DGX OS Desktop Software

Release Notes
Table of Contents

Chapter 1. DGX OS Desktop Releases and Versioning ............................................................. 1
Chapter 2. DGX OS Desktop 5 Releases .............................................................................. 3
Chapter 3. DGX OS Desktop 4 Releases ............................................................................. 4

3.1. Configuration File Conflicts in Upgrades to DGX OS Desktop 4 Releases ................. 4
3.2. Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release ............................. 4
3.4. DGX OS Desktop 4 Release History .............................................................................. 6
    3.4.1. DGX OS Desktop 4 Updates .................................................................................... 6
    3.4.2. DGX OS Desktop 4 Resolved Issues ...................................................................... 14
    3.4.3. DGX OS Desktop 4 Obsolete Packages .................................................................. 14
3.5. DGX OS Desktop 4.11 Releases ..................................................................................... 16
    3.5.1. DGX OS Desktop Software Release 4.11.0 ............................................................ 16
3.6. DGX OS Desktop 4.10 Releases ..................................................................................... 18
    3.6.1. DGX OS Desktop Software Release 4.10.0 ............................................................ 18
3.7. DGX OS Desktop 4.9 Releases ....................................................................................... 22
    3.7.1. DGX OS Desktop Software Release 4.9.0 ............................................................. 22
3.8. DGX OS Desktop 4.8 Releases ....................................................................................... 25
    3.8.1. DGX OS Desktop Software Release 4.8.0 ............................................................. 25
3.9. DGX OS Desktop 4.7 Releases ....................................................................................... 28
    3.9.1. DGX OS Desktop Software Release 4.7.0 ............................................................. 28
3.10. DGX OS Desktop 4.6 Releases ..................................................................................... 31
    3.10.1. DGX OS Desktop Software Release 4.6.0 ........................................................... 31
3.11. DGX OS Desktop 4.5 Releases ..................................................................................... 34
    3.11.1. DGX OS Desktop Software Release 4.5.0 ........................................................... 34
3.12. DGX OS Desktop 4.4 Releases ..................................................................................... 37
    3.12.1. DGX OS Desktop Software Release 4.4.0 ........................................................... 37
3.13. DGX OS Desktop 4.3 Releases ..................................................................................... 40
    3.13.1. DGX OS Desktop Software Release 4.3.0 ........................................................... 40
3.14. DGX OS Desktop 4.2 Releases ..................................................................................... 42
    3.14.1. DGX OS Desktop Software Release 4.2.0 ........................................................... 42
3.15. DGX OS Desktop 4.1 Releases ..................................................................................... 44
    3.15.1. DGX OS Desktop Software Patch Update 4.1.1 ................................................... 44
    3.15.2. DGX OS Desktop Software Release 4.1.0 ........................................................... 47
3.16. DGX OS Desktop 4.0 Releases ..................................................................................... 49
    3.16.1. DGX OS Desktop Software Release 4.0.7 ........................................................... 49
    3.16.2. DGX OS Desktop Software Release 4.0.6 ........................................................... 51
3.16.3. DGX OS Desktop Software Release 4.0.5 ................................................................. 53
3.16.4. DGX OS Desktop Software Release 4.0.4 ................................................................. 56

Chapter 4. DGX OS Desktop 3 Releases ............................................................................ 59
4.1. DGX OS Desktop 3 Release History ............................................................................. 59
4.1.1. DGX OS Desktop 3 Updates .................................................................................... 59
4.1.2. DGX OS Desktop 3 Resolved Issues ....................................................................... 61
4.1.3. DGX OS Desktop 3 Obsolete Packages .................................................................... 61
4.2. DGX OS Desktop Software Release 3.1.8 ................................................................. 62
4.3. DGX OS Desktop Software Release 3.1.7 ................................................................. 65
4.4. DGX OS Desktop Software Release 3.1.6 ................................................................. 67
4.5. DGX OS Desktop Software Release 3.1.4 ................................................................. 69
4.6. DGX OS Desktop Software Release 3.1.3 ................................................................. 71
4.7. DGX OS Desktop Software Release 3.1.2 ................................................................. 72
4.8. DGX OS Desktop Software Release 3.1.1 ................................................................. 74

Chapter 5. Known Issues .................................................................................................. 75
5.1. Applications that call the cuCTXCreate API Might Experience a Performance Drop .... 75
5.2. NVSM Platform Displays as Unsupported .................................................................. 75
5.3. Missing symbolic link to /usr/local/cuda .................................................................. 76
5.4. Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales ... 77
5.5. Issues with DGX OS Desktop Core Release Upgrade .................................................. 77
5.6. Old SSL Version Still Used After DGX OS Desktop Release Upgrade ......................... 78
5.7. NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade ... 79
5.8. Display Wake-Up Failure with Three Displays Connected ......................................... 80
5.9. Vino VNC Server Start-Up Issue with Automatic Login ............................................ 80
5.10. Incorrect Failed to finalize file systems Error After DGX OS Desktop Installation ...... 81
5.11. Intermittent Failures To Update the dgxstation-grub Package ................................... 82
5.12. Failure to Enable Networking from the Recovery Menu ......................................... 82
5.13. Software Image Installation Failures Caused by File Copy Errors ......................... 83

Chapter 6. Resolved Issues ............................................................................................. 85
6.2. Reduced UDP Networking Performance After Update to the Linux Kernel ............ 86
6.3. Incorrect Serial Number in nvhealth Output ............................................................ 86
6.4. Ethernet Connection Failures when the DGX Station Is Booted ............................ 87
6.5. Standby and Resume Issues with CUDA Applications ............................................ 88
Chapter 1. DGX OS Desktop Releases and Versioning

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

**DGX OS Desktop 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 released twice a year, typically around February and August, for two years after the first release. Updates are provided between releases and thereafter for the entire support duration.

**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. You cannot select which upgrades to make or limit upgrades to the non-latest DGX OS 5.x release.

**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 2. DGX OS Desktop 5 Releases

**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 Software Release Notes for the unified release notes.
Chapter 3. DGX OS Desktop 4 Releases

3.1. Configuration File Conflicts in Upgrades to DGX OS Desktop 4 Releases

During an upgrade to a DGX OS Desktop 4 release from an earlier release, you are prompted to resolve conflicts in configuration files. When prompted, evaluate the changes before accepting the maintainer’s version, keeping the local version, or manually resolving the difference.

Conflicts in /etc/apt/sources.list.d/dgxstation.list arise because the upgrade process edits the file to specify the bionic repositories for future updates. To avoid losing any customizations that users might have made to this file, keep the local version.

Conflicts in the following configuration files are the result of customizations to the Ubuntu Desktop OS made for DGX OS Desktop:

- /etc/grub.d/10_linux. You can accept the package maintainer’s version because the customizations are no longer required.
- /etc/ssh/sshd_config. Keep the local version to preserve the customizations, which are still required.

3.2. Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release

Perform this task to upgrade to DGX OS Desktop release 4.11.0 from a DGX OS Desktop 4.0 release, for example, 4.0.4, 4.0.5, or 4.0.6. DGX OS Desktop Release 4.11.0 contains NVIDIA Graphics Drivers and NVIDIA CUDA Toolkit software from later release branches than the branches for DGX OS Desktop 4.0 releases. The upgrade process updates your package sources to obtain future updates from repositories for the new release.

Note: For information about upgrading from other releases, see the following topics:

- Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide
Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide

Ensure that the following prerequisites are met:

- You are logged in to your Ubuntu desktop on the DGX Station as an administrator user.
- Your DGX Station is running a DGX OS Desktop 4.0 release, for example, 4.0.4, 4.0.5, or 4.0.6.

1. Download information from all configured sources about the latest versions of the packages.
   
   ```
   $ sudo apt update
   ```

2. Install the `dgxstation-bionic-r418+cuda10.1-repo` package.
   
   ```
   $ sudo apt install -y dgxstation-bionic-r418+cuda10.1-repo
   ```
   This step installs the R418 repository.

3. Optional: To move to the R450 package, after the R418 repository is installed, issue the following command:
   
   ```
   $ sudo apt install -y dgxstation-bionic-r450+cuda11.0-repo
   ```

4. After installing the `dgxstation-bionic-r418+cuda10.1-repo` package, download information from all configured sources about the latest versions of the packages again.
   
   ```
   $ sudo apt update
   ```

5. Review the available updates by simulating an upgrade of the packages.
   
   ```
   $ sudo apt -s full-upgrade
   ```

6. Install all available updates for your current DGX OS Desktop release.
   
   ```
   $ sudo apt -y full-upgrade
   ```

    **Note:** Even if the R450 repository is enabled, CUDA 11.0 is not automatically installed. To manually install CUDA 11.0, issue the following command:
   
   ```
   $ sudo apt install -y cuda-toolkit-11-0
   ```

7. When the update is complete, restart your DGX Station.

   Any update to the NVIDIA Graphics Drivers for Linux requires a restart.

   If you update the NVIDIA Graphics Drivers for Linux without restarting the DGX Station, running the `nvidia-smi` command displays an error message.
   
   ```
   $ nvidia-smi
   Failed to initialize NVML: Driver/library version mismatch
   ```

