

NVIDIA Data Center GPU Driver version 595.112.13 (Linux)

Release Notes

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Chapter 1. Version Highlights

This section provides highlights of the NVIDIA Data Center GPU R595 Driver (version 595.112.13 Linux).

For changes related to the 595 release of the NVIDIA display driver, review the file "NVIDIA_Changelog" available in the .run installer packages.

- Linux driver release date: 11/23/2026

1.1. Software Versions

For this release, the software versions are as follows:

- CUDA Toolkit 13: 13.x

  Note that starting with CUDA 11, individual components of the toolkit are versioned independently. For a full list of the individual versioned components (for example, nvcc, CUDA libraries, and so on), see the CUDA Toolkit Release Notes.
- NVIDIA Data Center GPU Driver: 595.112.13 (Linux)
- Fabric Manager: Use `nv-fabricmanager -v`
- NVFlash: 5.919.0

For more information on getting started with the NVIDIA Fabric Manager on NVSwitch-based systems (for example, NVIDIA HGX A100), refer to the Fabric Manager User Guide.

1.2. Fixed Issues

- Allow the importer timeout handler to process all pending timeouts at once, instead of once per wake up. Also, have SIGUSR1 trigger the normal teardown path, allowing the `IMEX_NODE_DISCONNECTED_GRACE_TIME` timer to be armed to trigger an eventual cleanup.
- Older Linux kernels utilized an API that is no longer in the kernel, so we defaulted to 4 GB mapping size. The fix is to only utilize the API in older kernels, as well as fix the off by one error in the system max mappable address space.

- Added a CPU load fence between reading the GSP queue producer pointer and copying the payload to prevent stale reads. Added GDMA flush error handling to stop queue-head publication on failure and ensure cleanup completes.
- Captured logs confirm sustained GSP-RM malloc-heap exhaustion, causing RM allocations to fail and leaving the GPU operationally unusable. This has been fixed to reduce heap consumption and allocation churn by removing unnecessary GSP per-client locks, compacting Resource Server references and containers, reducing allocator metadata overhead with the required alignment correction, and caching RUSD/PMUMON polling buffers.
- When a 64-bit subtraction was combined with a high-half multiply, the compiler mishandled the carry while negating the subtracted operand. If that operand was zero at runtime, the high word came out wrong, and so did the final result. The bug was silent, with no warning or error. The compiler now lowers the negation with an IADD3 sequence, which handles the carry correctly.

1.3. Known Issues

- NVIDIA Confidential Computing has an ABI breakage in its attestation flows. Driver 595.112.13 is incompatible with Attestation SDK versions prior to 2026.10.02. More details can be found on the Confidential Computing Release Notes page.

  This ABI breakage is limited to Attestation flows initiated via the Attestation SDK. It does not require any user-application recompilations, and has no effect on non-CC users.
- Applications using `cuTensorMapEncodeTiled()` or `cuTensorMapEncodeIm2col*()` on Blackwell GPUs may encounter sporadic illegal memory accesses (IMA) or MMU faults (like XID 13) due to driver incorrectly configuring TMA descriptors when the tensor's backing memory allocation is less than 128KB and it is not a dense non-overlapping tensor. To workaround this issue, add the following after descriptor creation for such tensors.

  ```
  CUtensorMap tensorMap;
  cuTensorMapEncode*(&tensorMap, ...); // Create descriptor
  ((uint64_t*)&tensorMap)[1] &= ~((uint64_t)1 << 21); // Workaround : clear bit 85
  ```

  This workaround is specific to Blackwell's tensor map descriptor layout and may not be portable to future GPU architectures. It should be removed once updated drivers with the fix are deployed.
- This version of the GPU driver will fail to initialize on systems with Hopper GPUs subrevision = 3 and VBIOS versions older than 96.00.68.00.xx. Please ensure the system is using a VBIOS version 96.00.68.00.xx or newer before upgrading to this version of the driver.
- When upgrading from ClosedRM to OpenRM, nvidia-smi may fail.

