



DGX Software for Red Hat Enterprise Linux 7

Release Notes

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Chapter 1. DGX Software For Red Hat Enterprise Linux 7 Overview

NVIDIA provides a NVIDIA® DGX™ software stack targeted for installation on DGX systems that have been user-installed with Red Hat Enterprise Linux. The software stack provides the same features and functionality that are provided by the original DGX OS Server and DGX OS Desktop software built upon the Ubuntu operating system. See also the [DGX Software on Red Hat Enterprise Linux 7 Installation Guide](#).

1.1. Current Versions

The following are the current versions available.

Product	Current Version
DGX Station A100	EL7-21.10
DGX Station	EL7-21.10
DGX-2, DGX-1	EL7-21.10
DGX A100	EL7-21.10

1.2. Installing and Updating the Software

Installing the Software

To install the software on a fresh DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#) or the [DGX Software for CentOS - Installation Guide](#).

Updating the Software

To update your DGX system to the latest version from a previous version, do the following.

1. Enable the R450 repository to install the R450 related packages.

The step is required for DGX A100 and DGX Station A100 but optional for other DGX platforms. If you have already enabled the R450 repository in a previous update, then you do not need to do it again.

When performing the update in step 3, the package manager picks up the R450 related packages provided in the R450 repository along with any other updated packages in the R418 repository.

- ▶ Either edit `/etc/yum.repos.d/nvidia-dgx-7.repo` and set `enabled=1`,

```
[nvidia-dgx-7-r450-cuda11-0]
name=NVIDIA DGX EL7 R450-CUDA11-0
baseurl=https://international.download.nvidia.com/dgx/repos/rhel7-r450-
cuda11-0/
enabled=1
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-dgx-cosmos-support
```

- ▶ Or, (if you have the `yum-utils` package installed), issue the following.

```
sudo yum-config-manager --enable nvidia-dgx-7-r450-cuda11-0
```

2. (Optional) Enable the R470 repository to install the R470 related packages.

If you have already enabled the R470 repository in a previous update, then you do not need to do it again.

When performing the update in step 3, the package manager picks up the R470 related packages provided in the R470 repository along with any other updated packages in the R418 repository.

- ▶ Either edit `/etc/yum.repos.d/nvidia-dgx-7.repo` and set `enabled=1`,

```
[nvidia-dgx-7-r470-cuda11-4]
name=NVIDIA DGX EL7 R470-CUDA11-4
baseurl=https://international.download.nvidia.com/dgx/repos/rhel7-r470-
cuda11-4/
enabled=1
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-dgx-cosmos-support
```

- ▶ Or, (if you have the `yum-utils` package installed), issue the following.

```
sudo yum-config-manager --enable nvidia-dgx-7-r470-cuda11-4
```

3. Perform the update.

```
sudo yum update
```

Chapter 2. Version EL7-21.10

The DGX Software for Red Hat Enterprise Linux 7, EL7-21.10 update, is available.

EL7-21.10 supports all DGX products - DGX A100, DGX-2, DGX-1 (with Tesla V100), DGX Station, and DGX Station A100.



Important: Installing or updating to EL7-21.10 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-21.10, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

R450 Repository

The R450 repository must be enabled if you are installing on the DGX A100 or DGX Station A100. See the [DGX Software for Red Hat Enterprise Linux Installation Guide](#) for instructions.

Change Highlights

- ▶ Added the **Release 470** driver package.
Refer to the Contents of the Repositories for individual software versions.
- ▶ The following changes were made in the **Release 450** driver package.
 - ▶ Updated the GPU driver to [450.156.00](#)
 - ▶ Updated DCGM to [2.2.9](#)
- ▶ The following changes were made in the **Release 418** driver package.

- ▶ Updated the GPU driver to [418.226.00](#)

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 1. Contents of the Repositories

Component	Versions in the Release 418 Driver Package	Versions in the Release 450 Driver Package	Versions in the Release 470 Driver Package
GPU Driver	418.226.00	450.156.00	470.82.01
NVIDIA System Management (NVSM)	20.03.6	20.09.33	21.07.15
Data Center GPU Management (DCGM)	1.7.4	2.2.9	2.2.9
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0 (From R418 Repository)	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0 (From R418 Repository)
NCCL Runtime	2.8.3+cuda10.1	2.9.9+cuda11.0	2.11.4+cuda11.4
cuDNN Library Runtime	8.0.5+cuda10.1	8.2.1+cuda11.0	8.2.4+cuda11.4
cuBLAS	10.2.2.214	11.1.0.229-1	11.6.5.2
CUDA Toolkit	CUDA 10.1.243	CUDA 11.0.3	11.4
mpt3sas-dkms	31.101.01.00	31.101.01.00	31.101.01.00

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-21.10** with the following:

- ▶ Linux Distribution and kernel
 - ▶ Red Hat Enterprise Linux 7.9

- ▶ CentOS 7.9
- ▶ Kernel 3.10.0-1160.31.1.el7
- ▶ NVIDIA DGX systems
 - ▶ NVIDIA DGX A100
 - ▶ NVIDIA DGX-2
 - ▶ NVIDIA DGX-1 (V100)
 - ▶ NVIDIA DGX Station A100
 - ▶ NVIDIA DGX Station
- ▶ MLNX OFED version 4.9-2.2.6.0
- ▶ ConnectX Firmware
 - ▶ ConnectX-4: 12.28.2006
 - ▶ ConnectX-5: 16.28.2006
 - ▶ ConnectX-6: 20.28.2006

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [NVSM May Raise 'md1 is corrupted' Alert](#)

Known Issues

- ▶ [Fabric Manager May Fail to Start if DCGM Service Installed](#)
- ▶ [nvsm-plugin-memory Service Fails to Launch](#)
- ▶ [DCGM Service Reported as Deprecated](#)
- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)

Known Limitations

See [Known Limitations](#) for the list of known limitations and other issues that will not be fixed.

Chapter 3. Version EL7-21.07

The DGX Software for Red Hat Enterprise Linux 7, EL7-21.07 update, is available.

EL7-21.07 supports all DGX products - DGX A100, DGX-2, DGX-1 (with Tesla V100), DGX Station, and DGX Station A100.



Important: Installing or updating to EL7-21.07 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-21.07, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

R450 Repository

The R450 repository must be enabled if you are installing on the DGX A100 or DGX Station A100. See the [DGX Software for Red Hat Enterprise Linux Installation Guide](#) for instructions.

Change Highlights

- ▶ The following changes were made in the Release 450 driver package.
 - ▶ Updated the GPU driver to [450.142.00](#)
 - ▶ Updated NVSM to 20.09.33
 - ▶ Updated DCGM to 2.2.8
- ▶ The following changes were made in the Release 418 driver package.
 - ▶ Updated the GPU driver to [418.211.00](#)

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 2. Contents of the Repositories

Component	Versions in the Release 418 Driver Package	Versions in the Release 450 Driver Package
GPU Driver	418.211.00	450.142.00
NVIDIA System Management (NVSM)	20.03.6	20.09.33
Data Center GPU Management (DCGM)	1.7.4	2.2.8
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0 (From R418 Repository)
NCCL Runtime	2.8.3+cuda10.1	2.9.9+cuda11.0
cuDNN Library Runtime	8.0.5+cuda10.1	8.2.1+cuda11.0
cuBLAS	10.2.2.214	11.1.0.229-1
CUDA Toolkit	CUDA 10.1.243	CUDA 11.0.3
mpt3sas-dkms	31.101.01.00	31.101.01.00

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-21.07** with the following:

- ▶ Linux Distribution and kernel
 - ▶ Red Hat Enterprise Linux 7.9
 - ▶ CentOS 7.9
 - ▶ Kernel 3.10.0-1160.25.1.el7

- ▶ NVIDIA DGX systems
 - ▶ NVIDIA DGX A100
 - ▶ NVIDIA DGX-2
 - ▶ NVIDIA DGX-1 (V100)
 - ▶ NVIDIA DGX Station A100
 - ▶ NVIDIA DGX Station
- ▶ MLNX OFED version 4.9-2.2.6.0
- ▶ ConnectX Firmware
 - ▶ ConnectX-4: 12.28.2006
 - ▶ ConnectX-5: 16.28.2006
 - ▶ ConnectX-6: 20.28.2006

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [DGX Station: The Symbolic Link to /usr/local/cuda Is Missing](#)
- ▶ [DGX Station A100: nvidia-switch Error Message in DGX Station A100](#)

Known Issues

- ▶ [Fabric Manager May Fail to Start if DCGM Service Installed](#)
- ▶ [nvsm-plugin-memory Service Fails to Launch](#)
- ▶ [DCGM Service Reported as Deprecated](#)
- ▶ [NVSM May Raise 'md1 is corrupted' Alert](#)
- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)

Known Limitations

See [Known Limitations](#) for the list of known limitations and other issues that will not be fixed.