8. Confirm the NVIDIA Graphics Drivers for Linux and NVIDIA CUDA Toolkit software versions.
   
   ```
   $ nvidia-smi
   Fri Mar 13 18:03:56 2020
   +------------------------------------------------------------------------+
   | NVIDIA-SMI 418.126.02 Driver Version: 418.126.02 CUDA Version: 10.1 |
   |------------------------------------------------------------------------+
   ...
3.3. Changes to Distribution Methods for DGX OS Desktop Software Updates

To deliver security updates and critical bug fixes quickly, NVIDIA is changing how DGX OS Desktop software updates are distributed.

Starting with DGX OS Desktop 4.1.1, NVIDIA is introducing patch updates to DGX OS Desktop software in addition to the existing full DGX OS Desktop releases.

Patch updates are package upgrades to individual components in DGX OS Desktop software that are delivered through the DGX OS Desktop update repository. You must opt in to receive patch updates. If you don’t opt in to patch updates, you will get these updates in the next full release, which aggregates the changes in all patch updates since the previous full release. Therefore, you can choose between always having the latest updates or reducing the frequency of software updates to your system by updating only when NVIDIA issues a full DGX OS Desktop release.

Previously, all DGX OS Desktop software updates were full releases and were available to all users without the need to opt in.

For more information about full DGX OS Desktop releases and patch updates, and how they are identified, see DGX OS Desktop Releases and Versioning.

3.4. DGX OS Desktop 4 Release History

3.4.1. DGX OS Desktop 4 Updates

Updates in Release 4.11.0

Note: Repository updates for version 4.11.0 are currently in progress as of 2/17/22.

- New software releases:
  - Linux Kernel: 4.15.0-156-generic [or later]
  - NVIDIA Graphics Drivers for Linux: 450.172.01
  - cuDNN Library: 8.3.2
  - NCCL: 2.11.4
  - NVSM: 20.09.35
  - NVIDIA Container Runtime for Docker: 3.7.0-1
  - Docker CE: 20.10.11

Note:
When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

**Updates in Release 4.10.0**

- New software releases:
  - **Linux Kernel**:
    - R418: 4.15.0-156-generic (or later)
    - R450: 4.15.0-156-generic (or later)
  - **NVIDIA Graphics Drivers for Linux**:
    - R418: 418.226.00
    - R450: 450.156.00
  - **cuDNN Library**:
    - R418: 8.0.5
    - R450: 8.2.2
  - **NCCL**:
    - R418: 2.8.3
    - R450: 2.11.4
  - **NVSM**:
    - R418: 20.03.06
    - R450: 20.09.34
  - **NVIDIA Container Runtime for Docker**: 3.5.0-1
  - **Docker CE**: 20.10.8

**Note:**

When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.
Updates in Release 4.9.0

- New software releases:
  - Linux Kernel:
    - R418: 4.15.0-151
    - R450: 4.15.0-151
  - NVIDIA Graphics Drivers for Linux:
    - R418: 418.211.00
    - R450: 450.142.00
  - cuDNN Library:
    - R418: 8.0.5
    - R450: 8.2.1
  - NCCL:
    - R418: 2.8.3
    - R450: 2.9.9
  - NVSM:
    - R418: 20.03.06
    - R450: 20.09.33
  - NVIDIA Container Runtime for Docker: 3.3.0
  - Docker CE: 19.03.15

Note:

When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

Updates in Release 4.8.0

- New software releases:
  - Linux Kernel:
    - R418: 4.15.0-137
    - R450: 4.15.0-137
NVIDIA Graphics Drivers for Linux:
- R418: 418.197.02
- R450: 450.119.03

cuDNN Library:
- R418: 8.0.5
- R450: 8.0.5

NCCL:
- R418: 2.8.3
- R450: 2.9.9

NVSM:
- R418: 20.03.06
- R450: 20.09.21

NVIDIA Container Runtime for Docker: 3.3.0
Docker CE: 19.03.15

Note:
When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

Updates in Release 4.7.0

New software releases:

- Linux Kernel:
  - R418: 4.15.0-124
  - R450: 4.15.0-124

- NVIDIA Graphics Drivers for Linux:
  - R418: 418.181.07
  - R450: 450.102.04

- cuDNN Library:
  - R418: 8.0.5
  - R450: 8.0.5
NCCL:
- R418: 2.8.3
- R450: 2.8.3

NVSM:
- R418: 20.03.6
- R450: 20.05.19

NVIDIA Container Runtime for Docker 3.3.0
Docker CE 19.03.14

Note:
When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

Updates in Release 4.6.0

- New software releases:
  - Linux Kernel:
    - R418: 4.15.0-112-generic
    - R450: 4.15.0-112-generic
  - NVIDIA Graphics Drivers for Linux:
    - R418: 418.165.02
    - R450: 450.80.02
  - cuDNN Library:
    - R418: 8.0.2.39+CUDA 11.0
    - R450: 8.0.4.8+CUDA 11.0
  - NCCL:
    - R418: 2.7.8-1+CUDA 10.1
    - R450: 2.7.8-1+CUDA 11.0
  - NVSM:
    - R418: 20.03.6
    - R450: 20.05.19
NVIDIA Container Runtime for Docker 3.3.0-1
Docker CE 19.03.12

Note:
When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

Updates in Release 4.5.0

New software releases:

- Linux Kernel:
  - R418: 4.15.0-106-generic
  - R450: 4.15.0-106-generic
- NVIDIA Graphics Drivers for Linux:
  - R418: 418.152.00
  - R450: 450.51.05
- cuDNN Library:
  - R418: 7.6.5
  - R450: 8.0.0
- NCCL:
  - R418: 2.6.4
  - R450: 2.7.3
- NVSM:
  - R418: 20.03.6
  - R450: 20.05.09
- NVIDIA Container Runtime for Docker 3.1.4
- Docker CE 19.03.8
- Support for the NVSM commands `nvsm show health` and `nvsm dump health` on the DGX Station, which replaces the `nvhealth` and `nvsysinfo` commands
- Support for disabling and restoring CPU mitigations
Updates in Release 4.4.0

- New software releases:
  - Linux Kernel 4.15.0-76-generic
  - NVIDIA Graphics Drivers for Linux 418.126.02
  - cuDNN Library 7.6.5
  - NCCL 2.4.7
  - NVSM 20.01.15
  - NVIDIA Container Runtime for Docker 3.1.4
  - Docker CE 19.03.5
- Support for the NVSM commands `nvsm show health` and `nvsm dump health` on the DGX Station, which replaces the `nvhealth` and `nvsysinfo` commands
- Support for disabling and restoring CPU mitigations

Updates in Release 4.3.0

- NVIDIA Graphics Drivers for Linux 418.116.00
- Docker CE 19.03.4

Updates in Release 4.2.0

This DGX OS Desktop release introduces new software releases since patch update 4.1.1 and accumulates the new software releases previously distributed through patch update 4.1.1.

- New software releases since patch update 4.1.1:
  - Ubuntu Desktop Operating System 18.04.3
  - NVIDIA Graphics Drivers for Linux 418.87.01
  - NVIDIA Container Runtime for Docker 3.1.1
  - Docker CE 19.03
- New software releases previously distributed through patch update 4.1.1:
  - NVIDIA CUDA Toolkit 10.1.243
  - NVIDIA cuDNN Library 7.6.2
  - NCCL 2.4.7

Updates in Patch Update 4.1.1

- New software releases:
  - NVIDIA Graphics Drivers for Linux 418.87.00
  - NVIDIA CUDA Toolkit 10.1.243
  - NVIDIA cuDNN Library 7.6.2
Updates in Release 4.1.0

- New software releases:
  - NVIDIA CUDA Toolkit 10.1.168
  - NVIDIA Graphics Drivers for Linux 418.67
  - NVIDIA cuDNN Library 7.5.0
  - Docker CE 18.09.8

Updates in Release 4.0.7

- New software releases: NVIDIA Graphics Drivers for Linux 410.129

Updates in Release 4.0.6

- New software releases:
  - NVIDIA cuDNN Library 7.5.0
  - Docker CE 18.09.4

Updates in Release 4.0.5

- New software releases:
  - NVIDIA Graphics Drivers for Linux 410.104
    The new release of the NVIDIA Graphics Drivers for Linux includes security updates. For more information, see:
    - Restricting Access to GPU Performance Counters in the README file for the NVIDIA Graphics Drivers for Linux
  - NVIDIA cuDNN Library 7.4.2
  - NCCL 2.4.2
  - Docker CE 18.09.2

Updates in Release 4.0.4

- New software releases:
Ubuntu Desktop Operating System 18.04 LTS
In Ubuntu 18.04, the GNOME desktop environment replaces the Unity desktop environment. For help getting started with the GNOME desktop environment, see Introduction to GNOME (https://help.ubuntu.com/18.04/ubuntu-help/shell-introduction.html) in the Ubuntu 18.04 Official Documentation.

NVIDIA Graphics Drivers for Linux 410.79
NVIDIA CUDA Toolkit 10.0.130
NVIDIA cuDNN Library 7.3.1
NCCL 2.3.5-4
Docker CE 18.06.1
Introduction of NVIDIA Container Runtime for Docker to replace Docker Engine Utility for NVIDIA GPUs

3.4.2. DGX OS Desktop 4 Resolved Issues

Issues Resolved in Release 4.4.0
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Incorrect Serial Number in nvhealth Output
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu

3.4.3. DGX OS Desktop 4 Obsolete Packages

Packages Made Obsolete in Release 4.11.0
None.

Packages Made Obsolete in Release 4.10.0
None.

Packages Made Obsolete in Release 4.9.0
None.

Packages Made Obsolete in Release 4.8.0
None.

Packages Made Obsolete in Release 4.7.0
None.
Packages Made Obsolete in Release 4.6.0
None.

Packages Made Obsolete in Release 4.5.0
None.

Packages Made Obsolete in Release 4.4.0
- nvhealth
- nvsyinfo

Packages Made Obsolete in Release 4.3.0
None.

Packages Made Obsolete in Release 4.2.0
None.

Packages Made Obsolete in Patch Update 4.1.1
libnvidia-diagnostic-418

Packages Made Obsolete in Release 4.1.0
None.

Packages Made Obsolete in Release 4.0.7
None.

Packages Made Obsolete in Release 4.0.6
None.

Packages Made Obsolete in Release 4.0.5
None.

Packages Made Obsolete in Release 4.0.4
nvidia-docker

Note: As a result of the update to a new release of the Ubuntu Desktop Operating System, many packages from Canonical are also made obsolete in this release of DGX OS Desktop.
3.5. **DGX OS Desktop 4.11 Releases**

3.5.1. **DGX OS Desktop Software Release 4.11.0**

Software Releases in DGX OS Desktop Release 4.11.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-156-generic [or later]</td>
<td>See also note [1].</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>450.172.01</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>11.0.3</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>8.3.2</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.11.4</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA System Management [NVSM]</td>
<td>20.09.35</td>
<td><a href="https://docs.nvidia.com/datacenter/nvsm/latest/">NVIDIA System Management Documentation</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td><a href="http://www.opengl.org/documentation/">OpenGL API Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.7.0-1</td>
<td><a href="https://docs.nvidia.com/deeplearning/dgx/">NVIDIA Deep Learning Frameworks Documentation</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>20.10.11</td>
<td></td>
</tr>
</tbody>
</table>
DGX OS Desktop 4 Releases

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>See also note [3].</td>
</tr>
</tbody>
</table>

Note:

1. DGX OS Desktop 4.11.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.11.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

Updates in Release 4.11.0

Note: Repository updates for version 4.11.0 are currently in progress as of 2/17/22.

- New software releases:
  - Linux Kernel: 4.15.0-156-generic (or later)
  - NVIDIA Graphics Drivers for Linux: 450.172.01
  - cuDNN Library: 8.3.2
  - NCCL: 2.11.4
  - NVSM: 20.09.35
  - NVIDIA Container Runtime for Docker: 3.7.0-1
  - Docker CE: 20.10.11

Note:

When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00 user version 450.51.06
```
This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

Distribution Methods

- Online upgrade
- ISO image file

Supported Upgrade Paths

- 4.1.0 through 4.1.1 to 4.11.0. For instructions, refer to Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide.
- 4.0.4 through 4.11.0. For instructions, see Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release.
- 3.1.1 through 3.1.8 to 4.11.0. For instructions, see Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide.

