Table of Contents

Chapter 1. DGX Software For Red Hat Enterprise Linux 8 Overview.................................. 1
Chapter 2. Version EL8-21.08.............................................................................................. 2
Chapter 3. Version EL8-20.11.............................................................................................. 5
Chapter 4. Known Issues..................................................................................................... 8
  4.1. [DGX-1, DGX-2]: nvsm dump health Does not Generate sosreport................................. 8
  4.2. [DGX-2]: No Rebuild Function for RAID 0 if Volume is not md1...................................... 8
  4.3. [DGX-2]: Storage Alerts Persist from Previous RAID Configuration............................... 9
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 on the Ubuntu operating system. See also the DGX Software on Red Hat Enterprise Linux 8 Installation Guide.

1.1. Current Versions

The following are the current versions available.

<table>
<thead>
<tr>
<th>Product</th>
<th>Current Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX Station</td>
<td>EL8-21.08</td>
</tr>
<tr>
<td>DGX-2, DGX-1</td>
<td>EL8-21.08</td>
</tr>
<tr>
<td>DGX A100</td>
<td>EL8-21.08</td>
</tr>
<tr>
<td>DGX Station A100</td>
<td>EL8-21.08</td>
</tr>
</tbody>
</table>

1.2. Installing and Updating the Software

Important: Before installing or performing the upgrade, refer to chapter on the latest version for additional instructions depending on the specific EL8 release.

Installing the Software

To install the software on a fresh DGX system, see the DGX Software for Red Hat Enterprise Linux 8 - Installation Guide.

Updating the Software

To update your DGX system to the latest version from a previous EL8 version, do the following.

```bash
sudo dnf update -y --nobest
```
Chapter 2. Version EL8-21.08

The DGX Software for Red Hat Enterprise Linux 8, EL8-21.08, is available.

EL8-21.08 supports all DGX products - DGX A100, DGX-2, DGX-1, DGX Station, and DGX Station A100.

Important: Installing or updating to EL8-21.08 also updates the installed Red Hat Enterprise Linux 8 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 EL8-21.08, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 8 version.

- To check the latest Red Hat Enterprise Linux 8 version, visit https://access.redhat.com/articles/3078
- To check the MLNX_OFED package OS support, visit https://docs.mellanox.com/category/mlnxofed, 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

- Support for DGX Station A100
- Added the NVIDIA GPU Driver Release 470
- Validated with NVIDIA MLNX_OFED 5.4
- Docker CE updated to 20.10

Software Contents

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 8.

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. When using `MLNX_OFED` with Red Hat, ensure you install a supported MLNX_OFED kernel version to avoid incompatibilities with the Red Hat distribution kernel. Refer to the DGX Software for Red Hat Enterprise Linux 8 Installation Guide for instructions.

<table>
<thead>
<tr>
<th>Component</th>
<th>Versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPU Driver (R470)</td>
<td>470.57.02</td>
</tr>
<tr>
<td>GPU Driver (R450)</td>
<td>450.142.00</td>
</tr>
<tr>
<td>NCCL</td>
<td>2.10.3</td>
</tr>
<tr>
<td>cuDNN</td>
<td>8.2.2</td>
</tr>
<tr>
<td>NVIDIA System Management (NVSM)</td>
<td>21.07.14</td>
</tr>
<tr>
<td>Data Center GPU Management (DCGM)</td>
<td>2.2.8</td>
</tr>
<tr>
<td>DGX Station Theme</td>
<td>nv-yaru-theme: 20.10-1</td>
</tr>
<tr>
<td>CUDA Toolkit</td>
<td>CUDA 11.4</td>
</tr>
<tr>
<td>Docker Engine</td>
<td>20.10.07</td>
</tr>
<tr>
<td>nvidia-container-runtime</td>
<td>3.5.0-1</td>
</tr>
<tr>
<td>NGC CLI</td>
<td>2.2.0</td>
</tr>
<tr>
<td>nvidia-mig-manager</td>
<td>0.1.2-1</td>
</tr>
</tbody>
</table>

**Compatibility**

NVIDIA has validated and tested the **DGX Software version EL8-21.08** on the following systems:

- **Linux Distribution and kernel:**
  - Red Hat Enterprise Linux 8.4
  - CentOS 8.4
  - Kernel 4.18.0-305

- **NVIDIA DGX systems**
  - NVIDIA DGX A100 with Red Hat Enterprise Linux 8.4 and CentOS 8
  - NVIDIA DGX-2 with Red Hat Enterprise Linux 8.4 and CentOS 8
  - NVIDIA DGX-1 (V100) with Red Hat Enterprise Linux 8.4 and CentOS 8
  - NVIDIA DGX Station with Red Hat Enterprise Linux 8.4 and CentOS 8
  - NVIDIA DGX Station A100 with Red Hat Enterprise Linux 8.4 and CentOS 8

- **21.07 Deep Learning Framework containers**

- **NVIDIA GPUDirect Storage v1.0** (refer to the GDS documentation for additional information)
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.