Chapter 4. Version EL7-21.04

The DGX Software for Red Hat Enterprise Linux 7, EL7-21.04 update, is available.

EL7-21.04 supports all DGX products - DGX A100, DGX-2, DGX-1 (with Tesla V100), DGX Station, and DGX Station A100.



Important: Installing or updating to EL7-21.04 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-21.04, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

R450 Repository

The R450 repository must be enabled if you are installing on the DGX A100 or DGX Station A100. See the [DGX Software for Red Hat Enterprise Linux Installation Guide](#) for instructions.

Change Highlights

- ▶ Added support for DGX Station A100.
- ▶ The following changes were made in the Release 450 driver package.
 - ▶ Updated the GPU driver to [450.119.04](#)
 - ▶ Updated NVSM to 20.09.21
 - ▶ Updated DCGM to 2.0.15
- ▶ The following changes were made in the Release 418 driver package.

- ▶ Updated the GPU driver to [418.197.02](#)

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 3. Contents of the Repositories

Component	Versions in the Release 418 Driver Package	Versions in the Release 450 Driver Package
GPU Driver	418.197.02	450.119.04
NVIDIA System Management (NVSM)	20.03.6	20.09.21
Data Center GPU Management (DCGM)	1.7.4	2.0.15
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0 (From R418 Repository)
NCCL Runtime	2.8.3+cuda10.1	2.8.3+cuda11.0
cuDNN Library Runtime	8.0.5+cuda10.1	8.0.5+cuda11.0
cuBLAS	10.2.2.214	11.1.0.229-1
CUDA Toolkit	CUDA 10.1.243	CUDA 11.0.3
mpt3sas-dkms	31.101.01.00	31.101.01.00

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-21.04** with the following:

- ▶ Linux Distribution and kernel
 - ▶ Red Hat Enterprise Linux 7.9
 - ▶ CentOS 7.9

- ▶ Kernel 3.10.0-1160.25.1.el7
- ▶ NVIDIA DGX systems
 - ▶ NVIDIA DGX A100
 - ▶ NVIDIA DGX-2
 - ▶ NVIDIA DGX-1 (V100)
 - ▶ NVIDIA DGX Station A100
 - ▶ NVIDIA DGX Station
- ▶ MLNX OFED version 4.9-2.2.6.0
- ▶ ConnectX Firmware
 - ▶ ConnectX-4: 12.28.2006
 - ▶ ConnectX-5: 16.28.2006
 - ▶ ConnectX-6: 20.28.2006

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [DGX Systems: nv_peer_mem is not Loaded](#)
- ▶ [DGX A100: ERROR: Device not found in mapping table](#)

Known Issues

- ▶ [DGX Systems: NGC Containers Might not Run](#)
- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)
- ▶ [DGX Station: The Symbolic Link to /usr/local/cuda Is Missing](#)
- ▶ [DGX Station A100: nvidia-switch Error Message in DGX Station A100](#)

Known Limitations

See [Known Limitations](#) for the list of known limitations and other issues that will not be fixed.

Chapter 5. Version EL7-21.01

The DGX Software for Red Hat Enterprise Linux 7, EL7-21.01 update, is available.

EL7-21.01 supports all DGX products - DGX A100, DGX-2, DGX-1, and DGX Station.



Important: Installing or updating to EL7-21.01 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-21.01, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

R450 Repository

The R450 repository must be enabled if you are installing on the DGX A100. See the [DGX Software for Red Hat Enterprise Linux Installation Guide](#) for instructions.

Change Highlights

- ▶ The following changes were made in the Release 450 driver package.
 - ▶ Updated the GPU driver to [450.102.04](#)
 - ▶ Updated NCCL to [2.8.3+cuda11.0](#)
 - ▶ Updated cuDNN to [8.0.5+cuda11.0](#)
 - ▶ Updated NVSM to 20.09.17
 - ▶ Updated DCGM to 2.0.13
 - ▶ Added `mpt3sas-dkms` version 31.101.01.00

- ▶ The following changes were made in the Release 418 driver package.
 - ▶ Updated the GPU driver to [418.181.07](#)
 - ▶ Updated NCCL to [2.8.3+cuda11.0](#)
 - ▶ Updated cuDNN to [8.0.5+cuda11.0](#)
 - ▶ Updated DCGM to 1.7.4
 - ▶ Added `mpt3sas-dkms` version 31.101.01.00

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 4. Contents of the Repositories

Component	Versions in the Release 418 Driver Package	Versions in the Release 450 Driver Package
GPU Driver	418.181.07	450.102.04
NVIDIA System Management (NVSM)	20.03.6	20.09.17
Data Center GPU Management (DCGM)	1.7.4	2.0.13
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0 (From R418 Repository)
NCCL Runtime	2.8.3+cuda10.1	2.8.3+cuda11.0
cuDNN Library Runtime	8.0.5+cuda10.1	8.0.5+cuda11.0
cuBLAS	10.2.2.214	11.1.0.229-1
CUDA Toolkit	CUDA 10.1.243	CUDA 11.0.3
mpt3sas-dkms	31.101.01.00	31.101.01.00

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-21.01** on the following systems:

- ▶ NVIDIA DGX A100 with Red Hat Enterprise Linux 7.9 and CentOS
- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7.9 and CentOS
- ▶ NVIDIA DGX-1 (V100) with Red Hat Enterprise Linux 7.9 and CentOS
- ▶ NVIDIA DGX Station with Red Hat Enterprise Linux 7.9 and CentOS

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [DGX Systems: nv_peer_mem is not Loaded](#)
- ▶ [DGX A100: ERROR: Device not found in mapping table](#)

Known Issues

- ▶ [DGX Systems: NGC Containers Might not Run](#)
- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)
- ▶ [DGX Station: The Symbolic Link to /usr/local/cuda Is Missing](#)

Known Limitations

See [Known Limitations](#) for the list of known limitations and other issues that will not be fixed.

Chapter 6. Version EL7-20.09

The DGX Software for Red Hat Enterprise Linux 7, EL7-20.09 update, is available.

EL7-20.09 supports all DGX products - DGX A100, DGX-2, DGX-1., and DGX Station.



Important: Installing or updating to EL7-20.09 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-20.09, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

R450 Repository

The R450 repository must be enabled if you are installing on the DGX A100. See the [DGX Software for Red Hat Enterprise Linux Installation Guide](#) for instructions.

Change Highlights

- ▶ The following changes were made in the Release 450 driver package.
 - ▶ Updated the GPU driver to [450.80.02](#)
 - ▶ Updated NCCL to [2.7.8-1+cuda11.0](#)
 - ▶ Updated cuDNN to [8.0.4.8-1+cuda11.0](#)
 - ▶ Update cuBLAS to 11.1.0.229-1
 - ▶ Updated DCGM to 2.0.12
 - ▶ Updated nvidia-container-runtime to 3.3.0-1

- ▶ The following changes were made in the Release 418 driver package.
 - ▶ Updated the GPU driver to [418.65.02](#)
 - ▶ Updated NCCL to [2.7.8-1+cuda10.1](#)
 - ▶ Updated cuDNN to [8.0.2.39-1+cuda10.1](#)
 - ▶ Update cuBLAS to 10.2.2.214-1
 - ▶ Updated nvidia-container-runtime to 3.3.0-1

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 5. Contents of the Repositories

Component	Versions in the Release 418 Driver Package	Versions in the Release 450 Driver Package
GPU Driver	418.165.02	450.80.02
NVIDIA System Management (NVSM)	20.03.6	20.05.19
Data Center GPU Management (DCGM)	1.7.2	2.0.12
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0 (From R418 Repository)
NCCL Runtime	2.7.8-1+cuda10.1	2.7.8.1+cuda11.0
cuDNN Library Runtime	8.0.2.39-1+cuda10.1	8.0.4.8-1+cuda11.0
cuBLAS	10.2.2.214	11.1.0.229-1
CUDA Toolkit	CUDA 10.1.243	CUDA 11.0.3

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-20.09** on the following systems:

- ▶ NVIDIA DGX A100 with Red Hat Enterprise Linux 7 and CentOS
- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7 and CentOS
- ▶ NVIDIA DGX-1 (V100) with Red Hat Enterprise Linux 7 and CentOS
- ▶ NVIDIA DGX Station with Red Hat Enterprise Linux 7 and CentOS

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [DGX Systems: nvidia-smi Reports Persistence Mode is Off within a Container](#)

Known Issues

- ▶ [DGX Systems: nv_peer_mem is not Loaded](#)
- ▶ [DGX Systems: NGC Containers Might not Run](#)
- ▶ [DGX Systems: nv_peer-mem Doesn't Start Automatically](#)
- ▶ [DGX A100: ERROR: Device not found in mapping table](#)
- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)
- ▶ [DGX Station: The Symbolic Link to /usr/local/cuda Is Missing](#)

Known Limitations

See [Known Limitations](#) for the list of known limitations and other issues that will not be fixed.