Packages Made Obsolete in Release 4.11.0

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- Vino VNC Server Start-Up Issue with Automatic Login
- Intermittent Failures To Update the dgxstation-grub Package
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.6. DGX OS Desktop 4.10 Releases

3.6.1. DGX OS Desktop Software Release 4.10.0

Software Releases in DGX OS Desktop Release 4.10.0

The following table shows the software releases that are installed on the DGX Station after you install this release.
<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-156-generic [or later]</td>
<td>4.15.0-156-generic [or later]</td>
<td></td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.226.00</td>
<td>450.156.00</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1 Update 2</td>
<td>11.0.3</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>8.0.5</td>
<td>8.2.2</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library [NCCL]</td>
<td>2.8.3</td>
<td>2.11.4</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA System Management [NVSM]</td>
<td>20.03.6</td>
<td>20.09.34</td>
<td>NVIDIA System Management Documentation [<a href="https://docs.nvidia.com/datacenter/nvsm/latest/">https://docs.nvidia.com/datacenter/nvsm/latest/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.5.0-1</td>
<td>3.5.0-1</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>]</td>
</tr>
<tr>
<td>Docker CE</td>
<td>20.10.8</td>
<td>20.10.8</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. DGX OS Desktop 4.10.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.10.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

Updates in Release 4.10.0

- New software releases:
  - Linux Kernel:
    - R418: 4.15.0-156-generic (or later)
    - R450: 4.15.0-156-generic (or later)
  - NVIDIA Graphics Drivers for Linux:
    - R418: 418.226.00
    - R450: 450.156.00
  - cuDNN Library:
    - R418: 8.0.5
    - R450: 8.2.2
  - NCCL:
    - R418: 2.8.3
    - R450: 2.11.4
  - NVSM:
    - R418: 20.03.06
    - R450: 20.09.34
  - NVIDIA Container Runtime for Docker: 3.5.0-1
  - Docker CE: 20.10.8

Note:
When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
          user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

Distribution Methods

- Online upgrade
- ISO image file

Supported Upgrade Paths

- 4.1.0 through 4.1.1. For instructions, refer to Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide.
- 4.0.4 through 4.11.0. For instructions, see Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release.
- 3.1.1 through 3.1.8 to 4.10.0. For instructions, see Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide.

Packages Made Obsolete in Release 4.10.0

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- Vino VNC Server Start-Up Issue with Automatic Login
- Intermittent Failures To Update the dgxstation-grub Package
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
### 3.7. DGX OS Desktop 4.9 Releases

#### 3.7.1. DGX OS Desktop Software Release 4.9.0

#### Software Releases in DGX OS Desktop Release 4.9.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ubuntu Desktop Operating System</td>
<td>18.04</td>
<td>18.04</td>
<td>See also note [1].</td>
</tr>
<tr>
<td>Linux kernel</td>
<td>4.15.0-151</td>
<td>4.15.0-151</td>
<td>See also note [1].</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.211.00</td>
<td>450.142.00</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1 Update 2</td>
<td>11.0.3</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
</tbody>
</table>
| NVIDIA CUDA Deep Neural Network (cuDNN) Library| 8.0.5             | 8.2.1             | NVIDIA Deep Learning SDK Documentation [https://docs.nvidia.com/deeplearning/sdk/]
| NVIDIA Collective Communication Library (NCCL)| 2.8.3             | 2.9.9             | NVIDIA Deep Learning SDK Documentation [https://docs.nvidia.com/deeplearning/sdk/]
| NVIDIA System Management (NVSM)               | 20.03.6           | 20.09.33          | NVIDIA System Management Documentation [https://docs.nvidia.com/datacenter/nvsm/latest/]
| OpenGL                                         | 4.6               | 4.6               | OpenGL API Documentation Overview [https://www.opengl.org/documentation/] |
DGX OS Desktop 4 Releases

### Updates in Release 4.9.0

- **New software releases:**
  - **Linux Kernel:**
    - R418: 4.15.0-151
    - R450: 4.15.0-151
  - **NVIDIA Graphics Drivers for Linux:**
    - R418: 418.211.00
    - R450: 450.142.00
  - **cuDNN Library:**
    - R418: 8.0.5
    - R450: 8.2.1
  - **NCCL:**

### Additional Information

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.3.0</td>
<td>3.3.0</td>
<td>NVIDIA Deep Learning Frameworks Documentation <a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>19.03.15</td>
<td>19.03.15</td>
<td>See note [3].</td>
</tr>
</tbody>
</table>

**Note:**

1. DGX OS Desktop 4.9.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.9.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```
DGX OS Desktop 4 Releases

- R418: 2.8.3
- R450: 2.9.9
- NVSM:
  - R418: 20.03.06
  - R450: 20.09.33
- NVIDIA Container Runtime for Docker: 3.3.0
- Docker CE: 19.03.15

**Note:**

When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00 user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

**Distribution Methods**

- Online upgrade
- ISO image file

**Supported Upgrade Paths**

- 4.1.0 through 4.1.1 to 4.9.0. For instructions, refer to [Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide](#).
- 4.0.4 through 4.11.0. For instructions, see [Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release](#).
- 3.1.1 through 3.1.8 to 4.9.0. For instructions, see [Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide](#).

**Packages Made Obsolete in Release 4.9.0**

None.

**Known Issues**

- Missing symbolic link to `/usr/local/cuda`
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
3.8. DGX OS Desktop 4.8 Releases

3.8.1. DGX OS Desktop Software Release 4.8.0

Software Releases in DGX OS Desktop Release 4.8.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-137</td>
<td>4.15.0-137</td>
<td>See also note [1].</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.197.02</td>
<td>450.119.03</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1 Update 2</td>
<td>11.0.3</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>8.0.5</td>
<td>8.0.5</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.8.3</td>
<td>2.9.9</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA System Management (NVSM)</td>
<td>20.03.06</td>
<td>20.09.21</td>
<td><a href="https://">NVIDIA System Management Documentation</a></td>
</tr>
</tbody>
</table>
DGX OS Desktop 4 Releases

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview (<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>)</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.3.0</td>
<td>3.3.0</td>
<td>NVIDIA Deep Learning Frameworks Documentation (<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>)</td>
</tr>
<tr>
<td>Docker CE</td>
<td>19.03.15</td>
<td>19.03.15</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. DGX OS Desktop 4.8.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.8.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

**Updates in Release 4.8.0**

- New software releases:
  - Linux Kernel:
    - R418: 4.15.0-137
    - R450: 4.15.0-137
  - NVIDIA Graphics Drivers for Linux:
    - R418: 418.197.02
DGX OS Desktop 4 Releases

- R450: 450.119.03
- cudNN Library:
  - R418: 8.0.5
  - R450: 8.0.5
- NCCL:
  - R418: 2.8.3
  - R450: 2.9.9
- NVSM:
  - R418: 20.03.06
  - R450: 20.09.21
- NVIDIA Container Runtime for Docker: 3.3.0
- Docker CE: 19.03.15

**Note:**
When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

**Distribution Methods**
- Online upgrade
- ISO image file

**Supported Upgrade Paths**
- 4.1.0 through 4.1.1 to 4.8.0. For instructions, refer to Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide.
- 4.0.4 through 4.11.0. For instructions, see Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release.
- 3.1.1 through 3.1.8 to 4.8.0. For instructions, see Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide.

**Packages Made Obsolete in Release 4.8.0**
None.
Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- Vino VNC Server Start-Up Issue with Automatic Login
- Intermittent Failures To Update the dgxstation-grub Package
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.9. DGX OS Desktop 4.7 Releases

3.9.1. DGX OS Desktop Software Release 4.7.0

Software Releases in DGX OS Desktop Release 4.7.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See also note [1].</td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>Linux kernel</td>
<td>4.15.0-124</td>
<td>4.15.0-124</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See also note [1].</td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.181.07</td>
<td>450.102.04</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1 Update 2</td>
<td>11.0.3</td>
<td>CUDA Toolkit Documentation <a href="https://docs.nvidia.com/cuda/">2</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>8.0.5</td>
<td>8.0.5</td>
<td>NVIDIA Deep Learning SDK Documentation <a href="https://docs.nvidia.com/deeplearning/sdk/">3</a></td>
</tr>
</tbody>
</table>
# DGX OS Desktop 4 Releases

## Software

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.8.3</td>
<td>2.8.3</td>
<td>NVIDIA Deep Learning SDK Documentation (<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>)</td>
</tr>
<tr>
<td>NVIDIA System Management (NVSM)</td>
<td>20.03.06</td>
<td>20.05.19</td>
<td>NVIDIA System Management Documentation (<a href="https://docs.nvidia.com/datacenter/nvsm/latest/">https://docs.nvidia.com/datacenter/nvsm/latest/</a>)</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview (<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>)</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.3.0</td>
<td>3.3.0</td>
<td>NVIDIA Deep Learning Frameworks Documentation (<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>)</td>
</tr>
<tr>
<td>Docker CE</td>
<td>19.03.14</td>
<td>19.03.14</td>
<td>See also note [3].</td>
</tr>
</tbody>
</table>

### Note:

1. DGX OS Desktop 4.7.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.7.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in [Upgrading to the NVIDIA Container Runtime for Docker](#).

