NVIDIA DGX OS Server

Software Release Notes
# Table of Contents

Chapter 1. Abstract...............................................................................................................1
Chapter 2. DGX OS Server Releases and Versioning.......................................................... 2
Chapter 3. Current NVIDIA DGX OS Server Software......................................................4
Chapter 4. Deprecated NVIDIA DGX OS Server Releases............................................... 6
Chapter 5. Third Party License Notice............................................................................... 12
Chapter 1. Abstract

The NVIDIA® DGX™ servers come with a DGX OS software image. This base operating system on NVIDIA® DGX™ servers allows customers to use their own on-site scheduling and management software to run GPU-accelerated applications within Docker containers provided by NVIDIA as well as within customized Docker containers.
Chapter 2. DGX OS Server Releases and Versioning

This information helps you understand the DGX OS Server release numbering convention and your options to upgrade your DGX OS Server software.

DGX OS Server Releases

DGX OS is a customized Linux distribution that is based on Ubuntu Linux. It includes platform-specific configurations, diagnostic and monitoring tools, and the drivers that are required to provide the stable, tested, and supported OS to run AI, machine learning, and analytics applications on DGX systems.

DGX OS is typically released twice a year and is often aligned with major feature enhancements of the components and new hardware introductions.

Release Versions

The DGX OS release numbering convention is MAJOR.MINOR, and it defines the following types of releases:

- **Major releases** are typically based on Ubuntu releases, which include new kernel versions and new features that are not always backwards compatible.
  
  For example:
  
  - DGX OS 5.x releases are based on Ubuntu 20.04.
  - DGX OS 4.x is based on Ubuntu 18.04.

- **Minor releases** include mostly new NVIDIA features and accumulated bug fixes and security updates.
  
  These releases are incremental and always include all previous software changes.
  
  - In DGX OS 4 and earlier, minor releases were also typically aligned with NVIDIA Graphics Drivers for Linux releases.
  - In DGX OS 5, you now have the option to install newer NVIDIA Graphic Drivers independently of the DGX OS release.
DGX OS Release Mechanisms

This section provides information about the DGX OS release mechanisms that are available to install or upgrade to the latest version of the DGX OS.

The ISO Image

DGX OS is released as an ISO image that includes the necessary packages and an autonomous installer. Updated versions of the ISO image are also released that:

‣ Provide bug fixes and security mitigations.
‣ Improve the installation experience.
‣ Provide hardware configuration support.

You should always use the latest ISO image, except when you need to restore the system to an earlier version.

WARNING: This image allows you to install or reimage a DGX system to restore the system to a default state, but the process erases all of the changes that you applied to the OS.

The Linux Software Repositories

Upgrades to DGX OS are provided through the software repositories. Software repositories are storage locations from which your system retrieves and installs OS updates and applications. The repositories used by DGX OS are hosted by Canonical for the Ubuntu OS and NVIDIA for DGX specific software and other NVIDIA software. Each repository is a collection of software packages that are intended to install additional software and to update the software on DGX systems.

New versions of these packages, which contain bug fixes and security updates, provide an update to DGX OS releases. The repositories are also updated to include hardware enablement, which might add support for a new system or a new hardware component, such as a network card or disk drive. This update does not affect existing hardware configurations.

System upgrades are cumulative, which means that your systems will always receive the latest version of all of the updated software components.

Important: We recommend that you do not update only individual components.

Before you update a system, refer to the DGX OS Software Release Notes for a list of the available updates. For more information on displaying available updates and upgrade instructions, refer to the DGX OS 5 User Guide.
Chapter 3. Current NVIDIA DGX OS Server Software

This section lists the NVIDIA® DGX™ OS Server software images and updates that have been released for the NVIDIA DGX-1, DGX-2, and DGX A100 systems. To determine the version of the DGX OS Server software on your system, enter the following command.

```
$ grep VERSION /etc/dgx-release
```

This will show the version installed on the system from the ISO image (DGX_SWBUILD_VERSION) as well as any subsequent updates performed on the system (DGX_OTA_VERSION). The latest version listed is the currently installed version.

For DGX OS 5, the DGX_OTA_VERSION field indicates the latest ISO version that was released. Consult the release notes to determine which additional upgrades were made prior to the date indicated in the DGX_OTA_DATE field.

Release 5.0 (All DGX systems)

**ATTENTION:** Beginning with DGX OS 5, there are no longer separate DGX OS Server and DGX OS Desktop releases. Instead, one release now includes the software for the DGX server and workstation products. Refer to the DGX OS Release Notes (http://docs.nvidia.com/dgx/dgx-os-release-notes/index.html) for the unified release notes.

Release 4.9 (DGX-1, DGX-2 only)

Repository updates for version 4.9.0 are currently in progress as of 07/27/2021.