Chapter 7. Version EL7-20.07

The DGX Software for Red Hat Enterprise Linux 7, EL7-20.07 update, is available. **You must enable the update repository in order to obtain this update.**

EL7-20.07 supports the DGX A100. For the list of changes and updates for other DGX platforms, see the [Version EL7-20.06](#) chapter.



Important: Installing or updating to EL7-20.07 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-20.07, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

R450 Repository

The R450 repository must be enabled for the DGX A100. See the [DGX Software for Red Hat Enterprise Linux Installation Guide](#) for instructions.

Change Highlights

- ▶ The following changes were made in the R450 package.
 - ▶ Added support for the DGX A100
 - ▶ Updated the GPU driver to [450.51.06](#)
 - ▶ Updated NVSM to 20.05.19
 - ▶ Updated the [CUDA 11 toolkit to Update 1](#)

- ▶ Updated NCCL to [2.7.3-1+cuda11.0](#)
- ▶ Updated cuDNN to [8.0.0.176-1+cuda11.0](#)
- ▶ Update cuBLAS to 11.2.0.252-1
- ▶ Updated DCGM to 2.0.10-1
- ▶ Updated nvidia-container-runtime to 3.2.0-1

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 6. Contents of the Repositories

Component	Versions in R450 Repository
GPU Driver	450.51.06
NVIDIA System Management (NVSM)	20.05.19
Data Center GPU Management (DCGM)	2.0.10-1
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0 (From R418 Repository)
NCCL Runtime	2.7.3-1+cuda11.0
cuDNN Library Runtime	8.0.0.176-1+cuda11.0
cuBLAS	11.2.0.252
CUDA Toolkit	CUDA 11.0.3

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-20.07** on the following systems:

- ▶ NVIDIA DGX A100 with Red Hat Enterprise Linux 7 and CentOS

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Known Issues

- ▶ [DGX A100: ERROR: Device not found in mapping table](#)
- ▶ [DGX A100: nvidia-smi Reports Persistence Mode is Off within a Container](#)

Chapter 8. Version EL7-20.06

The DGX Software for Red Hat Enterprise Linux 7, version EL7-20.06 with updates to the R450 repository, is available.



Important: Installing or updating to EL7-20.06 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-20.06, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

R450 Repository

The optional R450 repository was created for updating the NVIDIA driver to the R450 driver branch, CUDA 11.0, and other software packages associated with CUDA 11.0. These updates are available only if you have enabled the R450 repository. Once the R450 repository is enabled, any DGX EL7 updates will include the R450 packages as well as other updated packages.

Change Highlights

- ▶ The following changes were made to the R418 package at the initial release of EL7-20.06.
 - ▶ Updated NVSM to version 20.03.6
 - ▶ Updated NCCL Runtime to version [2.6.4+cuda10.1](#)
 - ▶ Updated cuDNN Library Runtime to version [7.6.5+cuda10.1](#)
 - ▶ Updated NVIDIA GPU driver to version [418.152.00](#)

- ▶ The following changes were made to the R450 package on 8/13/20.
 - ▶ Updated the GPU driver to [450.51.06](#)
 - ▶ Updated NVSM to 20.05.19
 - ▶ Updated the [CUDA 11 toolkit to Update 1](#)
 - ▶ Updated NCCL to 2.7.3-1+cuda11.0
 - ▶ Updated cuDNN to 8.0.0.176-1+cuda11.0
 - ▶ Update cuBLAS to 11.2.0.252-1
 - ▶ Updated DCGM to 2.0.10-1
 - ▶ Updated nvidia-container-runtime to 3.2.0-1

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 7. Contents of the Repositories

Component	Versions in R418 Repository (Default)	Versions in R450 Repository
GPU Driver	418.152.00	450.51.06
NVIDIA System Management (NVSM)	20.03.6	20.05.19
Data Center GPU Management (DCGM)	1.7.2	2.0.10-1
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0	R418 Repository Used
NCCL Runtime	2.6.4+cuda10.1	2.7.3-1+cuda11.0
cuDNN Library Runtime	7.6.5+cuda10.1	8.0.0.176-1+cuda11.0
cuBLAS	10.2.1.243	11.2.0.252
CUDA Toolkit	CUDA 10.1.243	CUDA 11.0.3

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-20.06** on the following systems:

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7 and CentOS
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7 and CentOS.
- ▶ NVIDIA DGX Station with Red Hat Enterprise Linux 7 and CentOS

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
Resolved with updated [installation](#) instructions.

Known Issues

- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)
- ▶ [DGX Station: The Symbolic Link to /usr/local/cuda Is Missing](#)

Known Limitations

See [Known Limitations](#) for the list of known limitations and other issues that will not be fixed.

Chapter 9. Version EL7-20.02

The DGX Software for Red Hat Enterprise Linux 7, EL7-20.02 update, is available. **You must enable the update repository in order to obtain this update.**



Important: Installing or updating to EL7-20.02 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-20.02, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

Update Repository

The update repository was created for updating the NVIDIA driver to the R418 driver branch, CUDA 10.1, and other software packages associated with CUDA 10.1.

These updates are available only if you have enabled the update repository. See [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions on updating the NVIDIA repositories.

Change Highlights

- ▶ The following changes were made to the **update** repository.
 - ▶ Updated NVSM to version [20.01.15](#)
 - ▶ Updated NCCL Runtime to version [2.5.6+cuda10.1](#)
 - ▶ Updated cuDNN Library Runtime to version [7.6.5+cuda10.1](#)
 - ▶ Updated TensorRT to version [6.0.1+cuda10.1](#)

- ▶ Updated NVIDIA GPU driver to version [418.126.02](#)
- ▶ Mellanox CX6 cards are now supported on DGX-1 (Tesla V100).
- ▶ PXE boot is now supported on DGX-1 and DGX-2.
- ▶ CPU mitigations can now be disabled and restored.
- ▶ Support for the NVSM commands `nvsm show health` and `nvsm dump health` on the DGX Station replaces the DGX Station Diagnostic Components.

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 8. Contents of the Update Repository

Component	Version
GPU Driver	418.126.02
NVIDIA System Management (NVSM)	20.01.15
Data Center GPU Management (DCGM)	1.7.2
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0
NCCL Runtime	2.5.6+cuda10.1
cuDNN Library Runtime	7.6.5+cuda10.1
TensorRT	6.0.1+cuda10.1
CUDA Toolkit	10.1.243

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-20.02** on the following systems:

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7 and CentOS
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7 and CentOS.

- ▶ [NVIDIA DGX Station with Red Hat Enterprise Linux 7 and CentOS](#)

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [DGX-2: NVSM Error Occurs When Accessing Systems/Localhost](#)
- ▶ [DGX-1, DGX-2: NVSM Services May Fail to Load](#)
- ▶ [DGX-2, DGX-1, DGX Station: Docker GPU Containers Cannot be Run](#)
- ▶ [DGX-1, CentOS: NVSM CLI and API Reports Incorrect DGX-1 Serial Number](#)

Known Issues

- ▶ [DGX-2: Unable to Boot from Degraded OS RAID 1 Array](#)
- ▶ [DGX-2: Ubuntu Appears as a Boot Option](#)
- ▶ [DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
- ▶ [DGX-1: NVSM Storage Alerts are Cleared When All Data Drives are Removed](#)
- ▶ [DGX-1: Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)
- ▶ [DGX Station: The Symbolic Link to /usr/local/cuda Is Missing](#)

Chapter 10. Version EL7-20.01

The DGX Software for Red Hat Enterprise Linux 7, Version EL7-20.01, is available. **This version is available only for the NVIDIA DGX Station.**



Important: Installing EL7-20.01 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version.