  Workaround

  Run the following commands:

  ```
  sudo zypper remove -y nvidia-driver-G07
  sudo zypper install -y nvidia-open-driver-G07=595.112.13 nvidia-open-595
  ```

- The default TCC mode in the NVIDIA driver does not support IOMMU-based isolation (necessary for Windows features such as DMA protection, kernel DMA guard, virtualization-based security, etc.). The impacted GPUs are NVIDIA L40, NVIDIA L40S, NVIDIA L20, NVIDIA L4, and NVIDIA RTX PRO 6000 Blackwell Server Edition.
- This GPU Driver release is compatible only with Data Center GPU Manager (DCGM) versions 4.3.x or newer. Earlier versions of DCGM are not compatible.
- On RHEL 10 x86_64 with kernel 6.12.0-55.29.1.el10_0.x86_64 the `doca-ofed` package does not include the `ib_umad.ko` module, causing Fabric Manager to fail at startup. This issue is not present on the older kernel 6.12.0-55.9.1.el10_0.x86_64.
- If your environment meets all of the following conditions:
  - You are using an RPM based distribution.
  - You are not using the online CUDA package repository.
  - You manually installed `nvidia-fabricmanager-devel-580.65.06-1`.

  In this case, uninstall the package manually before installing the new version. This does not prevent the other driver packages from being upgraded successfully.

Chapter 2. Virtualization

To make use of GPU passthrough with virtual machines running Windows and Linux, the hardware platform must support the following features:

- A CPU with hardware-assisted instruction set virtualization: Intel VT-x or AMD-V.
- Platform support for I/O DMA remapping.
- On Intel platforms, the DMA remapper technology is called Intel VT-d.
- On AMD platforms, it is called AMD IOMMU.

Support for these features varies by processor family, product, and system, and should be verified at the manufacturer's website.

The following hypervisors are supported for virtualization:

Hypervisor	Notes
Citrix XenServer	Version 6.0 and later
VMware vSphere (ESX / ESXi)	Version 5.1 and later.
Red Hat KVM	Red Hat Enterprise Linux 9 with KVM
Microsoft Hyper-V	Windows Server 2019 Hyper-V Generation 2

Data Center products now support one display of up to 2560x1600 resolution.

The following GPUs are supported for device passthrough for virtualization:

GPU Family	Boards Supported
NVIDIA Blackwell	NVIDIA HGX GB300, NVIDIA HGX B300, NVIDIA RTX 6000D, NVIDIA H20BFX, NVIDIA RTX 6000 PRO, NVIDIA HGX GB200 NVL, NVIDIA HGX B200
NVIDIA Grace Hopper	NVIDIA GH200
NVIDIA Hopper	NVIDIA H100, NVIDIA H800
NVIDIA Ada Lovelace	NVIDIA L40, L4, L2, L20
NVIDIA Ampere GPU Architecture	NVIDIA A800, A100, A40, A30, A16, A10, A10G, A2, AX800

GPU Family	Boards Supported
NVIDIA Turing	NVIDIA T4, NVIDIA T4G

Chapter 3. Hardware and Software Support

Support for these features varies by processor family, product, and system, and should be verified at the manufacturer's website.

Coherent Driver-Based Memory Management (CDMM)

The R595 Driver introduces Coherent Driver-Based Memory Management (CDMM) for GB200 platforms. With CDMM, the driver manages GPU memory instead of the OS. CDMM avoids OS onlining of the GPU memory and the exposing of the GPU memory as a NUMA node to the OS. It is recommended that Kubernetes clusters enable CDMM to resolve potential memory over-reporting.