- **Highlights**
  - Updated the NVIDIA Release 418 GPU driver to 418.211.00.
  - Updated the NVIDIA Release 450 GPU driver to 450.142.00
  - Improved process for updating the ConnectX card firmware.
    
    If updating from DGX OS 4.8 or later, the firmware for all cards are now updated in parallel instead of one at a time, significantly reducing the time to update all cards.
  
- **Initial release:** 4.9.0
  
  See the following for additional changes, update instructions, and known issues.

Release 4.8 (DGX-1, DGX-2 only)

- Highlights
  - Updated the NVIDIA Release 418 GPU driver to 418.197.02.
  - Updated the NVIDIA Release 450 GPU driver to 450.119.04
- Initial release: 4.8.0

See the following for update instructions, additional information, and known issues.

Release 4.7 (DGX-1, DGX-2 only)

- Highlights
  - Updated the NVIDIA Release 418 GPU driver to 418.181.07.
  - Updated the NVIDIA Release 450 GPU driver to 450.102.04
  - Updated NVIDIA KVM software
- Initial release: 4.7.0

See the following for update instructions, additional information, and known issues.
Chapter 4. Deprecated NVIDIA DGX OS Server Releases

This section lists the NVIDIA® DGX™ OS Server software images and updates that have been deprecated.

Release 4.99 (DGX A100 Only)

- Highlights
  - Supports the NVIDIA DGX A100 server only.
  - Updated NVIDIA GPU driver to Release 450.
- Latest update: 4.99.11

See the following for update instructions, additional information, and known issues.


Release 4.6 (DGX-1, DGX-2 only)

- Highlights
  - Updated the NVIDIA Release 418 GPU driver to 418.165.02.
  - Updated the NVIDIA Release 450 GPU driver to 450.80.02
  - Updated the Mellanox OFED driver to 4.9
- Initial release: 4.6.0

See the following for update instructions, additional information, and known issues.


Release 4.5

Important: Updates to Release 4.5 are no longer available. Attempts to update to Release 4.5 will result in upgrading your DGX Server software to the latest release of DGX OS Server 4.
Deprecated NVIDIA DGX OS Server Releases

- **Highlights**
  - Updated NVIDIA GPU driver to 418.152.00.
  - Added optional repository to install the NVIDIA Release 450 GPU driver
  - Updated to Ubuntu 18.04.4 LTS

- **Initial release:** 4.5.0

See the following for update instructions, additional information, and known issues.


- **Release 4.4**
  - **Important:** Updates to Release 4.4 are no longer available. Attempts to update to Release 4.4 will result in upgrading your DGX Server software to the latest release of DGX OS Server 4.

- **Highlights**
  - Updated NVIDIA GPU driver to 418.126.02.
  - Updated NVSM software to version 20.01.15
  - Added the ability to disable and re-enable CPU mitigations.
  - Added support for PXE boot.
  - Added support for Mellanox CX6 cards on DGX-1 (Tesla V100)

- **Latest patch update:** 4.4.1

- See the following for update instructions, additional information, and known issues.


- **Release 4.3**
  - **Important:** Updates to Release 4.3 are no longer available. Attempts to update to Release 4.3 will result in upgrading your DGX Server software to the latest release of DGX OS Server 4.

- **Highlights**
  - Updated NVIDIA GPU driver to 418.116.00.
  - Updated NVSM software to version 19.08.6
  - Updated DCGM software to version 1.7.2
  - Docker updated to version 19.03.4-ce

- See the following for update instructions, additional information, and known issues.

**Release 4.2**

- **Important:** Updates to Release 4.2 are no longer available. Attempts to update to Release 4.2 will result in upgrading your DGX Server software to the latest release of DGX OS Server 4.

- **Highlights**
  - Updated NVSM software to version 19.08
  - Docker update to version 19.03-ce
  - MLNX_OFED 4.6

- See the following for update instructions, additional information, and known issues.

**Release 4.1**

- **Important:** Updates to Release 4.1 are no longer available. Attempts to update to Release 4.1 will result in upgrading your DGX Server software to the latest release of DGX OS Server 4.

- **Highlights**
  - NVIDIA GPU Driver Release 418
    - Supports CUDA 10.1
  - Latest patch update: 4.1.1

- See the following for update instructions, additional information, and known issues.

**Release 4.0**

- **Important:** Updates to Release 4.0 are no longer available. Attempts to update to Release 4.0 will result in upgrading your DGX Server software to the latest release of DGX OS Server 4.