**Fixed Issues**
- [DGX-2]: No Rebuild Function for RAID 0 if Volume is not md1

**Known Issues**
- [DGX-1, DGX-2]: nvsm dump health Does not Generate sosreport
- [DGX-2]: Storage Alerts Persist from Previous RAID Configuration
Chapter 3. Version EL8-20.11

The DGX Software for Red Hat Enterprise Linux 8, EL8-20.11, is available. EL8-20.11 supports the following DGX products - DGX A100, DGX-2, DGX-1, and DGX Station.

**Important:** Installing or updating to EL8-20.11 also updates the installed Red Hat Enterprise Linux 8 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 EL8-20.11, be sure that there is a MLNX_OFED package version available that supports the latest Red Hat Enterprise Linux 8 version.

- To check the latest Red Hat Enterprise Linux 8 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.

See also the **Compatibility** section for more information.

**Change Highlights**

- Initial release of the DGX for Red Hat Enterprise Linux 8 software stack
- Additional updates

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 EL8-20.11.
Table 2.

<table>
<thead>
<tr>
<th>Update Date</th>
<th>Package</th>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 9, 2021</td>
<td>NVIDIA System Management (NVSM)</td>
<td>20.09.26</td>
<td>Added check for homogeneity of PSUs for DGX A100.</td>
</tr>
</tbody>
</table>

Software Contents

The following table provides version information for software included in the DGX Software Stack for Red Hat Enterprise Linux 8.

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. When using MLNX_OFED with Red Hat, ensure you install a supported MLNX_OFED kernel version to avoid incompatibilities with the Red Hat distribution kernel. Refer to the DGX Software for Red Hat Enterprise Linux 8 Installation Guide for instructions.

Table 3. Contents of the Repositories

<table>
<thead>
<tr>
<th>Component</th>
<th>Versions in the Release 450 Driver Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPU Driver</td>
<td>450.80.02</td>
</tr>
<tr>
<td>NVIDIA System Management (NVSM)</td>
<td>20.09.26</td>
</tr>
<tr>
<td>Data Center GPU Management (DCGM)</td>
<td>2.0.13</td>
</tr>
<tr>
<td>DGX Station Theme</td>
<td>dgxstation-desktop - 19.10-0</td>
</tr>
<tr>
<td></td>
<td>dgx-gnome - 19.10-0</td>
</tr>
<tr>
<td>CUDA Toolkit</td>
<td>CUDA 11.2</td>
</tr>
<tr>
<td>Docker Engine</td>
<td>19.03.13</td>
</tr>
<tr>
<td>nvidia-container-runtime</td>
<td>3.4.0-1</td>
</tr>
</tbody>
</table>

Compatibility

NVIDIA has validated and tested the DGX Software version EL8-20.11 with the following:

- Linux Distribution
  - Red Hat Enterprise Linux 8.3
  - CentOS 8.3
  - NVIDIA DGX systems
Important: Currently, the Mellanox cards are not supported with Red Hat Enterprise Linux/CentOS 8.4. To stay on Release 8.3:

- During the initial installation, select a Red Hat Enterprise Linux ISO image for version 8.3 to install.
- When performing an update, as part of the initial installation or after an installation, issue the following command to pin the release to 8.3 and then perform the update:

```
sudo subscription-manager release --set=8.3
sudo dnf update -y --nobest
```

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-1, DGX-2]: nvsm dump health Does not Generate sosreport
- [DGX-2]: No Rebuild Function for RAID 0 if Volume is not md1
- [DGX-2]: Storage Alerts Persist from Previous RAID Configuration
Chapter 4. Known Issues

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

4.1. [DGX-1, DGX-2]: nvsm dump health Does not Generate sosreport

Issue

After running `nvsm dump health`, the log file reports

```
INFO: Could not find sosreport output file
```

Analysis of the log files reveals that information is missing for components that are installed on the system; such as InfiniBand cards.

Explanation

The sosreport is not getting collected. This will be resolved in a later software release.