To set up the driver in CDMM mode, run the following commands and then reload the driver:

```
echo options nvidia NVreg_CoherentGPUMemoryMode=driver >
/etc/modprobe.d/nvidia-openrm.conf
```



Note:

1. If there is already a configuration file for the nvidia driver, please merge the options into a single options line.
2. To remove the configuration, undo its addition to the configuration file.
3. To use GDRCopy with CDMM, please use version 2.5.1 or later of GDRCopy.

Supported Operating Systems for NVIDIA Data Center GPUs

The Release 595 driver is supported on the following operating systems:

- The following table summarizes the supported Linux 64-bit distributions. For a complete list of distributions, kernel versions supported, see the CUDA Linux System Requirements documentation.
- All HGX configurations support the distributions listed in the column x86_64, and all Grace configurations support the OS distributions listed in column Grace Arm64.

Distribution	x86_64	Arm64 Server (Generic)	NVIDIA Grace Arm64 Server
Debian 13.x (where x <= 7)	Yes	No	Yes
Debian 12.x (where x <= 15)	Yes	No	Yes
OpenSUSE Leap 16.x (where x <= 1)	Yes	No	No
OpenSUSE Leap 15.x (where y = 7)	Yes	No	No
Fedora 43*	Yes	No	No
Red Hat Enterprise Linux 10.x (where x <= 3)	Yes	Yes	Yes
Red Hat Enterprise Linux 9.y (where y <= 9)	Yes	Yes	Yes
Rocky Linux 10.x (where x <= 3)	Yes	No	No
Rocky Linux 9.y (where y <= 9)	Yes	No	No
Red Hat Enterprise Linux 8.y (where y <= 10)	Yes	Yes	No
Rocky Linux 8.y (where y <= 10)	Yes	No	No
SUSE Linux Enterprise Server 16	Yes	Yes	Yes
SUSE Linux Enterprise Server 15.y (where y = 7)	Yes	Yes	Yes
Ubuntu 26.04.z LTS (where z <= 1)	Yes	Yes	Yes
Ubuntu 24.04.z LTS (where z <= 5)	Yes	Yes	Yes
Ubuntu 22.04.z LTS (where z <= 5)	Yes	Yes	Yes
KylinOS V11 SP3 2403	Yes	Yes	No
Amazon Linux AL2023	Yes	No	Yes
Microsoft Azure Linux 3.0	Yes	No	Yes

Distribution	x86_64	Arm64 Server (Generic)	NVIDIA Grace Arm64 Server
Oracle Linux 8	Yes	No	No
Oracle Linux 9	Yes	No	No

* This is the last release to support this OS.

Supported Operating Systems and CPU Configurations for NVIDIA RTX 6000D

Linux 64-bit distributions:

- Debian 12.15
- Ubuntu 24.04
- Ubuntu 22.04
- SUSE Linux Enterprise Server 16
- RedHat Enterprise Linus 10.3
- RedHat Enterprise Linux 9.9
- RedHat Enterprise Linux 8.10

Supported Operating Systems and CPU Configurations for NVIDIA RTX PRO 4500 Blackwell Server Edition

- Linux 64-bit distributions:
  - Ubuntu 24.04
  - RedHant Enterprise Linux 9.8
  - SUSE Linux Enterprise Server 15.7

Supported Operating Systems and CPU Configurations for NVIDIA H20 BFX

Linux 64-bit distributions:

- Ubuntu 22.04
- SUSE Linux Enterprise Server 15.7

Supported Operating Systems and CPU Configurations for NVIDIA DRIVE P2021

Linux 64-bit distributions:

- Ubuntu 24.04

Supported Operating Systems and CPU Configurations for NVIDIA RTX Pro 6000 Blackwell Server Edition

The Release 595 driver is validated with NVIDIA RTX Pro 6000 Blackwell Server Edition on the following operating systems and CPU configurations:

- Linux 64-bit distributions:
  - Debian 12.15
  - RedHat Enterprise Linux 10.3
  - RedHat Enterprise Linux 9.9
  - Rocky Linux 9.9
  - RedHat Enterprise Linux 8.10
  - OpenSUSE Leap 15.7
  - Fedora 43
  - Ubuntu 24.04
  - Ubuntu 22.04