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```bash
dpkg -l docker-ce
```

## Updates in Release 4.7.0

- New software releases:
- **Linux Kernel:**
  - R418: 4.15.0-124
  - R450: 4.15.0-124

- **NVIDIA Graphics Drivers for Linux:**
  - R418: 418.181.07
  - R450: 450.102.04

- **cuDNN Library:**
  - R418: 8.0.5
  - R450: 8.0.5

- **NCCL:**
  - R418: 2.8.3
  - R450: 2.8.3

- **NVSM:**
  - R418: 20.03.6
  - R450: 20.05.19

- **NVIDIA Container Runtime for Docker 3.3.0**
- **Docker CE** 19.03.14

---

**Note:**

When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00
  user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.

---

**Distribution Methods**

- Online upgrade
- ISO image file

**Supported Upgrade Paths**

- 4.1.0 through 4.1.1 to 4.7.0. For instructions, refer to [Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide](#).
4.0.4 through 4.11.0. For instructions, see Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release.

3.1.1 through 3.1.8 to 4.7.0. For instructions, see Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide.

Packages Made Obsolete in Release 4.7.0
None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- Vino VNC Server Start-Up Issue with Automatic Login
- Intermittent Failures To Update the dgxstation-grub Package
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.10. DGX OS Desktop 4.6 Releases

3.10.1. DGX OS Desktop Software Release 4.6.0

Software Releases in DGX OS Desktop Release 4.6.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See also note [1].</td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>Linux kernel</td>
<td>4.15.0-112-generic</td>
<td>4.15.0-112-generic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See also note [1].</td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>Release with R418</td>
<td>Release with R450</td>
<td>Additional Information</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.165.02</td>
<td>450.80.02</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1</td>
<td>11.0</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>8.0.2.39+CUDA 10.0</td>
<td>8.0.4.8+CUDA 11.0</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.7.8-1+CUDA 10.1</td>
<td>2.7.8-1+CUDA 11.0</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA System Management (NVSM)</td>
<td>20.03.06</td>
<td>20.05.19</td>
<td>NVIDIA System Management Documentation [<a href="https://docs.nvidia.com/datacenter/nvsm/latest/">https://docs.nvidia.com/datacenter/nvsm/latest/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.3.0-1</td>
<td>3.3.0-1</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
</tbody>
</table>
| Docker CE                                          | 19.03.12          | 19.03.12          | NVIDIA Deep Learning Frameworks Documentation [https://docs.nvidia.com/deeplearning/sdk/]

**Note:**

1. DGX OS Desktop 4.6.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.6.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX
Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

### Updates in Release 4.6.0

- **New software releases:**
  - **Linux Kernel:**
    - R418: `4.15.0-112-generic`
    - R450: `4.15.0-112-generic`
  - **NVIDIA Graphics Drivers for Linux:**
    - R418: `418.165.02`
    - R450: `450.80.02`
  - **cuDNN Library:**
    - R418: `8.0.2.39+CUDA 11.0`
    - R450: `8.0.4.8+CUDA 11.0`
  - **NCCL:**
    - R418: `2.7.8-1+CUDA 10.1`
    - R450: `2.7.8-1+CUDA 11.0`
  - **NVSM:**
    - R418: 20.03.6
    - R450: 20.05.19
  - **NVIDIA Container Runtime for Docker 3.3.0-1**
  - **Docker CE 19.03.12**

### Note:

When starting the DCGM service, a version mismatch error message similar to the following will appear:

```
[78075.772392] nvidia-nvswitch: Version mismatch, kernel version 450.80.00 user version 450.51.06
```

This occurs with GPU driver versions later than 450.51.06. The version check occurs on all DGX systems, but applies only to NVSwitch systems, so the message can be ignored on the DGX Station/DGX-1 system.
Distribution Methods

- Online upgrade
- ISO image file

Supported Upgrade Paths

- 4.1.0 through 4.1.1 to 4.6.0. For instructions, refer to Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide.
- 4.0.4 through 4.11.0. For instructions, see Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release.
- 3.1.1 through 3.1.8 to 4.6.0. For instructions, see Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide.

Packages Made Obsolete in Release 4.6.0

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- Vino VNC Server Start-Up Issue with Automatic Login
- Intermittent Failures To Update the dgxstation-grub Package
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.11. DGX OS Desktop 4.5 Releases

3.11.1. DGX OS Desktop Software Release 4.5.0

Software Releases in DGX OS Desktop Release 4.5.0

The following table shows the software releases that are installed on the DGX Station after you install this release.
## DGX OS Desktop Software

<table>
<thead>
<tr>
<th>Software</th>
<th>Release with R418</th>
<th>Release with R450</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-106-generic</td>
<td>4.15.0-106-generic</td>
<td></td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.152.00</td>
<td>450.51.05</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1.243</td>
<td>11.0</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.6.5</td>
<td>8.0.0</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.6.4</td>
<td>2.7.3</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA System Management (NVSM)</td>
<td>20.03.06</td>
<td>20.05.09</td>
<td>NVIDIA System Management Documentation [<a href="https://docs.nvidia.com/datacenter/nvsm/latest/">https://docs.nvidia.com/datacenter/nvsm/latest/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.1.4</td>
<td>3.1.4</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>]</td>
</tr>
<tr>
<td>Docker CE</td>
<td>19.03.8</td>
<td>19.03.8</td>
<td></td>
</tr>
</tbody>
</table>

---

**Note:**

1. DGX OS Desktop 4.5.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.5.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in [Upgrading to the NVIDIA Container Runtime for Docker](https://docs.nvidia.com/deeplearning/dgx/).
3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

Updates in Release 4.5.0

- New software releases:
  - Linux Kernel:
    - R418: 4.15.0-106-generic
    - R450: 4.15.0-106-generic
  - NVIDIA Graphics Drivers for Linux:
    - R418: 418.152.00
    - R450: 450.51.05
  - cuDNN Library:
    - R418: 7.6.5
    - R450: 8.0.0
  - NCCL:
    - R418: 2.6.4
    - R450: 2.7.3
  - NVSM:
    - R418: 20.03.6
    - R450: 20.05.09
  - NVIDIA Container Runtime for Docker 3.1.4
  - Docker CE 19.03.8
  - Support for the NVSM commands `nvsm show health` and `nvsm dump health` on the DGX Station, which replaces the `nvhealth` and `nvsysinfo` commands
  - Support for disabling and restoring CPU mitigations

Distribution Methods

- Online upgrade
- ISO image file
Supported Upgrade Paths

- 4.1.0 through 4.1.1 to 4.5.0. For instructions, refer to Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide.
- 4.0.4 through 4.11.0. For instructions, see Upgrading to DGX OS Desktop Release 4.11.0 from a 4.0 Release.
- 3.1.1 through 3.1.8 to 4.5.0. For instructions, see Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide.

Packages Made Obsolete in Release 4.5.0

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- Vino VNC Server Start-Up Issue with Automatic Login
- Intermittent Failures To Update the dgxstation-grub Package
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.12. DGX OS Desktop 4.4 Releases

3.12.1. DGX OS Desktop Software Release 4.4.0

Software Releases in DGX OS Desktop Release 4.4.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See also note (1).</td>
<td></td>
</tr>
<tr>
<td>Linux kernel</td>
<td>6.15.0-76-gener</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>Release</td>
<td>Additional Information</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>------------------------</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.126.02</td>
<td>See also note [1].</td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1.243</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.6.5</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.4.7</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA System Management (NVSM)</td>
<td>20.01.15</td>
<td><a href="https://docs.nvidia.com/datacenter/nvsm/latest/">NVIDIA System Management Documentation</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td><a href="https://www.opengl.org/documentation/">OpenGL API Documentation Overview</a></td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.1.4</td>
<td><a href="https://docs.nvidia.com/deeplearning/dgx/">NVIDIA Deep Learning Frameworks Documentation</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>19.03.5</td>
<td>See also note [3].</td>
</tr>
</tbody>
</table>

**Note:**

1. DGX OS Desktop 4.4.0 was tested with this release. If subsequent upgrades to the Linux kernel were made available before you upgraded to DGX OS Desktop 4.4.0, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in [Upgrading to the NVIDIA Container Runtime for Docker](#).

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```
Updates in Release 4.4.0

- New software releases:
  - Linux Kernel 4.15.0-76-generic
  - NVIDIA Graphics Drivers for Linux 418.126.02
  - cuDNN Library 7.6.5
  - NCCL 2.4.7
  - NVSM 20.01.15
  - NVIDIA Container Runtime for Docker 3.1.4
  - Docker CE 19.03.5
- Support for the NVSM commands `nvsm show health` and `nvsm dump health` on the DGX Station, which replaces the `nvhealth` and `nvsysinfo` commands
- Support for disabling and restoring CPU mitigations

Distribution Methods

- Online upgrade
- ISO image file

Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Issues Resolved in Release 4.4.0

- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Incorrect Serial Number in nvhealth Output
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu

Packages Made Obsolete in Release 4.4.0

- nvhealth
- nvsysinfo

Known Issues

- Missing symbolic link to `/usr/local/cuda`
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
Old SSL Version Still Used After DGX OS Desktop Release Upgrade

NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade

Vino VNC Server Start-Up Issue with Automatic Login

Intermittent Failures To Update the dgxstation-grub Package

Software Image Installation Failures Caused by File Copy Errors

Software Image Installation Failures Caused by Lack of a Root File System

3.13. DGX OS Desktop 4.3 Releases

3.13.1. DGX OS Desktop Software Release 4.3.0

Software Releases in DGX OS Desktop Release 4.3.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-55-generic</td>
<td>See also note [1]. <a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.116.00</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1.243</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.6.2</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.4.7</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td><a href="https://www.opengl.org/documentation/">OpenGL API Documentation Overview</a></td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.1.1</td>
<td><a href="https://docs.nvidia.com/deeplearning/dgx/">NVIDIA Deep Learning Frameworks Documentation</a></td>
</tr>
</tbody>
</table>
### Software

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Docker CE</td>
<td>19.03.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>See also note [3].</td>
</tr>
</tbody>
</table>

### Note:

1. DGX OS Desktop 4.3.0 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in [Upgrading to the NVIDIA Container Runtime for Docker](#).

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

   To determine the release of Docker CE that is installed on your DGX Station, run the following command:

   ```bash
   # dpkg -l docker-ce
   ```

### Updates in Release 4.3.0

- NVIDIA Graphics Drivers for Linux 418.116.00
- Docker CE 19.03.4

### Distribution Methods

- Online upgrade
- ISO image file

### Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

### Packages Made Obsolete in Release 4.3.0

None.

### Known Issues

- Missing symbolic link to /usr/local/cuda
3.14. DGX OS Desktop 4.2 Releases

3.14.1. DGX OS Desktop Software Release 4.2.0

Software Releases in DGX OS Desktop Release 4.2.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>Linux kernel</td>
<td>4.15.0-55-generic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.87.01</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1.243</td>
<td>CUDA Toolkit Documentation (<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>)</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.6.2</td>
<td>NVIDIA Deep Learning SDK Documentation (<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>)</td>
</tr>
</tbody>
</table>

- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Vino VNC Server Start-Up Issue with Automatic Login
- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
DGX OS Desktop 4 Releases

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Collective Communication Library [NCCL]</td>
<td>2.4.7</td>
<td>NVIDIA Deep Learning SDK Documentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview <a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a></td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.1.1</td>
<td>NVIDIA Deep Learning Frameworks Documentation <a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>19.03</td>
<td>See also note [3].</td>
</tr>
</tbody>
</table>

Note:

1. DGX OS Desktop 4.2.0 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

Updates in Release 4.2.0

This DGX OS Desktop release introduces new software releases since patch update 4.1.1 and accumulates the new software releases previously distributed through patch update 4.1.1.

- New software releases since patch update 4.1.1:
  - Ubuntu Desktop Operating System 18.04.3
  - NVIDIA Graphics Drivers for Linux 418.87.01
  - NVIDIA Container Runtime for Docker 3.1.1
  - Docker CE 19.03
- New software releases previously distributed through patch update 4.1.1:
  - NVIDIA CUDA Toolkit 10.1.243
  - NVIDIA cuDNN Library 7.6.2
DGX OS Desktop 4 Releases

Distribution Methods

- Online upgrade
- ISO image file

Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Packages Made Obsolete in Release 4.2.0

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Vino VNC Server Start-Up Issue with Automatic Login
- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.15. DGX OS Desktop 4.1 Releases

3.15.1. DGX OS Desktop Software Patch Update 4.1.1

Software Releases in DGX OS Desktop Patch Update 4.1.1

The following table shows the software releases installed on the DGX Station after upgrading to this patch update.
<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See also note</td>
<td></td>
</tr>
<tr>
<td>Linux kernel</td>
<td>4.15.0-55-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>generic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See also note</td>
<td></td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.87.00</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1.243</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.6.2</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.4.7</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>3.0.0</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>]</td>
</tr>
<tr>
<td>Docker CE</td>
<td>18.09.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See also note</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. DGX OS Desktop 4.1.1 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.

2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker's stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:
# dpkg -l docker-ce

## Updates in Patch Update 4.1.1

- New software releases:
  - NVIDIA Graphics Drivers for Linux 418.87.00
  - NVIDIA CUDA Toolkit 10.1.243
  - NVIDIA cuDNN Library 7.6.2
  - NCCL 2.4.7
  - NVIDIA Container Runtime for Docker 3.0.0
  - Docker CE 18.09.8

## Distribution Methods

Online upgrade **only**.

## Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

## Packages Made Obsolete in Patch Update 4.1.1

- libnvidia-diagnostic-418

## Known Issues

- **Missing symbolic link to /usr/local/cuda**
- **Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales**
- **Issues with DGX OS Desktop Release Upgrade**
- **Old SSL Version Still Used After DGX OS Desktop Release Upgrade**
- **NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade**
- **NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures**
- **Vino VNC Server Start-Up Issue with Automatic Login**
- **Incorrect Serial Number in nvhealth Output**
- **Intermittent Failures To Update the dgxstation-grub Package**
- **Reduced UDP Networking Performance After Update to the Linux Kernel**
- **Failure to Enable Networking from the Recovery Menu**
- **Software Image Installation Failures Caused by File Copy Errors**
- **Software Image Installation Failures Caused by Lack of a Root File System**
### 3.15.2. DGX OS Desktop Software Release 4.1.0

#### Software Releases in DGX OS Desktop Release 4.1.0

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ubuntu Desktop Operating System</td>
<td>18.04 LTS</td>
<td>See also note [1].</td>
</tr>
<tr>
<td>Linux kernel</td>
<td>4.15.0-47-genc</td>
<td>See also note [1].</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>418.67</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.1.168</td>
<td>CUDA Toolkit Documentation <a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.5.0</td>
<td>NVIDIA Deep Learning SDK Documentation <a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.4.2</td>
<td>NVIDIA Deep Learning SDK Documentation <a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview <a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a></td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>2.0</td>
<td>See note [2].</td>
</tr>
<tr>
<td>Docker CE</td>
<td>18.09.4</td>
<td>See also note [3].</td>
</tr>
</tbody>
</table>

**Note:**

1. DGX OS Desktop 4.1.0 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.
2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.

3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
dpkg -l docker-ce
```

