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Chapter 1. DGX A100 System FW Update Container Overview

The NVIDIA DGX™ A100 System Firmware Update container is the preferred method for updating firmware on DGX A100 system. It provides an easy method for updating the firmware to the latest released versions, and uses the standard method for running Docker containers.

This document describes firmware components that can be updated, any known issues, and how to run this container.

1.1. Features

▷ Automates firmware (FW) update for DGX A100 system firmware, such as the system BIOS and BMC.
▷ Provides flexibility to update individual or all FW components
▷ Embeds the following
  ▷ Qualified FW binaries for supported components
  ▷ Flash update utilities and supporting dependencies
  ▷ Manifest file which lists
    ▸ Target platform and firmware version numbers
    ▸ Sequence in which FW update should be applied
    ▸ “On-Error” policy for every FW component
▷ Supports interactive and non-interactive firmware update
Chapter 2. Using the DGX A100 FW Update Utility

The NVIDIA DGX A100 System Firmware Update utility is provided in a tarball and also as a .run file. Copy the files to the DGX A100 system, then update the firmware using one of the following three methods:

- **NVSM** provides convenient commands to update the firmware using the firmware update container
- **Using Docker** to run the firmware update container
- **Using the .run file** which is a self-extracting package embedding the firmware update container tarball

**Note:** Fan speeds may increase while updating the BMC firmware. This is a normal part of the BMC firmware update process.

2.1. Requirements

Refer to the **Highlights and Changes** in the specific release for the DGX OS and EL7/EL8 versions supported by the firmware update container.

The firmware update container requires that the following modules are installed on the system.

- nvidia_vgpu_vfio
- nvidia-uvm
- nvidia-drm
- nvidia-modeset
- nv_peer_mem
- nvidia_peermem
- nvidia
- i2c_nvidia_gpu
- ipmi_devintf
- ipmi_ssif
These modules are installed as part of the standard DGX OS, EL7, or EL8 installation. The container may fail if any of these modules are not installed. Be sure to follow the provided instructions when installing or upgrading DGX OS, EL7, or EL8.

**Caution:** Observe the following before running the firmware update container:

- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - `dcgm-exporter`
  - `nvidia-dcgm`
  - `nvidia-fabricmanager`
  - `nvidia-persistenced`
  - `xorg-setup`
  - `lightdm`
  - `nvsm-core`
  - `kubelet`
  The container will attempt to stop these services automatically, but will be unable to stop any that are launched from Docker.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

### 2.2. Using NVSM

The NVIDIA DGX A100 system software includes Docker software required to run the container.

1. Copy the tarball to a location on the DGX system.
2. From the directory where you copied the tarball, enter the following command to load the container image.
$ sudo docker load -i nvfw-dgxa100_24.6.1_240604.tar.gz

3. To verify that the container image is loaded, enter the following.

$ sudo docker images

<table>
<thead>
<tr>
<th>REPOSITORY</th>
<th>TAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvfw-dgxa100</td>
<td>24.6.1</td>
</tr>
</tbody>
</table>

4. Using NVSM interactive mode, enter the firmware update module.

$ sudo nvsm

nvsm-> cd systems/localhost/firmware/install

5. Set the flags corresponding to the action you want to take.

$ nvsm(/system/localhost/firmware/install)-> set Flags=<option>

See the *Command and Argument Summary* section below for the list of common flags.

6. Set the container image to run.

$ nvsm(/system/localhost/firmware/install)-> set DockerImageRef=nvfw-dgxa100:24.6.1

7. Run the command.

$ nvsm(/system/localhost/firmware/install)-> start

### 2.3. Using docker run

The NVIDIA DGX A100 system software includes Docker software required to run the container.