- **Highlights**
  - First release to support the NVIDIA DGX-2 System
  - Ubuntu 18.04 LTS
  - NVIDIA GPU Driver Release 410
• Supports CUDA 10.0
• Docker CE and the NVIDIA Container Runtime for Docker are pre-installed, and the
docker daemon automatically launched.
• New NVIDIA System Management (NVSM) health monitoring software framework
  Replaces `nvsysinfo` and `nvhealth`.
• See the following for additional information and known issues for the latest version.
  • DGX OS Server v4.0.7 Release Notes [http://docs.nvidia.com/dgx/pdf/DGX-OS-
    server-4.0.7-relnotes-update-guide.pdf]
  • DGX OS Server v4.0.6 Release Notes [http://docs.nvidia.com/dgx/pdf/DGX-OS-
    server-4.0.6-relnotes-update-guide.pdf]
  • DGX OS Server v4.0.5 Release Notes [http://docs.nvidia.com/dgx/pdf/DGX-OS-
    server-4.0.5-relnotes-update-guide.pdf]
  • DGX OS Server v4.0.4 Release Notes [http://docs.nvidia.com/dgx/pdf/DGX-OS-
    server-4.0.4-relnotes-update-guide.pdf]
  • DGX OS Server v4.0.3 Release Notes v03 [http://docs.nvidia.com/dgx/pdf/DGX-OS-
    server-4.0.3-relnotes-update-guide.pdf] (DGX-2 System only)
  • DGX OS Server v4.0.2 Release Notes [http://docs.nvidia.com/dgx/pdf/DGX-OS-
    server-4.0.2-relnotes-update-guide.pdf] (DGX-2 System only)

Release 3.1

• End of Support Notice

  NVIDIA has announced End of Support for DGX OS Server 3, effective September 30, 2019.
  DGX OS Server 3.1.8 is the last DGX OS Server 3 release. For more information, see DGX
  OS Server 3, DGX OS Desktop 3 [requires login to NVIDIA Enterprise Support].
• Highlights
  • Ubuntu 16.04 LTS
    • Initialization daemon changed from Upstart to systemd.
    • Updated network interface naming policy.
      Policy now uses predictable names, rather than the native naming scheme used
      in previous releases. The first and second Ethernet interfaces, enumerated as
      em1 and em2 in previous releases, will now enumerate as enp1s0f0 and enp1s0f1
      respectively.
  • NVIDIA GPU Driver Release 384
    • Supports the NVIDIA Tesla™ V100 GPUs.
    • Supports CUDA 9.0.
    • CUDA drivers and diagnostic packages updated to Release 384.
Mellanox drivers updated to 4.0.
Docker CE and nvidia-docker are pre-installed, and the docker daemon automatically launched.

See the following for additional information, known issues, and update instructions for specific versions.

- **DGX OS Server v3.1.4** (http://docs.nvidia.com/dgx/pdf/DGX-OS-server-3.1.4-relnotes-update-guide_v03.pdf) Release Notes

### Release 2.1

**End of Support Notice**

NVIDIA will discontinue support for DGX OS Server 2.1 effective December 31, 2018. After this date, NVIDIA will no longer provide software updates for this release. You may need to upgrade your DGX-1 systems to a supported release to address issues or security vulnerabilities.

Evaluate your installation to determine update needs and strategy. Systems can be updated now to DGX OS Server 3.1 (which includes Ubuntu 16.04), or updated later to update to a future software release that includes Ubuntu 18.04.

**Highlights**

- **Ubuntu 14.04 LTS**
  Updates installed packages with the latest versions available at the time of update.
- **NVIDIA GPU Driver Release 384**
  - Supports CUDA 9.0
  - CUDA drivers and diagnostic packages updated to Release 384.
  - CUDA Toolkit (if already installed) will get updated to 9.0.176.
- See the following for additional information and update instructions for specific versions.
Release 2.0

- **Highlights**
  - Ubuntu 14.04 LTS
  - NVIDIA GPU Driver Release 375

- **End of Support Notice**

  NVIDIA will discontinue support for DGX OS Server 2.0 effective December 31, 2018. After this date, NVIDIA will no longer provide software updates for this release. You may need to upgrade your DGX-1 systems to a supported release to address issues or security vulnerabilities.

  Evaluate your installation to determine update needs and strategy. Systems can be updated now to DGX OS Server 3.1 (which includes Ubuntu 16.04), or updated later to update to a future software release that includes Ubuntu 18.04.

- **See the following for additional information and update instructions for specific versions.**
  - DGX OS Server v2.0.6 [Release Notes](http://docs.nvidia.com/dgx/pdf/DGX-OS-server-2.0.6-relnotes-upgrade-guide.pdf)
  - DGX OS Server v2.0.4 [Release Notes](http://docs.nvidia.com/dgx/pdf/DGX-OS-server-2.0.4-relnotes-upgrade-guide.pdf)
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