To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>.

Update Repository

The update repository was created for delivering the NVIDIA driver to the R418 driver branch, CUDA 10.1, and other software packages associated with CUDA 10.1. These updates are available only if the update repository is enabled.

If you are installing DGX Software for Red Hat Enterprise Linux 7 - Version EL7-20.01, you must ensure that the update repository is enabled. For more information, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#) or the [DGX Software for CentOS - Installation Guide](#).

Change Highlights

This version introduces support for Red Hat Enterprise Linux 7 on the DGX Station.

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.

Table 9. Contents of DGX Software for Red Hat Enterprise Linux 7, Version EL7-20.01

Component	Version
GPU Driver	418.116.00

Component	Version
DGX Station Diagnostic Components	nvhealth-dgxstation 19.01.10-1 nvsysinfo-dgxstation 19.01.4-1
DGX Station Theme	dgxstation-desktop - 19.10-0 dgx-gnome - 19.10-0
NCCL Runtime	2.4.7+cuda10.1
cuDNN Library Runtime	7.6.2+cuda10.1
TensorRT	5.1.5+cuda10.1
CUDA Toolkit	10.1.243

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-20.01 only** on the DGX Station with Red Hat Enterprise Linux 7 and CentOS.

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Installation Instructions



Note: This version is available only for a fresh installation on the DGX Station.

For installing on a fresh DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#) or the [DGX Software for CentOS - Installation Guide](#).

Known Issues

- ▶ [DGX-2, DGX-1, DGX Station: Docker GPU Containers Cannot be Run](#)
- ▶ [DGX-2, DGX Station: Ubuntu Boot Option Appears After Installing Red Hat Enterprise Linux](#)
- ▶ [DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
- ▶ [DGX Station: The Symbolic Link to /usr/local/cuda Is Missing](#)
- ▶ [DGX Station: An Incorrect Serial Number Is Listed in nvhealth Output](#)
- ▶ [DGX Station: The System Cannot be Resumed After Suspension](#)

Chapter 11. Version EL7-19.11

The DGX Software for Red Hat Enterprise Linux 7, EL7-19.11 update, is available. **You must enable the update repository in order to obtain this update.**



Important: Installing or updating to EL7-19.11 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-19.11, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

Update Repository

The update repository was created for updating the NVIDIA driver to the R418 driver branch, CUDA 10.1, and other software packages associated with CUDA 10.1.

These updates are available only if you have enabled the update repository. See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

Change Highlights

The following changes were made to the **update** repository.

- ▶ Updated NVSM to version [19.08.6](#).
- ▶ Updated DCGM to [v1.7.2](#).
- ▶ Updated NVIDIA GPU driver to version [418.116.00](#)

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 10. Contents of the Update Repository

Component	Version
GPU Driver	418.116.00
NVIDIA System Management (NVSM)	NVSM 19.08.6 nvsm-cli 19.08.7 nvsm-dshm 19.08.6 nvsm-apis 19.08.10 nvsm-health 19.08.10
Data Center GPU Management (DCGM)	1.7.2
NCCL Runtime	2.4.7+cuda10.1
cuDNN Library Runtime	7.6.2+cuda10.1
TensorRT	5.1.5+cuda10.1
CUDA Toolkit	10.1.243

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-19.11** on the

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7 and CentOS, and
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7 and CentOS.

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software

runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

See the section [Installing and Updating the Software](#) for instructions.

Resolved Issues

- ▶ [\[DGX-1\]: Failure Reading Sector 0x0 May Occur on Reboot](#)

Known Issues

- ▶ [DGX-2, DGX-1, DGX Station: Docker GPU Containers Cannot be Run](#)
- ▶ [DGX-1, DGX-2: NVSM Services May Fail to Load](#)
- ▶ [DGX-2: NVSM Error Occurs When Accessing Systems/Localhost](#)
- ▶ [DGX-2: Ubuntu Appears as a Boot Option](#)
- ▶ [DGX-1: DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
- ▶ [DGX-1: NVSM Storage Alerts are Cleared When All Data Drives are Removed](#)
- ▶ [DGX-1: Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [DGX-1, CentOS: NVSM CLI and API Reports Incorrect DGX-1 Serial Number](#)

Chapter 12. Version EL7-19.10

The DGX Software for Red Hat Enterprise Linux 7, EL7-19.10 update, is available. **You must enable the update repository in order to obtain this update.**



Important: Installing or updating to EL7-19.10 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-19.10, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

Update Repository

The update repository was created for updating the NVIDIA driver to the R418 driver branch, CUDA 10.1, and other software packages associated with CUDA 10.1.

These updates are available only if you have enabled the update repository. See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

Change Highlights

The following changes were made to the **update** repository.

- ▶ Added NVSM version 19.08.
See also the list of resolved issues.
- ▶ Updated DCGM to v1.7.1
- ▶ Updated NVIDIA GPU driver to version 418.87.01.

Resolved a driver issue that caused the GPU to hang.

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 11. Contents of the Update Repository

Component	Version
GPU Driver	418.87.01
NVIDIA System Management (NVSM)	nvsm-cli 19.08.5 nvsm-dshm 19.08.5 nvsm-apis 19.08.8 nvsm-health 19.08.6
Data Center GPU Management (DCGM)	1.7.1
NCCL Runtime	2.4.7+cuda10.1
cuDNN Library Runtime	7.6.2+cuda10.1
TensorRT	5.1.5+cuda10.1
CUDA Toolkit	10.1.243

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-19.10** on the

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7 and CentOS, and
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7 and CentOS.

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software

runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

- ▶ For installing on a fresh DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#) or the [DGX Software for CentOS - Installation Guide](#).
- ▶ To obtain additional updates, issue the following.

```
sudo yum update
```

The updates will depend on which repositories you have enabled.

See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

Resolved Issues

- ▶ [DGX-2]: NVSM is unable to detect PSU and fan sensors with BMC v1.05.07 (due to updated sensor names).
- ▶ [DGX-2]: [NVSM erroneously reports PSUs and fans as unhealthy after updating the BMC to version 1.05.07.](#)
- ▶ [DGX-1]: [Failure Reading Sector 0x0 May Occur on Reboot](#)

Known Issues

- ▶ [DGX-2]: [DGX-2: NVSM Error Occurs When Accessing Systems/Localhost](#)
- ▶ [DGX-2]: [Ubuntu Appears as a Boot Option](#)
- ▶ [DGX-1]: [DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
- ▶ [DGX-1]: [NVSM Storage Alerts are Cleared When All Data Drives are Removed](#)
- ▶ [DGX-1]: [Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [DGX-1][CentOS]: [NVSM CLI and API Reports Incorrect DGX-1 Serial Number](#)

Chapter 13. Version EL7-19.09

The DGX Software for Red Hat Enterprise Linux 7, EL7-19.09 update, is available.



Important: Installing or updating to EL7-19.09 also updates the installed Red Hat Enterprise Linux 7 distribution to the latest version. If you require use of the Mellanox OpenFabrics Enterprise Distribution for Linux (MLNX_OFED), then before installing or updating to EL7-19.09, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 7 version.

- ▶ To check the latest Red Hat Enterprise Linux 7 version, visit <https://access.redhat.com/articles/3078>
- ▶ To check the MLNX_OFED package OS support, visit <https://docs.mellanox.com/category/mlnxofedib>, click the latest MLNX_OFED software version and then use the side menu to navigate to Release Notes->General Support in MLNX_OFED and view Supported Operating Systems.

If a supporting MLNX_OFED package has been released, then be sure to install it.

Change Highlights

The following changes were made to the default repository.

- ▶ Updated NVIDIA Driver to version 410.129: Includes security updates. See the [Driver Release Notes](#) for more information.