Updates in Release 4.1.0

- New software releases:
  - NVIDIA CUDA Toolkit 10.1.168
  - NVIDIA Graphics Drivers for Linux 418.67
  - NVIDIA cuDNN Library 7.5.0
  - Docker CE 18.09.4

Distribution Methods

- Online upgrade
- ISO image file

Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Packages Made Obsolete in Release 4.1.0

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Vino VNC Server Start-Up Issue with Automatic Login
DGX OS Desktop 4 Releases

3.16. DGX OS Desktop 4.0 Releases

3.16.1. DGX OS Desktop Software Release 4.0.7

Software Releases in DGX OS Desktop Release 4.0.7

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-47-generic</td>
<td>See also note (1).</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>410.129</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.0.130</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.5.0</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.4.2</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>2.0</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>]</td>
</tr>
</tbody>
</table>

- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
DGX OS Desktop 4 Releases

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Docker CE</td>
<td>18.09.4</td>
<td>See also note (3).</td>
</tr>
</tbody>
</table>

**Note:**

1. DGX OS Desktop 4.0.7 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.
2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.
3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

**Updates in Release 4.0.7**

- New software releases: NVIDIA Graphics Drivers for Linux 410.129

**Distribution Methods**

- Online upgrade
- ISO image file

**Supported Upgrade Paths**

4.0.4 through 4.0.6 to 4.11.0. For instructions, refer to Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide.

**Note:** Upgrades from 3.1.1 through 3.1.8 to 4.11.0 are no longer available. Following the instructions in Upgrading to a New DGX OS Desktop Major Release in DGX Station User Guide upgrades your DGX OS Desktop software to release 4.11.0.

**Packages Made Obsolete in Release 4.0.7**

None.
Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Vino VNC Server Start-Up Issue with Automatic Login
- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.16.2. DGX OS Desktop Software Release 4.0.6

Software Releases in DGX OS Desktop Release 4.0.6

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>Linux kernel</td>
<td>4.15.0-47-generic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See also note [1].</td>
<td></td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>410.104</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.0.130</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.5.0</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>Software</td>
<td>Release</td>
<td>Additional Information</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>------------------------</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library [NCCL]</td>
<td>2.4.2</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>2.0</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>]</td>
</tr>
<tr>
<td>Docker CE</td>
<td>18.09.4</td>
<td>See also note (3).</td>
</tr>
</tbody>
</table>

**Note:**

1. DGX OS Desktop 4.0.6 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.
2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in Upgrading to the NVIDIA Container Runtime for Docker.
3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

**Updates in Release 4.0.6**

- New software releases:
  - NVIDIA cuDNN Library 7.5.0
  - Docker CE 18.09.4

**Distribution Methods**

- Online upgrade
- ISO image file
Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Packages Made Obsolete in Release 4.0.6

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Number of Logical CPU Cores Unknown in nvhealth Output for Non-English Locales
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Vino VNC Server Start-Up Issue with Automatic Login
- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

3.16.3. DGX OS Desktop Software Release 4.0.5

Software Releases in DGX OS Desktop Release 4.0.5

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-36-gener</td>
<td></td>
</tr>
</tbody>
</table>


### DGX OS Desktop 4 Releases

**Software** | **Release** | **Additional Information**
--- | --- | ---
NVIDIA Graphics Drivers for Linux | 410.104 | [*CUDA Toolkit Documentation*](https://docs.nvidia.com/cuda/)
NVIDIA CUDA Toolkit | 10.0.130 | [*CUDA Toolkit Documentation*](https://docs.nvidia.com/cuda/)
NVIDIA CUDA Deep Neural Network (cuDNN) Library | 7.4.2 | [*NVIDIA Deep Learning SDK Documentation*](https://docs.nvidia.com/deeplearning/sdk/)
NVIDIA Collective Communication Library (NCCL) | 2.4.2 | [*NVIDIA Deep Learning SDK Documentation*](https://docs.nvidia.com/deeplearning/sdk/)
OpenGL | 4.6 | [*OpenGL API Documentation Overview*](https://www.opengl.org/documentation/)
NVIDIA Container Runtime for Docker | 2.0 | [*NVIDIA Deep Learning Frameworks Documentation*](https://docs.nvidia.com/deeplearning/dgx/)
Docker CE | 18.09.2 | [*NVIDIA Deep Learning Frameworks Documentation*](https://docs.nvidia.com/deeplearning/dgx/)

### Distribution Methods

- Online upgrade
- ISO image file

---

**Note:**

1. DGX OS Desktop 4.0.5 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.
2. NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs. In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in [*Upgrading to the NVIDIA Container Runtime for Docker*](https://docs.nvidia.com/deeplearning/dgx/).
3. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```
Updates in Release 4.0.5

- New software releases:
  - NVIDIA Graphics Drivers for Linux 410.104
    The new release of the NVIDIA Graphics Drivers for Linux includes security updates. For more information, see:
    - Restricting Access to GPU Performance Counters in the README file for the NVIDIA Graphics Drivers for Linux
  - NVIDIA cuDNN Library 7.4.2
  - NCCL 2.4.2
  - Docker CE 18.09.2

Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Packages Made Obsolete in Release 4.0.5

None.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Vino VNC Server Start-Up Issue with Automatic Login
- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
### 3.16.4. DGX OS Desktop Software Release 4.0.4

#### Software Releases in DGX OS Desktop Release 4.0.4

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel</td>
<td>4.15.0-36-generic</td>
<td>See also note (1).</td>
</tr>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>410.79</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>10.0.130</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.3.1</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.3.5-4</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.6</td>
<td><a href="https://www.opengl.org/documentation/">OpenGL API Documentation Overview</a></td>
</tr>
<tr>
<td>NVIDIA Container Runtime for Docker</td>
<td>2.0</td>
<td>See note (2). <a href="https://docs.nvidia.com/deeplearning/dgx/">NVIDIA Deep Learning Frameworks Documentation</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>18.06.1</td>
<td>See also note (3).</td>
</tr>
</tbody>
</table>

---

### Note:

1. DGX OS Desktop 4.0.4 was tested with this release. As a result of upgrades to DGX OS Desktop, your system might be running a later release.
2. **NVIDIA Container Runtime for Docker replaces Docker Engine Utility for NVIDIA GPUs.**
   In earlier releases, NVIDIA Container Runtime for Docker was available as an optional upgrade as described in [Upgrading to the NVIDIA Container Runtime for Docker](#).

3. **Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.**

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

---

**Updates in Release 4.0.4**

- New software releases:
  - Ubuntu Desktop Operating System 18.04 LTS
    
    In Ubuntu 18.04, the GNOME desktop environment replaces the Unity desktop environment. For help getting started with the GNOME desktop environment, see [Introduction to GNOME](https://help.ubuntu.com/18.04/ubuntu-help/shell-introduction.html) in the Ubuntu 18.04 Official Documentation.
  - NVIDIA Graphics Drivers for Linux 410.79
  - NVIDIA CUDA Toolkit 10.0.130
  - NVIDIA cuDNN Library 7.3.1
  - NCCL 2.3.5-4
  - Docker CE 18.06.1

- Introduction of NVIDIA Container Runtime for Docker to replace Docker Engine Utility for NVIDIA GPUs

---

**Distribution Methods**

- Online upgrade
- ISO image file

---

**Supported Upgrade Paths**

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.
Packages Made Obsolete in Release 4.0.4

nvidia-docker

Note: As a result of the update to a new release of the Ubuntu Desktop Operating System, many packages from Canonical are also made obsolete in this release of DGX OS Desktop.