Supported Virtualization Configurations

The Release 595 driver is validated with NVIDIA HGX A100, HGX A800, H100, and H800 on the following configurations:

- Passthrough (full visibility of GPUs and NVSwitches to guest VMs):
  - 8-GPU configurations with Ubuntu 22.04.5

API Support

This release supports the following APIs:

- NVIDIA® CUDA® 13.x for NVIDIA® Maxwell™, Pascal™, Volta™, Turing™, Hopper™, NVIDIA Ampere architecture, NVIDIA Ada Lovelace architecture, and NVIDIA Blackwell architecture GPUs
- OpenGL® 4.6
- Vulkan® 1.3
- Open Computing Language (OpenCL™ software) 3.0

Note that for using graphics APIs on Windows (such as OpenGL, Vulkan, DirectX 11, and DirectX 12) or any WDDM 2.0+ based functionality on Data Center GPUs, vGPU is required. See the vGPU documentation for more information.

Supported NVIDIA Data Center GPUs

The NVIDIA Data Center GPU driver package is designed for systems that have one or more Data Center GPU products installed. This release of the driver supports CUDA C/C++ applications and libraries that rely on the CUDA C Runtime and/or CUDA Driver API.

Attention: Release 470 was the last driver branch to support Data Center GPUs based on the NVIDIA Kepler architecture. This includes discontinued support for the following compute capabilities:

- sm_30 (NVIDIA Kepler)
- sm_32 (NVIDIA Kepler)
- sm_35 (NVIDIA Kepler)
- sm_37 (NVIDIA Kepler)

For more information on GPU products and compute capability, see https://developer.nvidia.com/cuda-gpus.

NVIDIA Server Platforms	
Product	**Architecture**
NVIDIA GB300 NVL72	GB300 and NVSwitch
NVIDIA HGX B300 8-GPU	B300 and NVSwitch
NVIDIA HGX GB200 NVL	GB200 and NVLink
NVIDIA GB200 NVL4	GB200 and NVLink
NVIDIA HGX B200 8-GPU	B200 and NVSwitch
NVIDIA GH200	GH200 and NVLink
NVIDIA HGX H20-3e 8-GPU	H20 and NVSwitch
NVIDIA HGX H20 8-GPU	H20 and NVSwitch
NVIDIA HGX H200 8-GPU	H200 and NVSwitch
NVIDIA HGX H100 8-GPU	H100 and NVSwitch
NVIDIA HGX H800 8-GPU	H800 and NVSwitch
NVIDIA HGX H100 4-GPU	H100 and NVLink
NVIDIA HGX A800 8-GPU	A800 and NVSwitch
NVIDIA HGX A100 8-GPU	A100 and NVSwitch
NVIDIA HGX A100 4-GPU	A100 and NVLink

Data Center H-Series Products	
Product	**GPU Architecture**
NVIDIA H100 PCIe	NVIDIA Hopper

Data Center H-Series Products	
Product	**GPU Architecture**
NVIDIA H100 NVL	NVIDIA Hopper
NVIDIA H200 NVL	NVIDIA Hopper
NVIDIA H800 PCIe	NVIDIA Hopper
NVIDIA H800 NVL	NVIDIA Hopper

Data Center L-Series Products	
Product	**GPU Architecture**
NVIDIA L2	NVIDIA Ada Lovelace
NVIDIA L20	NVIDIA Ada Lovelace
NVIDIA L40	NVIDIA Ada Lovelace
NVIDIA L40S	NVIDIA Ada Lovelace
NVIDIA L4	NVIDIA Ada Lovelace