Update Repository

The optional repository was created for updating the NVIDIA driver to the R418 driver branch, CUDA 10.1, and other software packages associated with CUDA 10.1.

These updates are available only if you have enabled the optional update repository. See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 12. Contents of the Default Repository

Component	Version
GPU Driver	410.129
NVIDIA System Health Monitor (NVSM)	nvsm-cli 19.06.5-1 nvsm-dshm 19.06-2 nvsm-apis 19.06.9-1 nvhealth 19.06.8-1
Data Center GPU Management (DCGM)	1.5.9
NCCL Runtime	2.4.7+cuda10.0
cuDNN Library Runtime	7.6.0.64-1+cuda10.0
TensorRT	5.1.5+cuda10.0
CUDA Toolkit	10.0-130

Table 13. Contents of the Update Repository

Component	Version
GPU Driver	418.87
NVIDIA System Health Monitor (NVSM)	Not included. Components are updated from the default repository.
Data Center GPU Management (DCGM)	1.6.6
NCCL Runtime	2.4.7+cuda10.1

Component	Version
cuDNN Library Runtime	7.6.2+cuda10.1
TensorRT	5.1.5+cuda10.1
CUDA Toolkit	10.1.243

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-19.09** on the

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7 and CentOS, and
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7 and CentOS.

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

- ▶ For installing on a fresh DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#) or the [DGX Software for CentOS - Installation Guide](#).
- ▶ To obtain additional updates, issue the following.

```
sudo yum update
```

The updates will depend on which repositories you have enabled.

See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

Resolved Issues

- ▶ [DGX-1]: [NVSM CLI Returns HTTP Code 500 Error After Hot-Plugging a Previously Removed SSD](#)
- ▶ [DGX-1]: [Failure Reading Sector 0x0 May Occur on Reboot](#)

Known Issues

- ▶ [DGX-2]: [DGX-2: NVSM Error Occurs When Accessing Systems/Localhost](#)
- ▶ [DGX-2]: [NVSM erroneously reports PSUs and fans as unhealthy after updating the BMC to version 1.05.07.](#)
- ▶ [DGX-2]: [Ubuntu Appears as a Boot Option](#)
- ▶ [DGX-1]: [DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
- ▶ [DGX-1]: [NVSM Storage Alerts are Cleared When All Data Drives are Removed](#)

- ▶ [\[DGX-1\]: Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [\[DGX-1\]\[CentOS\]: NVSM CLI and API Reports Incorrect DGX-1 Serial Number](#)

Chapter 14. Version EL7-19.08

The DGX Software for Red Hat Enterprise Linux 7, EL7-19.08 update, is available. These updates are available only if you have enabled the optional update repository. See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

The optional repository was created for updating the NVIDIA driver to the R418 driver branch, CUDA 10.1, and other software packages associated with CUDA 10.1.

Change Highlights

The following changes were made to the optional update repository.

- ▶ Updated NVIDIA Driver to version 418.87: Includes security updates
- ▶ Updated CUDA Toolkit to 10.1 Update 2 (10.1.243)
- ▶ Updated cuDNN Library Runtime to 7.6.2
- ▶ Updated DCGM to 1.6.6

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 14. Contents of the Default Repository

Component	Version
GPU Driver	410.104
NVIDIA System Health Monitor (NVSM)	nvsm-cli 19.06.5-1 nvsm-dshm 19.06-2 nvsm-apis 19.06.9-1 nvhealth 19.06.8-1
Data Center GPU Management (DCGM)	1.5.9
NCCL Runtime	2.4.7+cuda10.0
cuDNN Library Runtime	7.6.0.64-1+cuda10.0
TensorRT	5.1.5+cuda10.0
CUDA Toolkit	10.0-130

Table 15. Contents of the Optional Repository (EL7-19.08 update)

Component	Version
GPU Driver	418.87
NVIDIA System Health Monitor (NVSM)	Not included. Components are updated from the default repository.
Data Center GPU Management (DCGM)	1.6.6
NCCL Runtime	2.4.7+cuda10.1
cuDNN Library Runtime	7.6.2+cuda10.1
TensorRT	5.1.5+cuda10.1
CUDA Toolkit	10.1.243

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-19.08** on the

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7.6 and CentOS, and
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7.6 and CentOS.

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software

runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

- ▶ For installing on a fresh DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#) or the [DGX Software for CentOS - Installation Guide](#).
- ▶ To obtain additional updates, issue the following.

```
sudo yum update
```

The updates will depend on which repositories you have enabled.

See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

Known Issues

- ▶ [DGX-2]: [Ubuntu Appears as a Boot Option](#)
- ▶ [DGX-1]: [DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
- ▶ [DGX-1]: [NVSM Storage Alerts are Cleared When All Data Drives are Removed](#)
- ▶ [DGX-1]: [Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [DGX-1]: [NVSM CLI Returns HTTP Code 500 Error After Hot-Plugging a Previously Removed SSD](#)
- ▶ [DGX-1]: [Failure Reading Sector 0x0 May Occur on Reboot](#)

Chapter 15. Version EL7-19.07

The DGX Software for Red Hat Enterprise Linux 7, Version EL7-19.07, is available.

Change Highlights

► Optional Installation Repository

Added an optional repository for updating the NVIDIA driver to the R418 driver branch, CUDA 10.1, and other software packages associated with CUDA 10.1. See the list of components in the table [Contents of Optional Repository for EL7-19.07](#).

The default repository updates to the component versions listed in the table [Contents of Default Repository for EL7-19.07](#).

► NVSM Updated to version 19.06

Implemented the following NVSM updates:

- Storage reporting: NVSM now reports the physical slot number in addition to device name of the failed storage device.
- NVSM APIs are based on the OpenAPI project.
- Generic bug fixes

Software Contents:

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Table 16. Contents of Default Repository for EL7-19.07

Component	Version
GPU Driver	410.104
NVIDIA System Health Monitor (NVSM)	nvsm-cli 19.06.5-1 nvsm-dshm 19.06-2 nvsm-apis 19.06.9-1 nvhealth 19.06.8-1
Data Center GPU Management (DCGM)	1.5.9
NCCL Runtime	2.4.7+cuda10.0
cuDNN Library Runtime	7.6.0.64-1+cuda10.0
TensorRT	5.1.5+cuda10.0
CUDA Toolkit	10.0-130

Table 17. Contents of Optional Repository for EL7-19.07

Component	Version
GPU Driver	418.67
NVIDIA System Health Monitor (NVSM)	Not included. Components are updated from the default repository.
Data Center GPU Management (DCGM)	1.6.5
NCCL Runtime	2.4.7+cuda10.1
cuDNN Library Runtime	7.6.0.64-1+cuda10.1
TensorRT	5.1.5+cuda10.1
CUDA Toolkit	10.1.168

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-19.07** on the

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7.6 and CentOS, and
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7.6 and CentOS.

NVIDIA acknowledges the wide use of CentOS and understands that it is a community-developed derivative of the NVIDIA supported Red Hat Enterprise Linux. Support for CentOS is available directly from the CentOS community. NVIDIA ensures that NVIDIA provided software

runs on tested CentOS versions and will try to identify and correct issues related to NVIDIA provided software.

Update Instructions

- ▶ For installing on a fresh DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#).
- ▶ To obtain additional updates, issue the following.

```
sudo yum update
```

The updates will depend on which repositories you have enabled.

See the document [DGX-Software-Stack-for-Red-Hat-Enterprise-Linux-on-DGX](#) (available to DGX customers with an NVIDIA Enterprise Support account) for instructions on updating the NVIDIA repositories.

See the section [Change Highlights](#) for an explanation of the two repositories.

Fixed Issues

- ▶ [DGX-1]: [DSHM Does Not Clear Alerts After RAID 0 Rebuild](#)
- ▶ [DGX-2]: [NVSM Does not Raise an Alert When the EFI Directory is Modified](#)
- ▶ [DGX-2]: [NVSM Reports 'Unsupported Drive' Alerts During RAID 1 Rebuild](#)
- ▶ [DGX-2]: [NVSM EFI Sync Hangs on CentOS](#)

Known Issues

- ▶ [DGX-2]: [Ubuntu Appears as a Boot Option](#)
- ▶ [DGX-1]: [DGX-1: DKMS May not Build for New Kernel During Driver Update](#)
- ▶ [DGX-1]: [NVSM Storage Alerts are Cleared When All Data Drives are Removed](#)
- ▶ [DGX-1]: [Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [DGX-1]: [NVSM CLI Returns HTTP Code 500 Error After Hot-Plugging a Previously Removed SSD](#)

Chapter 16. Version EL7-19.03

The DGX Software for Red Hat Enterprise Linux 7, Version EL7-19.03, is available.