Known Issues

- Missing symbolic link to /usr/local/cuda
- Issues with DGX OS Desktop Release Upgrade
- Old SSL Version Still Used After DGX OS Desktop Release Upgrade
- NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade
- NVIDIA Visual Profiler and Nsight Eclipse Edition Start Failures
- Vino VNC Server Start-Up Issue with Automatic Login
- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
Chapter 4. DGX OS Desktop 3 Releases

4.1. DGX OS Desktop 3 Release History

4.1.1. DGX OS Desktop 3 Updates

Updates in Release 3.1.8

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.183
    The new release of the NVIDIA Graphics Drivers for Linux includes security updates. For more information, see:
    - Restricting Access to GPU Performance Counters in the README file for the NVIDIA Graphics Drivers for Linux
  - NVIDIA cuDNN Library 7.4.2
  - NCCL 2.4.2
  - Docker CE 18.09.2

Updates in Release 3.1.7

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.145
DGX OS Desktop 3 Releases

- NVIDIA cuDNN Library 7.1.4
- NCCL 2.2.12
- Docker CE 18.03.1

Security updates

Updates in Release 3.1.6

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.125
  - NVIDIA cuDNN Library 7.1.1
  - NCCL 2.1.15
- Support for the 32-GB GPU
- Security updates

Updates in Release 3.1.4

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.111
  - NVIDIA cuDNN Library 7.0.5-15
  - NCCL 2.1.2
  - Docker CE from Docker’s stable repository
- New name `nvsysinfo` for the command to collect troubleshooting information
- Removal of the Docker CE startup option `--disable-legacy-registry=false` from the Docker CE service configuration file `docker-override.conf`
  
  This option is removed for compatibility with Docker CE 17.12 and later, which does not support interacting with registries that use API version v1.

Updates in Release 3.1.3

- New software releases:
  - NVIDIA cuDNN Library 7.0.4
  - NCCL 2.0.5
- New features:
  - Hot plugging a display after the DGX Station is booted without a display connected to it
  - Data journalling to preserve file-system metadata more robustly and to make the file system more resilient to power failures
  - Resolution of Ethernet connection failure issue when the DGX Station is booted
Updates in Release 3.1.2

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.81
  - NVIDIA CUDA Toolkit 9.0.176
  - NVIDIA cuDNN Library 7.0.1.13-1
  - NCCL 2.0.4
  - Performance optimizations for NVIDIA Docker Containers Release 17.09
  - Resolution of standby and resume issues with CUDA applications

Updates in Release 3.1.1

This release is the first release of DGX OS Desktop Software.

4.1.2. DGX OS Desktop 3 Resolved Issues

Issues Resolved in Release 3.1.3

- Ethernet Connection Failures when the DGX Station Is Booted

Issues Resolved in Release 3.1.2

- Standby and Resume Issues with CUDA Applications

4.1.3. DGX OS Desktop 3 Obsolete Packages

Packages Made Obsolete in Release 3.1.8

None.

Packages Made Obsolete in Release 3.1.7

None.

Packages Made Obsolete in Release 3.1.6

- nvhealth-doc
- nvhealth-framework
- nvhealth-module-dcgm-diag
- nvhealth-module-df
- nvhealth-module-docker-hello-world
- nvhealth-module-dpkg
- nvhealth-module-ethernet
DGX OS Desktop 3 Releases

- nvhealth-module-kernel-modules
- nvhealth-module-lscpu
- nvhealth-module-lshw
- nvhealth-module-lspci
- nvhealth-module-meminfo
- nvhealth-module-nvidia-persistenced
- nvhealth-module-nvidia-smi
- nvhealth-module-ping
- nvhealth-module-ps
- nvhealth-module-smartctl
- nvhealth-module-systemd-services
- nvhealth-module-template
- nvhealth-module-uname
- nvhealth-station

Packages Made Obsolete in Release 3.1.4
- nvhealth-base
- nvhealth-dgx-baseos
- nvhealth-overlay-dgx
- nvhealth-overlay-dgx-station
- nvhealth-overlay-dgx-station-baseos-3.1.0
- nvhealth-overlay-dgx-station-volta
- nvidia-sysinfo

Packages Made Obsolete in Release 3.1.3
None.

Packages Made Obsolete in Release 3.1.2
None.

4.2. DGX OS Desktop Software Release 3.1.8

Note: NVIDIA has announced End of Support for DGX OS Desktop 3, effective September 30, 2019. DGX OS Desktop 3.1.8 is the last DGX OS Desktop 3 release. For more information, see
DGX OS Desktop 3 Releases

DGX OS Server 3, DGX OS Desktop 3 (requires login to NVIDIA Enterprise Support [http://nvid.nvidia.com/dashboard/]).

Software Releases in DGX OS Desktop Release 3.1.8

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>384.183</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>9.0.176</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.4.2</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.4.2</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.5</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>Docker Engine Utility for NVIDIA GPUs</td>
<td>1.0.1</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>]</td>
</tr>
<tr>
<td>Docker CE</td>
<td>18.09.2</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. NVIDIA Container Runtime for Docker is available as an optional upgrade to replace Docker Engine Utility for NVIDIA GPUs. For more information, see Upgrading to the NVIDIA Container Runtime for Docker.

2. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```bash
# dpkg -l docker-ce
```
Updates in Release 3.1.8

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.183
    The new release of the NVIDIA Graphics Drivers for Linux includes security updates. For more information, see:
    - Restricting Access to GPU Performance Counters in the README file for the NVIDIA Graphics Drivers for Linux
  - NVIDIA cuDNN Library 7.4.2
  - NCCL 2.4.2
  - Docker CE 18.09.2

Supported Upgrade Paths

- 3.1.3 to 3.1.8
- 3.1.4 to 3.1.8
- 3.1.6 to 3.1.8
- 3.1.7 to 3.1.8

For instructions, refer to Upgrading Within the Same DGX OS Desktop Major Release in DGX Station User Guide.

Note: If a message appears indicating that the nvidia-docker.service failed to start, you can disregard the message and continue with the update. The nvidia-docker.service service will start normally the next time that the DGX Station is restarted.

Packages Made Obsolete in Release 3.1.8

None.

Known Issues

- Display Wake-Up Failure with Three Displays Connected
- Incorrect Failed to finalize file systems Error After DGX OS Desktop Installation
- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
4.3. DGX OS Desktop Software Release 3.1.7

Software Releases in DGX OS Desktop Release 3.1.7

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>384.145</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>9.0.176</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network [cuDNN] Library</td>
<td>7.1.4</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.2.12</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.5</td>
<td><a href="https://www.opengl.org/documentation/">OpenGL API Documentation Overview</a></td>
</tr>
<tr>
<td>Docker Engine Utility for NVIDIA GPUs</td>
<td>1.0.1</td>
<td><a href="https://docs.nvidia.com/deeplearning/dgx/">NVIDIA Deep Learning Frameworks Documentation</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>18.03.1</td>
<td>See also note [1].</td>
</tr>
</tbody>
</table>

**Note:**

1. NVIDIA Container Runtime for Docker is available as an optional upgrade to replace Docker Engine Utility for NVIDIA GPUs. For more information, see [Upgrading to the NVIDIA Container Runtime for Docker](https://docs.nvidia.com/deeplearning/dgx/).
2. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

Updates in Release 3.1.7

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.145
  - NVIDIA cuDNN Library 7.1.4
  - NCCL 2.2.12
  - Docker CE 18.03.1
- Security updates

Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Packages Made Obsolete in Release 3.1.7

None.

Known Issues

- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
### 4.4. DGX OS Desktop Software Release 3.1.6

**Software Releases in DGX OS Desktop Release 3.1.6**

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>384.125</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>9.0.176</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.1.1</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.1.15</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.5</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
</tbody>
</table>
| Docker Engine Utility for NVIDIA GPUs         | 1.0.1         | NVIDIA Deep Learning Frameworks Documentation [https://docs.nvidia.com/deeplearning/dgx/]
|                                               | See also note [1]. |                                                                |
| Docker CE                                      | 17.12.1       | NVIDIA Deep Learning Frameworks Documentation [https://docs.nvidia.com/deeplearning/dgx/]
|                                               | See also note [2]. |                                                                |

**Note:**

1. NVIDIA Container Runtime for Docker is available as an optional upgrade to replace Docker Engine Utility for NVIDIA GPUs. For more information, see Upgrading to the NVIDIA Container Runtime for Docker.

2. Updates to Docker CE are no longer provided from Docker’s stable repository, but instead from a repository that is maintained by NVIDIA. The release of Docker CE on your DGX Station is the release that is available from this NVIDIA repository when you update your DGX OS Desktop software over the network.
To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

**Updates in Release 3.1.6**

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.125
  - NVIDIA cuDNN Library 7.1.1
  - NCCL 2.1.15
- Support for the 32-GB GPU
- Security updates

**Supported Upgrade Paths**

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

**Packages Made Obsolete in Release 3.1.6**

- nvhealth-doc
- nvhealth-framework
- nvhealth-module-dcgm-diag
- nvhealth-module-df
- nvhealth-module-docker-hello-world
- nvhealth-module-dpkg
- nvhealth-module-ethernet
- nvhealth-module-kernel-modules
- nvhealth-module-lscpu
- nvhealth-module-lshw
- nvhealth-module-lspci
- nvhealth-module-meminfo
- nvhealth-module-nvidia-persistenced
- nvhealth-module-nvidia-smi
- nvhealth-module-ping
- nvhealth-module-ps
- nvhealth-module-smartctl
- nvhealth-module-systemd-services
Known Issues

- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

4.5. DGX OS Desktop Software Release 3.1.4

Software Releases in DGX OS Desktop Release 3.1.4

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>384.111</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>9.0.176</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network [cuDNN] Library</td>
<td>7.0.5-15</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library [NCCL]</td>
<td>2.1.2</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.5</td>
<td><a href="https://www.opengl.org/documentation/">OpenGL API Documentation Overview</a></td>
</tr>
<tr>
<td>Docker Engine Utility for NVIDIA GPUs</td>
<td>1.0.1</td>
<td><a href="https://docs.nvidia.com/deeplearning/dgx/">NVIDIA Deep Learning Frameworks Documentation</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>See note</td>
<td></td>
</tr>
</tbody>
</table>

Note:
The release of Docker CE on your DGX Station is the release that is available from Docker's stable repository when you update your DGX OS Desktop software over the network.

To determine the release of Docker CE that is installed on your DGX Station, run the following command:

```
# dpkg -l docker-ce
```

Updates in Release 3.1.4

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.111
  - NVIDIA cuDNN Library 7.0.5-15
  - NCCL 2.1.2
  - Docker CE from Docker’s stable repository

- New name `nvsysinfo` for the command to collect troubleshooting information

- Removal of the Docker CE startup option `--disable-legacy-registry=false` from the Docker CE service configuration file `docker-override.conf`

  This option is removed for compatibility with Docker CE 17.12 and later, which does not support interacting with registries that use API version v1.

Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Packages Made Obsolete in Release 3.1.4

- `nvhealth-base`
- `nvhealth-dgx-baseos`
- `nvhealth-overlay-dgx`
- `nvhealth-overlay-dgx-station`
- `nvhealth-overlay-dgx-station-baseos-3.1.0`
- `nvhealth-overlay-dgx-station-volta`
- `nvidia-sysinfo`

Known Issues

- Incorrect Serial Number in nvhealth Output
- Intermittent Failures To Update the dgxstation-grub Package
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
4.6. **DGX OS Desktop Software Release 3.1.3**

**Software Releases in DGX OS Desktop Release 3.1.3**

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>384.81</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>9.0.176</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network (cuDNN) Library</td>
<td>7.0.4</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.0.5</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.5</td>
<td>OpenGL API Documentation Overview [<a href="https://www.opengl.org/documentation/">https://www.opengl.org/documentation/</a>]</td>
</tr>
<tr>
<td>Docker Engine Utility for NVIDIA GPUs</td>
<td>1.0.1</td>
<td>NVIDIA Deep Learning Frameworks Documentation [<a href="https://docs.nvidia.com/deeplearning/dgx/">https://docs.nvidia.com/deeplearning/dgx/</a>]</td>
</tr>
<tr>
<td>Docker CE</td>
<td>17.06</td>
<td></td>
</tr>
</tbody>
</table>

**Updates in Release 3.1.3**

- New software releases:
  - NVIDIA cuDNN Library 7.0.4
  - NCCL 2.0.5
- New features:
  - Hot plugging a display after the DGX Station is booted without a display connected to it
  - Data journalling to preserve file-system metadata more robustly and to make the file system more resilient to power failures
  - Resolution of Ethernet connection failure issue when the DGX Station is booted
Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Issues Resolved in Release 3.1.3

- Ethernet Connection Failures when the DGX Station Is Booted

Packages Made Obsolete in Release 3.1.3

None.

Known Issues

- Incorrect Serial Number in nvhealth Output
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System

4.7. DGX OS Desktop Software Release 3.1.2

Software Releases in DGX OS Desktop Release 3.1.2

The following table shows the software releases that are installed on the DGX Station after you install this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>384.81</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>9.0.176</td>
<td>CUDA Toolkit Documentation [<a href="https://docs.nvidia.com/cuda/">https://docs.nvidia.com/cuda/</a>]</td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network [cuDNN] Library</td>
<td>7.0.1.13-1</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library (NCCL)</td>
<td>2.0.4</td>
<td>NVIDIA Deep Learning SDK Documentation [<a href="https://docs.nvidia.com/deeplearning/sdk/">https://docs.nvidia.com/deeplearning/sdk/</a>]</td>
</tr>
</tbody>
</table>
Updates in Release 3.1.2

- New software releases:
  - NVIDIA Graphics Drivers for Linux 384.81
  - NVIDIA CUDA Toolkit 9.0.176
  - NVIDIA cuDNN Library 7.0.1.13-1
  - NCCL 2.0.4
  - Performance optimizations for NVIDIA Docker Containers Release 17.09
  - Resolution of standby and resume issues with CUDA applications

Supported Upgrade Paths

Upgrades to this release are no longer available. Upgrading DGX OS Desktop software replaces the installed packages with the latest versions available from the NVIDIA and Canonical repositories.

Issues Resolved in Release 3.1.2

- Standby and Resume Issues with CUDA Applications

Packages Made Obsolete in Release 3.1.2

None.

Known Issues

- Incorrect Serial Number in nvhealth Output
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Ethernet Connection Failures when the DGX Station Is Booted
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
4.8. DGX OS Desktop Software Release 3.1.1

Software Releases in DGX OS Desktop Release 3.1.1

The following table shows the software releases installed on the DGX Station after installing this release.

<table>
<thead>
<tr>
<th>Software</th>
<th>Release</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Graphics Drivers for Linux</td>
<td>384.80</td>
<td></td>
</tr>
<tr>
<td>NVIDIA CUDA Toolkit</td>
<td>9.0.103</td>
<td><a href="https://docs.nvidia.com/cuda/">CUDA Toolkit Documentation</a></td>
</tr>
<tr>
<td>NVIDIA CUDA Deep Neural Network [cuDNN] Library</td>
<td>7.0.1</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>NVIDIA Collective Communication Library [NCCL]</td>
<td>2.0.4</td>
<td><a href="https://docs.nvidia.com/deeplearning/sdk/">NVIDIA Deep Learning SDK Documentation</a></td>
</tr>
<tr>
<td>OpenGL</td>
<td>4.5</td>
<td><a href="https://www.opengl.org/documentation/">OpenGL API Documentation Overview</a></td>
</tr>
<tr>
<td>Docker Engine Utility for NVIDIA GPUs</td>
<td>1.0.1</td>
<td><a href="https://docs.nvidia.com/deeplearning/dgx/">NVIDIA Deep Learning Frameworks Documentation</a></td>
</tr>
<tr>
<td>Docker CE</td>
<td>17.06</td>
<td></td>
</tr>
</tbody>
</table>

Updates in Release 3.1.1

This release is the first release of DGX OS Desktop Software.

Known Issues

- Incorrect Serial Number in nvhealth Output
- Reduced UDP Networking Performance After Update to the Linux Kernel
- Failure to Enable Networking from the Recovery Menu
- Ethernet Connection Failures when the DGX Station Is Booted
- Software Image Installation Failures Caused by File Copy Errors
- Software Image Installation Failures Caused by Lack of a Root File System
- Standby and Resume Issues with CUDA Applications
Chapter 5. Known Issues

5.1. Applications that call the cuCTXCreate API Might Experience a Performance Drop

Description
In DGX Station, when some applications call cuCtxCreate, cuGLCtxCreate, or cuCtxDestroy, there might be a drop in performance.

Affects Versions
5.0.0

Workaround
This issue occurs with Ubuntu 20.04, but not with previous versions. The issue affects applications that perform graphics/compute interoperations or have a plugin mechanism for CUDA, where every plugin creates its own context, or video streaming applications where computations are needed. Examples include ffmpeg, Blender, simpleDrvRuntime, and cuSolverSp_LinearSolver.

This issue is not expected to impact deep learning training.

5.2. NVSM Platform Displays as Unsupported

Description
In DGX Station, when you run

```
$ nvsm show version
```

instead of displaying DGX Station, the platform field displays Unsupported.
Affects Versions
5.0.0

Workaround
You can ignore this message.

5.3. Missing symbolic link to /usr/local/cuda

Description
Removing the NVIDIA CUDA Toolkit can cause the symbolic link to /usr/local/cuda to be removed even if multiple versions of the NVIDIA CUDA Toolkit are installed.

This issue occurs during an upgrade from a DGX OS Desktop 3 release to a DGX OS Desktop 4 release because NVIDIA CUDA Toolkit 9.0 is removed after NVIDIA CUDA Toolkit 10.1 is installed.

This issue can also occur if you remove the NVIDIA CUDA Toolkit yourself by, for example, running the apt remove cuda-toolkit-10-0 command or a similar command.

Affects Versions
4.0.4 through 4.11.0.

Workaround
This workaround requires sudo privileges.

Reconfigure the cuda-toolkit-major-minor package for the version of NVIDIA CUDA Toolkit that you want to continue to use. For example, after an upgrade from a DGX OS Desktop 3 release to a DGX OS Desktop 4 release, reconfigure the cuda-toolkit-10-1 package:

```
# sudo dpkg-reconfigure cuda-toolkit-10-1
```
5.4. **Number of Logical CPU Cores Unknown in `nvhealth` Output for Non-English Locales**

**Description**
If the locale is other than English, the `nvhealth` command lists the number of logical CPU cores as Unknown.

```
$ sudo nvhealth
... Number of logical CPU cores [None]................................. Unknown ...
```

**Affects Versions**
4.1.0 through 4.11.0

5.5. **Issues with DGX OS Desktop Release Upgrade**

**Description**
After a DGX OS Desktop release upgrade, the following issues might occur:

- The desktop layout is not updated from the Unity desktop environment to the GNOME desktop environment.
- This display manager is `lightdm` instead of `gdm3`.

**Affects Versions**
4.0.4 through 4.11.0

**Workaround**
This workaround requires administrator privileges.

1. Press `Ctrl+Alt+F5` to switch to `tty5`.
2. Start the `gdm3` service.
   ```bash
   # sudo systemctl start gdm3
   ```
3. Press `Ctrl+Alt+F6` to switch to `tty6`.
4. Reconfigure your system to use the `gdm3` display manager instead of `lightdm`.
a). Reconfigure the gdm3 package.

```bash
# sudo dpkg-reconfigure gdm3
```

b). In response to the prompt, select `gdm3`.

5. Reboot the system.

```bash
# sudo reboot
```

6. In the login window that appears after the system is rebooted, click the gear icon and choose `Ubuntu`.

7. Log in to your Ubuntu desktop.

### 5.6. Old SSL Version Still Used After DGX OS Desktop Release Upgrade

#### Description

**Note:** This issue affects only systems that have been upgraded from a DGX OS Desktop 3 release. It does not affect systems on which a DGX OS Desktop 4 release was preinstalled at the factory or installed from an ISO image.

After a DGX OS Desktop release upgrade, the version of Secure Sockets Layer (SSL) for DGX OS Desktop 3 releases continues to be used.

This issue occurs because, for DGX OS Desktop 3 releases, two versions of SSL are installed:

- A custom version of LibreSSL is installed in `/usr/local/bin/openssl`.
- The standard Ubuntu version of OpenSSL is installed in `/usr/bin/openssl`.

The custom version of LibreSSL is not removed during a DGX OS Desktop release upgrade. However, because of the way the `PATH` variable is defined for DGX OS Desktop, the version in `/usr/local/bin` takes precedence.

In DGX OS Desktop 4 releases, the customizations to LibreSSL that were made for DGX OS Desktop 3 releases are no longer required. To ensure that you are using a version of SSL that is actively being maintained, use the standard Ubuntu version of OpenSSL.

#### Affects Versions

Any DGX OS Desktop 4 release upgraded to from a DGX OS Desktop 3 release.

#### Workaround

This workaround requires administrator privileges.

1. Confirm that you are still using LibreSSL.