4.2. [DGX-2]: No Rebuild Function for RAID 0 if Volume is not md1

Issue

[Fixed in EL8-21.08]

If the RAID 0 volumes are a designation other than `md1`, such as `md128`, then there is no Rebuild under Target.

Example:

```
$ nvsm show /systems/localhost/storage/volumes/md128
Properties:
    CapacityBytes = 6146269992678
    Encrypted = False
    Id = md128
```
Explanation

This occurs if the drives are not configured in the default configuration of two OS drives in a RAID 1 configuration and storage drives used for caching in a RAID 0 configuration. The `nvsm rebuild` command does not support non-standard drive configurations.

4.3. [DGX-2]: Storage Alerts Persist from Previous RAID Configuration

Issue

After switching to a custom drive configuration, such as by adding or removing storage drives, any NVSM storage alerts from the previous configuration will still be reported even though the current drive status is healthy.

For example, alerts can appear for `md0` even though the current RAID drive name is `md125` and healthy.

Explanation

To configure NVSM to support custom drive partitioning, perform the following.

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

2. Remove the NVSM database.
   
   `sudo rm /var/lib/nvsm/sqlite/nvsm.db`

3. Restart NVSM.
   
   `sudo systemctl restart nvsm`
Notice

This document is provided for information purposes only and shall not be regarded as a warranty of a certain functionality, condition, or quality of a product. NVIDIA Corporation ("NVIDIA") makes no representations or warranties, expressed or implied, as to the accuracy or completeness of the information contained in this document and assumes no responsibility for any errors contained herein. NVIDIA shall have no liability for the consequences or use of such information or for any infringement of patents or other rights of third parties that may result from its use. This document is not a commitment to develop, release, or deliver any Material (defined below), code, or functionality.

NVIDIA reserves the right to make corrections, modifications, enhancements, improvements, and any other changes to this document, at any time without notice.

Customer should obtain the latest relevant information before placing orders and should verify that such information is current and complete.

NVIDIA products are sold subject to the NVIDIA standard terms and conditions of sale supplied at the time of order acknowledgement, unless otherwise agreed in an individual sales agreement signed by authorized representatives of NVIDIA and customer ("Terms of Sale"). NVIDIA hereby expressly objects to applying any customer general terms and conditions with regards to the purchase of the NVIDIA product referenced in this document. No contractual obligations are formed either directly or indirectly by this document.

NVIDIA products are not designed, authorized, or warranted to be suitable for use in medical, military, aircraft, space, or life support equipment, nor in applications where failure or malfunction of the NVIDIA product can reasonably be expected to result in personal injury, death, or property or environmental damage. NVIDIA accepts no liability for inclusion and/or use of NVIDIA products in such equipment or applications and therefore such inclusion and/or use is at customer’s own risk.

NVIDIA makes no representation or warranty that products based on this document will be suitable for any specified use. Testing of all parameters of each product is not necessarily performed by NVIDIA. It is customer’s sole responsibility to evaluate and determine the applicability of any information contained in this document, ensure the product is suitable and fit for the application planned by customer, and perform the necessary testing for the application in order to avoid a default of the application or the product. Weaknesses in customer’s product designs may affect the quality and reliability of the NVIDIA product and may result in additional or different conditions and/or requirements beyond those contained in this document. NVIDIA accepts no liability related to any default, damage, costs, or problem which may be based on or attributable to: (i) the use of the NVIDIA product in any manner that is contrary to this document or (ii) customer product designs.

No license, either expressed or implied, is granted under any NVIDIA patent right, copyright, or other NVIDIA intellectual property right under this document. Information published by NVIDIA regarding third-party products or services does not constitute a license from NVIDIA to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property rights of the third party, or a license from NVIDIA under the patents or other intellectual property rights of NVIDIA.

Reproduction of information in this document is permissible only if approved in advance by NVIDIA in writing, reproduced without alteration and in full compliance with all applicable export laws and regulations, and accompanied by all associated conditions, limitations, and notices.

THIS DOCUMENT AND ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS [TOGETHER AND SEPARATELY, “MATERIALS”] ARE BEING PROVIDED “AS IS.” NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL NVIDIA BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF ANY USE OF THIS DOCUMENT, EVEN IF NVIDIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA’s aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms of Sale for the product.

Trademarks

NVIDIA, the NVIDIA logo, DGX, DGX-1, DGX-2, DGX A100, DGX Station, and DGX Station A100 are trademarks and/or registered trademarks of NVIDIA Corporation in the United States and other countries. Other company and product names may be trademarks of the respective companies with which they are associated.

Copyright

© 2021 NVIDIA Corporation. All rights reserved.