Update Instructions

- ▶ For installing on a fresh DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 - Installation Guide](#).
- ▶ Get additional updates using `yum update`.

Upgrading or updating a system replaces the installed packages with the latest versions available from NVIDIA at the time the system is updated. These packages include security updates and corrections for other high-impact bugs, with focus on maintaining stability and compatibility with earlier versions.

The following table lists the updates that have been made to the NVIDIA repository since release of EL7-19.03.

Updated on	Package	Version	Description
5/14/2019	<code>dgx-raid-config</code>	19.04-1	Added support for RAID configuration tool on CentOS and Fedora.
5/14/2019	<code>nvsm-api</code>	19.02.7.1-1	Added support for NVSM commands on CentOS and Fedora.

Change Highlights

Added support for the NVIDIA DGX-2 system.

Software Contents

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7 and CentOS.



Note: Unlike the DGX OS shipped with the NVIDIA DGX system, the DGX software stack for Red Hat and CentOS does not include the Mellanox OpenFabrics Enterprise Distribution

(MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX system, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Component	Version
DGX Software	EL7-19.03
GPU Driver	410.104
NVIDIA System Health Monitor (NVSM)	nvsm-cli 19.02.1-1 nvsm-dshm 19.03-2 nvsm-apis 19.02.7-1 nvsysinfo 19.01.3-1 nvhealth 19.01.8-1
Data Center GPU Management (DCGM)	1.5.9
NCCL Runtime	2.4.2
cuDNN Library Runtime	7.4.2
TensorRT	5.0.2.6-1
CUDA Toolkit	10.0

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-19.03** on the

- ▶ NVIDIA DGX-2 with Red Hat Enterprise Linux 7.6
- ▶ NVIDIA DGX-1 (Tesla V100) with Red Hat Enterprise Linux 7.6.

Known Issues - DGX-2

- ▶ [NVSM Does not Raise an Alert When the EFI Directory is Modified](#)
- ▶ [Ubuntu Appears as a Boot Option](#)
- ▶ [NVSM Reports 'Unsupported Drive' Alerts During RAID 1 Rebuild](#)

Known Issues - DGX-1

- ▶ [DSHM Does Not Clear Alerts After RAID 0 Rebuild](#)
- ▶ [NVSM Storage Alerts are Cleared When All Data Drives are Removed](#)
- ▶ [Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [NVSM CLI Returns HTTP Code 500 Error After Hot-Plugging a Previously Removed SSD](#)

Chapter 17. Version EL7-19.02

The DGX Software for Red Hat Enterprise Linux 7, Version EL7-19.02, is available.

Change Highlights

Includes security updates to the NVIDIA GPU driver. For more information, see [Security Bulletin: NVIDIA GPU Display Driver - February 2019](#).

Software Contents

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7 and Red Hat-derived operating systems.



Note: Unlike the DGX OS shipped with the NVIDIA DGX-1, the DGX software stack for Red Hat-derived operating systems does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX-1, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Component	Version
DGX Software	EL7-19.02
GPU Driver	410.104
NVIDIA System Health Monitor (NVSM)	nvsm-cli 19.02.1 nvsm-dshm 19.02.2 nvsm-apis 19.02.2 nvsysinfo 19.01.4 nvhealth 19.01.3
Data Center GPU Management (DCGM)	1.5.9
NCCL Runtime	2.4.2
cuDNN Library Runtime	7.4.2

Component	Version
TensorRT	5.0.2.6-1
CUDA Toolkit	10.0

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-19.02** on the

- ▶ NVIDIA DGX-1 (Tesla V100) with
- ▶ Red Hat Enterprise Linux 7.6.

Known Issues

- ▶ [Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [NVSM CLI Returns HTTP Code 500 Error After Hot-Plugging a Previously Removed SSD](#)

Chapter 18. Version EL7-18.11

The DGX Software for Red Hat Enterprise Linux 7 - Version EL7-18.11- is available.

Software Contents

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 7 and Red Hat-derived operating systems.



Note: Unlike the DGX OS shipped with the NVIDIA DGX-1, the DGX software stack for Red Hat-derived operating systems does not include the Mellanox OpenFabrics Enterprise Distribution (MLNX_OFED) for Linux. This is due to the likelihood of the MLNX_OFED kernel being out of sync with the Red Hat distribution kernel. This can result in system instability. To use InfiniBand on the DGX-1, see the [DGX Software for Red Hat Enterprise Linux 7 Installation Guide](#) for instructions.

Component	Version
DGX Software	EL7-18.11
GPU Driver	410.79
NVIDIA System Health Monitor (NVSM)	nvsm-cli 18.10.6-1.el7.x86_64 nvsm-dshm 18.12-2.el7.noarch nvsm-apis 18.10.11-1.el7.x86_64 nvsysinfo 18.10.5-1.el7.x86_64 nvhealth 18.10.10-1.el7.x86_64
Data Center GPU Management (DCGM)	1.5.3-1
NCCL Runtime	2.3.7-1
cuDNN Library Runtime	7.3.1.20-1
TensorRT	5.0.2.6-1
CUDA Toolkit	10.0

Compatibility

NVIDIA has validated and tested the **DGX Software version EL7-18.11** on the

- ▶ NVIDIA DGX-1 (Tesla V100) with
- ▶ Red Hat Enterprise Linux 7.5.

Known Issues

- ▶ [Black screen on BMC Remote Console with Red Hat Enterprise Linux 7.5](#)
- ▶ [NVSM CLI Returns HTTP Code 500 Error After Hot-Plugging a Previously Removed SSD](#)

Chapter 19. Known Issues: All DGX Systems

See the sections for specific versions to see which issues are open in those versions.

19.1. DCGM Service Reported as Deprecated

Issue

When inquiring the status of `dcgm.service`, it is reported as deprecated.

```
$ sudo systemctl status dcgm.service
dcgm.service - DEPRECATED. Please use nvidia-dcgm.service
...
```

Explanation and Workaround

The message can be ignored. `dcgm.service` is, indeed, deprecated, but can still be used without issue. The name of the DCGM service is in the process of migrating from `dcgm.service` to `nvidia-dcgm.service`. During the transition, both are included in DCGM 2.2.8. A later version of DGX EL7 will enable `nvidia-dcgm.service` by default. You can enable `nvidia-dcgm.service` manually (even though there is no functional difference) as follows:

```
$ sudo systemctl stop dcgm.service
$ sudo systemctl disable dcgm.service
$ sudo systemctl start nvidia-dcgm.service
$ sudo systemctl enable nvidia-dcgm.service
```

19.2. Fabric Manager May Fail to Start if DCGM Service Installed

Issue

On systems where both the `datacenter-gpu-manager=1.x` and `datacenter-gpu-manager-fabricmanager=1.x` packages are installed, you may see the `nvidia-fabricmanager` service fail to start with the following errors:

```
nvhostengine_daemon[18519]: nv-hostengine version 1.7.2 daemon started
nvhostengine_daemon[18519]: DCGM initialized
nv-hostengine[18517]: ERROR: TCP bind failed for port 5555 address 16777343 errno 98
nv-hostengine[18517]: Failed to start host engine server
nvhostengine_daemon[18519]: Err: Failed to start DCGM Server
systemd[1]: Started FabricManager service.
systemd[1]: nvidia-fabricmanager.service: main process exited, code=exited,
status=255/n/a
systemd[1]: Unit nvidia-fabricmanager.service entered failed state.
systemd[1]: nvidia-fabricmanager.service failed.
```

This happens because both `dcgm.service` and `nvidia-fabricmanager.service` try to launch `nv-hostengine`. This issue does not affect `datacenter-gpu-manager` version 2.x and later.