```bash
# openssl version
```
LibreSSL 2.5.4
2. Remove LibreSSL.
   
   ```bash
   # sudo rm -f /usr/local/bin/openssl
   ```

3. In a new shell window, confirm that you’re now using OpenSSL.
   
   ```bash
   openssl version
   OpenSSL 1.1.0g  2 Nov 2017
   ```

### 5.7. NVIDIA Desktop Shortcuts Not Updated After DGX OS Desktop Release Upgrade

**Description**

In DGX OS Desktop 4 releases, the NVIDIA desktop shortcuts have been updated to reflect current information about NVIDIA DGX systems and containers for deep learning frameworks. These desktop shortcuts are also organized in a single folder on the desktop.

After a DGX OS Desktop release upgrade, the NVIDIA desktop shortcuts for existing users are not updated. However, the desktop for a user added after the upgrade will have the current desktop shortcuts in a single folder.

**Affects Versions**

4.0.4 through 4.11.0

**Workaround**

If you want quick access to current information about NVIDIA DGX systems and containers from your desktop, replace the old desktop shortcuts with the new desktop shortcuts.

1. Change to your desktop directory.
   
   ```bash
   $ cd /home/your-user-login-id/Desktop
   ```

2. Remove the existing NVIDIA desktop shortcuts.
   
   ```bash
   $ rm dgx-container-registry.desktop \
      dgxstation-userguide.desktop \
      dgx-container-registry-userguide.desktop \
      nvidia-customer-support.desktop
   ```

3. Copy the folder that contains the new NVIDIA desktop shortcuts and its contents to your desktop directory.
   
   ```bash
   $ cp -rf /etc/skel/Desktop/Getting\ Started/ .
   ```
5.8. Display Wake-Up Failure with Three Displays Connected

Description

In a DGX Station to which three displays are connected, the displays fail to wake up after sleeping when the system is idle. When you log in after waking up the displays by pressing a key on the keyboard, an error dialog box appears displaying the following message:

Could not switch the monitor configuration

Affects Versions

3.1.8

Workaround

This workaround requires `sudo` privileges and remote access to the DGX Station over secure shell (SSH) from another computer.

1. From another computer, log in to the DGX Station through SSH as a user with `sudo` privileges.
2. From the computer where you logged in, stop and restart the X Window System display manager.
   a. Stop the X Window System display manager.
      ```bash
      # sudo pkill X
      ```
   b. Restart the X Window System display manager.
      ```bash
      # sudo service lightdm start
      ```
3. From the DGX Station, prevent the displays from sleeping when the system is idle.
   a. From the Ubuntu system menu at the right of the desktop menu bar, choose System Settings and in the System Settings window that opens, click Brightness & Lock.
   b. In the Brightness & Lock window that opens, set Turn screen off when inactive to Never and click Apply.

5.9. Vino VNC Server Start-Up Issue with Automatic Login

Description

If you have used default Ubuntu Desktop OS features to enable screen sharing and your account is set up to log you in automatically, you cannot access your desktop session on the
DGX Station remotely through a VNC client. If you try to access your desktop session remotely after you have been logged in automatically, the display on the VNC client is blank.

This issue occurs because the Vino VNC server is not started automatically when the DGX Station is booted. The Vino VNC server process `vino-server` runs only when you have logged in manually through the login screen. The `vino-server` process is not started if you are logged in automatically when the DGX Station is booted.

**Affects Versions**

4.0.4 through 4.11.0

**Resolution**

Upgrade the `plymouth` package to version 0.9.3-1ubuntu7.18.04.2 or later.

5.10. Incorrect **Failed to finalize file systems** Error After DGX OS Desktop Installation

**Description**

When the system is first rebooted after DGX OS Desktop is installed from an ISO image, the following message is erroneously displayed:

`Failed to finalize file systems`

If you see this message during the first reboot after DGX OS Desktop is installed from an ISO image, ignore the message.

**Affects Versions**

3.1.8

**Workaround**

None required.
5.11. Intermittent Failures To Update the `dgxstation-grub` Package

**Description**

During an update of the DGX OS Desktop software, the EFI boot record may become unreadable, which prevents the `dgxstation-grub` package from being updated. When this error occurs, the following error messages are displayed:

```
efibootmgr: Could not set variable Boot0008: No such file or directory
efibootmgr: Could not prepare boot variable: No such file or directory
```

**Affects Versions**

- 4.0.4 through 4.11.0
- 3.1.4 through 3.1.8

**Workaround**

This workaround requires administrator privileges.

1. Reboot the DGX Station.
   
   ```
   $ sudo reboot
   ```

2. Install the `dgxstation-grub` package.
   
   ```
   $ sudo apt install -y dgxstation-grub
   ```

5.12. Failure to Enable Networking from the Recovery Menu

**Description**

In recovery mode, when `network` is chosen from the Recovery menu, the command fails with the following error:

```
/etc/resolv.conf: No such file or directory
```

**Resolved in Version**

- 4.4.0

**Affects Versions**

- 4.0.4 through 4.3.0
- 3.1.1 through 3.1.8
Workaround

1. Boot the DGX Station in recovery mode.
2. From the Recovery menu, choose root to drop to the root shell.
3. In the root shell, reconfigure the resolvconf package.
   ```
   dpkg-reconfigure resolvconf
   ```

Networking is now enabled.

5.13. Software Image Installation Failures Caused by File Copy Errors

Description

Random errors in copying files to the OS SSD can cause installation of the DGX OS Desktop software image to fail.

Affects Versions

4.0.4 through 4.11.0
3.1.1 through 3.1.8

Workaround

Reboot the DGX Station and try again.


Description

Installation of the DGX OS Desktop software image may fail with the error No root file system is defined. This error may occur if a custom software image had previously been installed on DGX Station and device sda had been configured as part of a RAID array. Installation of the DGX OS Desktop software image requires that device sda must be available for use as the OS drive.

Affects Versions

4.0.4 through 4.11.0
3.1.1 through 3.1.8
Workaround

Reconfigure device sda to be available for use as the OS drive and try again.
Chapter 6. Resolved Issues


Description

NVIDIA Visual Profiler and Nsight Eclipse Edition require an earlier version of the Java Runtime Environment (JRE) than the default version in DGX OS Desktop. If you try to run NVIDIA Visual Profiler or Nsight Eclipse Edition without specifying the required JRE version, it fails to start.

These applications also require the `libcanberra-gtk-module` package, which is not included in DGX OS Desktop 4 releases. If either application is started without this package, the following error message is displayed:

```
Gtk-Message: 17:34:33.117: Failed to load module "canberra-gtk-module"
```

Resolved in Version

4.4.0

Affects Versions

4.0.4 through 4.3.0

Workaround

If you want to use NVIDIA Visual Profiler or Nsight Eclipse Edition, install the `libcanberra-gtk-module` package after installing or upgrading to a DGX OS Desktop 4 release such as 4.0.4.

```
# sudo apt install libcanberra-gtk-module
```

Each time you start NVIDIA Visual Profiler or Nsight Eclipse Edition, you must specify the required JRE version. Because DGX OS Desktop already includes the required JRE version, all you need do is include the `-vm /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/java` option in the command to start NVIDIA Visual Profiler or Nsight Eclipse Edition:
6.2. Reduced UDP Networking Performance After Update to the Linux Kernel

Description
An update to DGX OS Desktop that includes an update to the Linux kernel may result in reduced network performance for workloads involving data transfer over UDP from the DGX Station to a remote system.

Resolved in Version
4.4.0
The reduced performance is the result of mitigations to CPU speculative side-channel vulnerabilities. Resolving this issue involves disabling these mitigations as explained in .

Affects Versions
Any DGX OS Desktop version running Linux kernel version 4.4.0-116

6.3. Incorrect Serial Number in nvhealth Output

Description
The `nvhealth` command incorrectly lists the serial number of the motherboard in the DGX Serial Number entry under Checks. The correct serial number is listed under System Summary.

```
$ sudo nvhealth
Info
----
Timestamp: Thu Mar  7 08:54:52 2019 -0800
Version:   19.01.6

Checks
-----
DGX BaseOS Version [4.0.5].
BIOS Version [0406].
DGX Serial Number [160984157800056].

System Summary
```
Resolved Issues

DGX OS Desktop Software

rn-08254-001_v4.11.0 | 87

Product Name: DGX Station
Manufacturer: NVIDIA
DGX Serial Number: 0154017000004
Uptime: up 5 days, 17 hours, 44 minutes
Motherboard:
  BIOS Version: 0406
  Serial Number: 160984157800056

---

Resolved in Version

4.4.0

This issue is resolved in NVIDIA System Management (NVSM), which replaces nvhealth in release 4.4.0.

Affects Versions

4.0.4 through 4.3.0
3.1.1 through 3.1.8

6.4. Ethernet Connection Failures when the DGX Station Is Booted

Description

When the DGX Station is booted or rebooted, the Ethernet interfaces may not be correctly configured for the Dynamic Host Configuration Protocol (DHCP). As a result, the DGX Station cannot connect to the Internet and the status of its network ports is unmanaged. Docker interfaces are unaffected.

Resolved in Version

3.1.3

Affects Versions

3.1.2, 3.1.1

Workaround

This workaround requires sudo privileges.

1. Open the file /etc/network/interfaces for editing in a plain-text editor such as vi.

   $ sudo vi /etc/network/interfaces

2. Remove the following lines from the file:

   auto enp2s0f0
   iface enp2s0f0 inet manual
3. Save and close the file.
4. Configure your DGX Station Ethernet interfaces using DHCP.
   ```bash
   sudo dhclient
   ```

6.5. Standby and Resume Issues with CUDA Applications

Description

The NVIDIA driver has a known issue with suspend and resume when a CUDA application is running. Suspending the system when a CUDA application is running can cause application crashes. Running some CUDA applications after a suspend-resume cycle can cause system instability.

To address these issues for CUDA applications that are running in Docker containers, the system power management scripts have been updated to stop and start the `nvidia-docker` plugin during a suspend-resume cycle. The `nvidia-docker` plugin is a plugin for the Docker Container Engine that provides GPU driver and CUDA capabilities to containers.

Note: Do not suspend your system while it is in the middle of a DL workload and expect it to resume properly.

Resolved in Version

3.1.2

Affects Versions

3.1.1
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