RTX-Series / T-Series Products	
Product	**GPU Architecture**
NVIDIA RTX PRO 6000 Blackwell Server Edition	NVIDIA Blackwell
NVIDIA RTX PRO 6000 Blackwell Workstation Edition	NVIDIA Blackwell
NVIDIA RTX PRO 6000 Blackwell Max-Q Workstation Edition	NVIDIA Blackwell
NVIDIA RTX PRO 5000 Blackwell 72GB	NVIDIA Blackwell
NVIDIA RTX PRO 5000 Blackwell	NVIDIA Blackwell
NVIDIA RTX PRO 4500 Blackwell Server Edition	NVIDIA Blackwell
NVIDIA RTX PRO 4500 Blackwell	NVIDIA Blackwell
NVIDIA RTX PRO 4000 Blackwell	NVIDIA Blackwell
NVIDIA RTX PRO 4000 SFF Blackwell	NVIDIA Blackwell
NVIDIA RTX PRO 2000 Blackwell	NVIDIA Blackwell
NVIDIA RTX 6000 Ada Generation	NVIDIA Ada Lovelace
NVIDIA RTX 5880 Ada Generation	NVIDIA Ada Lovelace
NVIDIA RTX 5000 Ada Generation	NVIDIA Ada Lovelace
NVIDIA RTX 4500 Ada Generation	NVIDIA Ada Lovelace

RTX-Series / T-Series Products	
Product	**GPU Architecture**
NVIDIA RTX 4000 Ada Generation	NVIDIA Ada Lovelace
NVIDIA RTX 4000 SFF Ada Generation	NVIDIA Ada Lovelace
NVIDIA RTX 2000 Ada Generation	NVIDIA Ada Lovelace
NVIDIA RTX 2000E Ada Generation	NVIDIA Ada Lovelace
NVIDIA RTX A6000	NVIDIA Ampere architecture
NVIDIA RTX A5500	NVIDIA Ampere architecture
NVIDIA RTX A5000	NVIDIA Ampere architecture
NVIDIA RTX A4500	NVIDIA Ampere architecture
NVIDIA RTX A4000H	NVIDIA Ampere architecture
NVIDIA RTX A4000	NVIDIA Ampere architecture
NVIDIA RTX A2000 12GB	NVIDIA Ampere architecture
NVIDIA RTX A2000	NVIDIA Ampere architecture
NVIDIA RTX A1000	NVIDIA Ampere architecture
NVIDIA RTX A400	NVIDIA Ampere architecture
NVIDIA RTX A800 40GB Active	NVIDIA Ampere architecture
Quadro RTX 8000	NVIDIA Turing
Quadro RTX 6000	NVIDIA Turing
Quadro RTX A6000	NVIDIA Turing
Quadro RTX 5000	NVIDIA Turing
Quadro RTX A5000	NVIDIA Turing
Quadro RTX 4000	NVIDIA Turing
Quadro RTX A4000	NVIDIA Turing
NVIDIA T1000 8GB	NVIDIA Turing
NVIDIA T600	NVIDIA Turing
NVIDIA T400 4GB	NVIDIA Turing
NVIDIA T400	NVIDIA Turing
NVIDIA T400E	NVIDIA Turing

Data Center A-Series Products	
Product	**GPU Architecture**
NVIDIA A2	NVIDIA Ampere architecture
NVIDIA A800, AX800	NVIDIA Ampere architecture

Data Center A-Series Products	
Product	**GPU Architecture**
NVIDIA A100X	NVIDIA Ampere architecture
NVIDIA A100 NVIDIA A100 80 GB PCIe	NVIDIA Ampere architecture
NVIDIA A40	NVIDIA Ampere architecture
NVIDIA A30, A30X	NVIDIA Ampere architecture
NVIDIA A16	NVIDIA Ampere architecture
NVIDIA A10, A10M, A10G	NVIDIA Ampere architecture

Data Center T-Series Products	
Product	**GPU Architecture**
NVIDIA T4, T4G	NVIDIA Turing

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