Explanation and Workaround

On non-NVSwitch systems such as DGX-1, stop and disable the `nvidia-fabricmanager` service:

```
$ systemctl stop nvidia-fabricmanager
$ systemctl disable nvidia-fabricmanager
```

On NVSwitch systems such as DGX-2 and DGX A100, stop and disable the `dcgm` service:

```
$ systemctl stop dcgm
$ systemctl disable dcgm
```

19.3. nvsm-plugin-memory Service Fails to Launch

Issue

After attempting to start `nvsm-plugin-memory.service`, the service fails. Issuing `systemctl status nvsm-plugin-memory.service` returns error messages such as `nvsm-plugin-memory.service failed OR Failed to start NVSM API plugin service to monitor system memory devices.`

Explanation and Workaround

This can occur with GPU driver release 418 when one or more DIMMs are bad. To workaround, update to Release 450 or 470 as described in [Installing and Updating the Software](#).

Chapter 20. Known Issues: DGX A100

See the sections for specific versions to see which issues are open in those versions.

20.1. NVSM May Raise 'md1 is corrupted' Alert

Issue (fixed with EL7-21.10/R470)

On a system where one OS drive is used for the EFI boot partition and one is used for the root file system (each configured as RAID 1), NVSM raises 'md1 is corrupted' alerts.

Explanation and Workaround

The OS RAID 1 drives are running in a non-standard configuration, resulting in erroneous alert messages. If you alter the default configuration, you must let NVSM know so that the utility does not flag the configuration as an error, and so that NVSM can continue to monitor the health of the drives.

To resolve, enable the R470 repository and update to EL7-21.10 or later, otherwise configure NVSM to support a custom drive partitioning by performing the following.

1. Stop NVSM services.

```
$ systemctl stop nvsm
```

2. Edit `/etc/nvsm/nvsm.config` and set the `"use_standard_config_storage"` parameter to false.

```
"use_standard_config_storage":false
```

3. Remove the NVSM database.

```
$ sudo rm /var/lib/nvsm/sqlite/nvsm.db
```

4. Restart NVSM.

```
$ systemctl restart nvsm
```

20.2. nv_peer_mem Doesn't Start Automatically

Issue (fixed in EL7-21.01)

After installing `nvidia-peer-memory-dkms` in order to use InfiniBand on DGX servers, the `nv_peer_mem` module is not loaded.

Explanation and Workaround

The `nv_peer_mem` module needs to be loaded, either

- ▶ Manually, by issuing `sudo systemctl start nv_peer_mem`, or
- ▶ Automatically on every system boot by performing the following:
 1. Create a file `/etc/modules-load.d/nv-peer-mem.conf` with contents `"nv_peer_mem"`.
 2. Issue `dracut --force /boot/initramfs-$(uname -r).img $(uname -r)`
 3. Reboot

20.3. With Eight NVMe drives installed, nvsm-plugin-pcie generates "ERROR Device not found in mapping table" error

Issue (fixed in 21.01)

With eight U.2 NVMe drives installed, the `nvsm-plugin-pcie` service reports `ERROR: Device not found in mapping table` (for example, in response to `systemctl status nvsm*`) for the additional four drives.

Explanation and Workaround

This is an issue with the NVSM plugin PCIe service, which is not detecting the additional four drives. `nvsm show health` and `nvsm dump health` function normally and no false alerts are raised in connection with this issue.

20.4. nvidia-smi Reports Persistence Mode is Off Within a Container

Issue (fixed in EL7-20.9)

When `nvidia-smi` is run within a non-privileged container, the output shows that persistence mode is off for all the GPUs.

Explanation and Workaround

Within non-privileged containers, persistence mode cannot be viewed or managed. Persistence mode for the GPUs is actually ON as demonstrated when running `nvidia-smi` outside of the container.

Chapter 21. Known Issues: DGX-1

See the sections for specific versions to see which issues are open in those versions.

21.1. Docker GPU Containers Cannot be Run

Issue (fixed in 20.02)

Attempting to run GPU-accelerated Docker containers may return the following error.

```
Failed to initialize NVML: Unknown Error
```

Explanation and Workaround

This issue occurs if you have installed `docker-1.13.1-108` provided by Red Hat Enterprise Linux.

An updated Docker version that resolves the issue is now available. To obtain the update, issue the following:

```
sudo yum update
```

21.2. DGX: NVSM Services May Fail to Load

Fixed in EL7-20.02

Issue

After installing the DGX software stack for Red Hat Enterprise Linux, the following query returns messages indicating that various `nvsm` services have failed to load.

```
sudo systemctl --state=failed
```

Explanation and Workaround

This issue occurs with later versions of the Mosquitto messaging service installed with Red Hat Enterprise Linux 7.7. The latest version compatible with some NVSM services is 1.5.8. To work around, restore the Mosquitto service to version 1.5.8 as follows:

1. Downgrade the Mosquitto service to 1.5.8.

```
sudo yum downgrade mosquitto-1.5.8-1.el7.x86_64
```

2. Restart NVSM services.

```
sudo systemctl restart nvsm*
```

21.3. DGX-1: DKMS May not Build for New Kernel During Driver Update

Issue

This issue is resolved with updated installation instructions.

When updating the driver, the DKMS module may not build for a newly installed kernel, resulting in a driver/library mismatch. This can be confirmed by the following output when issuing `nvidia-smi`:

```
Failed to initialize NVML: Driver/library version mismatch
```

Workaround

Initiate a DKMS build manually by issuing the following:

```
$ sudo dkms install nvidia/418.67 -k $(uname -r)
```

21.4. NVSM CLI Returns HTTP Code 500 Error After Hot-Plugging a Previously Removed SSD

Issue

(Fixed in EL7-19.09) After removing one of the cache SSDs from the DGX-1, checking the status using NVSM CLI, and then hot-plugging the SSD back in, NVSM CLI reports an HTTP code 500 error.

Example, where drive 20:4 is the reinserted SSD (20 is the enclosure ID and 4 is the drive slot):

```
nvsm-> show /systems/localhost/storage/drives/20:4
```

```
/systems/localhost/storage/drives/20:4
```

```
ERROR:nvsm:Bad HTTP status code "500" from NVSM backend: Internal Server Error
```

Explanation and Workaround

After re-inserting the SSD back into the system, NVSM recognizes the drive but fails to get full device information from storCLI. Additionally, the RAID controller sets the array to offline and

marks the re-inserted SSD as Unconfigured_Bad (UBad). This prevents the RAID 0 array from being recreated.

To correct this condition,

1. Set the drive back to a good state.

```
# sudo /opt/MegaRAID/storcli/storcli64 /c0/e<enclosure_id>/s<drive_slot> set good force
```

2. Run the script to recreate the array.

```
# sudo configure_raid_array.py -c -f
```

21.5. DGX-1: DSHM does not clear alerts after RAID 0 data drives are recreated

This issue was fixed in EL7-19.07.

Issue

The alert that comes up (for example, from the "nvsm show alerts" command) when removing the RAID 0 data drive is not cleared after replacing the drive, recreating the RAID 0 array, and then rebooting the system.

Workaround

To clear the alerts, run the following command:

```
# systemctl restart nvsm-storage-dshm
```

21.6. Failure Reading Sector 0x0 May Occur on Reboot

Issue

(Resolved in Red Hat Enterprise Linux 7.7) Upon rebooting the server, you may see the following message on the boot screen.

```
error: failure reading sector 0x0 from 'hd0'.
Press any key to continue ...
```

Action to Take

Press any key to continue. The server continues the boot process without other problems.

Resolution

Upgrade to Red Hat Enterprise Linux 7.7.

21.7. NVSM CLI and API Reports Incorrect DGX-1 Serial Number

Fixed in EL7-20.02

Issue

The DGX serial number returned by `nvsm show health` is a generic serial number that does not reflect the actual number. The same occurs with the NVSM API.

Resolution

This issue will be resolved in a future update.

Chapter 22. Known Issues: DGX-2

See the sections for specific versions to see which issues are open in those versions.

22.1. Docker GPU Containers Cannot be Run

Issue (fixed in 20.02)

Attempting to run GPU-accelerated Docker containers may return the following error.

```
Failed to initialize NVML: Unknown Error
```

Explanation and Workaround

This issue occurs if you have installed `docker-1.13.1-108` provided by Red Hat Enterprise Linux.

An updated Docker version that resolves the issue is now available. To obtain the update, issue the following:

```
sudo yum update
```

22.2. DGX-2: NVSM Error Occurs When Accessing Systems/Localhost

Fixed in EL7-20.02

Issue

Switching to the `systems/localhost` folder results in an error with message "Error connecting to NVSM backend".

