thermal kits and include other components needed to install the GPU. See the server product guide for details.

Regulatory approvals

The RTX 4000 Ada GPU has the following regulatory approvals:

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

Operating environment

The RTX 4000 Ada 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/
- NVIDIA RTX 4000 Ada product page:
  https://www.nvidia.com/en-us/design-visualization/rtx-4000/
- NVIDIA Ada Lovelace Architecture page
  https://www.nvidia.com/en-us/geforce/ada-lovelace-architecture

Related product families

Product families related to this document are the following:

- GPU adapters

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