Explanation and Workaround

This is due to the NVSM `mosquito` service accessing the IPv6 interface. To work around, inspect the `/etc/hosts` config file for the following lines:

```
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
```

Comment out the localhost6 line.

```
:::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
```

22.3. DGX: NVSM Services May Fail to Load

Fixed in EL7-20.02

Issue

After installing the DGX software stack for Red Hat Enterprise Linux, the following query returns messages indicating that various nvsm services have failed to load.

```
sudo systemctl --state=failed
```

Explanation and Workaround

This issue occurs with later versions of the Mosquitto messaging service installed with Red Hat Enterprise Linux 7.7. The latest version compatible with some NVSM services is 1.5.8. To work around, restore the Mosquitto service to version 1.5.8 as follows:

1. Downgrade the Mosquitto service to 1.5.8.

```
sudo yum downgrade mosquitto-1.5.8-1.el7.x86_64
```

2. Restart NVSM services.

```
sudo systemctl restart nvsm*
```

22.4. DGX-2: NVSM Erroneously Reports PSUs and Fans as Unhealthy

This issue is fixed in EL7-19.10.

Issue

After updating the BMC to version 1.05.07, output from `nvsm show health` reports PSUs and Fans as "unhealthy" and that they cannot be detected, even though they are fine as indicated when using `ipmitool`.

Explanation

The "unhealthy" status is erroneous and does not impact functionality.

22.5. DGX-2: NVSM Does not Show Alerts for Modified EFI Directory on Boot Drive

This issue was fixed in EL7-19.07.

Issue

If the EFI directory of one of the RAID 1 OS drives is inadvertently modified, the system will boot off the good drive but NVSM does not show an alert. The `nvsm show` command reports the drive as healthy.

Explanation

The EFI directory is used to hold the UEFI boot file. The ESP monitor will not be aware of changes to the directory name and will not generate an alert. This will be resolved in a future release of the NVSM software.

22.6. DGX-2, DGX Station: Ubuntu Boot Option Appears After Installing Red Hat Enterprise Linux

Issue

After installing Red Hat Enterprise Linux 7.6 and rebooting, the Ubuntu boot option still appears in the boot menu.

Explanation and Workaround

After installing Red Hat Enterprise Linux, the OS leaves entries from the previous DGX OS in the EFI boot table. These entries have no effect on the system other than potentially causing confusion. You can manually remove the entries as follows.

1. Obtain a list of all the entries in the boot table.

```
efibootmgr list
```

2. To remove an entry, run the following.

```
sudo efibootmgr -b <xxxx> -B
```

Where `<xxxx>` is the boot entry number.

Example: To remove the following boot entry

```

Boot000A* ubuntu      HD(1,GPT,ae7ba5cb-d73f-43af-
ae8c-96d8579d7299,0x800,0x100000)/File(\EFI\UBUNTU\GRUBX64.EFI) ..BO
run
sudo efiboomgr -b 000A -B

```

22.7. DGX-2: NVSM reports "System has unsupported drive" during RAID 1 rebuild

This issue was fixed in EL7-19.07.

Issue

While rebuilding the RAID 1 array, "unsupported drive" alerts appear for the volume being rebuilt.

Workaround

This is an erroneous alert and can be ignored. To prevent the alert from being raised, mute monitoring for all storage components, including drives and volumes, before rebuilding the RAID array as follows.

```

# nvsm set /systems/localhost/storage/policy
drive_mute_monitoring=Slot0,Slot1,Slot2,Slot3,Slot4,Slot5,Slot6,Slot7,Slot8,Slot9,Slot10,Slot11,S
# nvsm set /systems/localhost/storage/policy volume_mute_monitoring=md0,md1

```

22.8. DGX-2: NVSM EFI Sync Hangs on CentOS

Issue

On CentOS, when attempting to replicate the EFI partition and rebuild RAID 1, the rebuild process hangs.

Explanation

This is an issue with syncing EFI on CentOS, and is resolved in EL7-19.07.

Chapter 23. Known Issues: DGX Station

See the sections for specific versions to see which issues are open in those versions.

23.1. Docker GPU Containers Cannot be Run

Issue (fixed in 20.02)

Attempting to run GPU-accelerated Docker containers may return the following error.

```
Failed to initialize NVML: Unknown Error
```

Explanation and Workaround

This issue occurs if you have installed `docker-1.13.1-108` provided by Red Hat Enterprise Linux.

An updated Docker version that resolves the issue is now available. To obtain the update, issue the following:

```
sudo yum update
```

23.2. DGX Station: The Symbolic Link to `/usr/local/cuda` Is Missing

Issue

[Fixed in EL7-21-07] 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.

Workaround

This workaround requires `sudo` privileges.

Re-create the symbolic link to `/usr/local/cuda` from the versioned CUDA directory, for example, `/usr/local/cuda-10.1`.

```
# sudo ln -s /usr/local/cuda-10.1 /usr/local/cuda
```

23.3. DGX Station: An Incorrect Serial Number Is Listed in `nvhealth` Output

Issue

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
-----
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
...
```

23.4. DGX Station: The System Cannot be Resumed After Suspension

Issue

The DGX Station cannot be resumed after being suspended either from the desktop GUI or by using the `systemctl suspend` command. Pressing a keyboard key or the power button when the system is suspended has no effect: The display remains dark, it is not possible to log in to the system, and the system does not respond to a `ping` command from a remote host.

Workaround

To avoid this issue, do **not** suspend the system.

If you encounter this issue, turn off the power to the system and then turn on the power to the system again.

Chapter 24. Known Issues: DGX Station A100

See the sections for specific versions to see which issues are open in those versions.

24.1. nvidia-switch Error Message in DGX Station A100

Issue

[Fixed in EL7-21.07] In DGX Station A100, after you install the image, and you run `$ cat /etc/dgx-release`, you might see a version mismatch error message for nvidia-nvswitch.

Explanation and Workaround

There are no NVswitches in DGX Station A100, so you can ignore the error messages.

Chapter 25. Known Limitations

This section lists known limitations and other issues that will not be fixed.

25.1. Unable to Boot from Degraded RAID 1 Array

Issue

After deleting the second partition of the OS RAID 1 array, putting it into a degraded mode, the system cannot be booted.

Explanation and Workaround

This occurs with Red Hat Enterprise Linux 7 or CentOS 7. The OS is booting into emergency mode.

To manually recover, perform the following while in emergency mode to enter maintenance mode.

```
mdadm --run /dev/md0  
exit
```

While in maintenance mode, recover by replacing the the lost RAID partition.

```
mdadm /dev/md0 --add /dev/nvme1n1p2
```

25.2. NGC Containers Might not Run

Issue

NGC containers might not run without either

- ▶ using the `--privileged` argument, or
- ▶ disabling selinux

Explanation and Workaround

NVIDIA devices sometimes are not labelled correctly after boot. To work around, issue the following before running the NGC container.

```
$ sudo restorecon /dev/nvidia*
```

25.3. DGX-2, DGX Station: Ubuntu Boot Option Appears After Installing Red Hat Enterprise Linux

Issue

After installing Red Hat Enterprise Linux 7.6 and rebooting, the Ubuntu boot option still appears in the boot menu.

Explanation and Workaround

After installing Red Hat Enterprise Linux, the OS leaves entries from the previous DGX OS in the EFI boot table. These entries have no affect on the system other than potentially causing confusion. You can manually remove the entries as follows.

1. Obtain a list of all the entieres in the boot table.

```
efibootmgr list
```

2. To remove an entry, run the following.

```
sudo efibootmgr -b <xxxx> -B
```

Where <xxxx> is the boot entry number.

Example: To remove the following boot entry

```
Boot000A* ubuntu      HD(1,GPT,ae7ba5cb-d73f-43af-ae8c-96d8579d7299,0x800,0x100000)/File(\EFI\UBUNTU\GRUBX64.EFI)..BO
```

```
run
```

```
sudo efiboomgr -b 000A -B
```

25.4. DGX-1: NVSM Storage Alerts are Cleared After Removing All Four RAID 0 Data Drives

Issue

When data drives are removed, NVSM raises several alerts including a controller alert; but after removing the last drive, the controller alert is cleared.

Status

This is not a typical or likely use case.

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