1. Copy the tarball to a location on the DGX system.

2. From the directory where you copied the tarball, enter the following command to load the container image.

   $ sudo docker load -i nvfw-dgxa100_24.6.1_240604.tar.gz

3. To verify that the container image is loaded, enter the following.

   $ sudo docker images

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</thead>
<tbody>
<tr>
<td>nvfw-dgxa100</td>
<td>24.6.1</td>
</tr>
</tbody>
</table>

4. Use the following syntax to run the container image.

   $ sudo docker run --rm --privileged -ti -v /:/hostfs nvfw-dgxa100:24.6.1 <command>
   → <[arg1] [arg2] ... [argn]

See the *Command and Argument List* section below for the list of common commands and arguments.
Note: If you do not have the tarball file, but you do have the .run file, you can extract the tarball from the .run file by issuing the following:

```
sudo nvfw-dgxa100_24.6.1_240604.run -x
```

2.4. Using the .run File

The update container is also available as a .run file. The .run file uses Docker or Podman software if either is installed on the system, but can also be run without either installed.

The container uses Podman on Red Hat Enterprise Linux and attempts to use Docker if Podman is not available. The container uses Docker on other platforms. You can override the behavior by specifying `-docker` or `-podman`.

1. After obtaining the .run file, make the file executable.

```
$ chmod +x nvfw-dgxa100_24.6.1_240604.run
```

2. Use the following syntax to run the container image.

```
$ sudo ./nvfw-dgxa100_24.6.1_240604.run <command> <[arg1] [arg2] ... [argn]>
```

2.5. Command and Argument List

The following are common commands and arguments.

- **Show the manifest**
  
  `show_fw_manifest`
  
  ▶ NVSM Example: `$ nvsm(/system/localhost/firmware/install)-> set Flags=show_fw_manifest`
  
  ▶ Docker Run Example: `$ sudo docker run --rm --privileged -ti -v /:/hostfs nvfw-dgxa100:24.6.1 show_fw_manifest`
  
  ▶ .run File Example: `$ sudo ./nvfw-dgxa100_24.6.1_240604.run show_fw_manifest`

- **Show version information**
  
  `show_version`
  
  ▶ NVSM Example: `$ nvsm(/system/localhost/firmware/install)-> set Flags=show_version`
  
  ▶ Docker Run Example: `$ sudo docker run --rm --privileged -ti -v /:/hostfs nvfw-dgxa100:24.6.1 show_version`
  
  ▶ .run File Example: `$ sudo ./nvfw-dgxa100_24.6.1_240604.run show_version`

- Check the onboard firmware against the manifest and update all down-level firmware.
2.5.1. List of Arguments

Update flags:

 Updates all, a specified combination, or an individual firmware component if the image currently on the device is prior to the available version.
 syntax:

```bash
update_fw < firmware_components >
update_fw < component [ -f | --force ] [ component options ] >
```

Update flag Definitions:

- --force For single component updates. Bypass the checks and upgrade regardless of the version.
- all Update firmware on all components. Cannot be used with the '--force' flag.

syntax: update_fw all

(continues on next page)
SBIOS  Update the System BIOS firmware.
syntax: update_fw SBIOS [ -a | --active]
       [ -i | --inactive]

BMC   Update the firmware on all, or a specified Baseboard Management
       Controller.
syntax: update_fw BMC [ -i | --inactive]
       [ -b | --bmc-access-path <BMC IP:login_id:password>]
where:
       --bmc-access-path <val> Non-default access parameters to the BMC

SSD   Update firmware on all, or a specified Solid State Drive.
syntax: update_fw SSD [ -s | --select-ssd <SSD target> ]
where:
       --select-ssd <target> Name of the specific drive to update

PSU   Update the firmware on all, or a specified Power Supply
syntax: update_fw PSU [ -s | --select-psu <PSU number> ] [ -S | --select-
       -slot <PSU slot> ]
where:
       --select-psu <target> Name of the specific PSU to update.
       --select-slot <slot> Name of the specific PSU slot to update

VBIOS Update the Video BIOS firmware on all detected GPUs.
It is not currently possible to update individual GPU devices.
syntax: update_fw VBIOS

FPGA  Update firmware on the FPGA devices on lower and upper GPU trays.
syntax: update_fw FPGA

SWITCH Update firmware on one, specific set, or all switch devices.
syntax: update_fw SWITCH [ -s | --select-switch <switch-model[:BDF]> ]

CEC   Update firmware on one or multiple CEC
syntax: update_fw CEC [ -s | --select-cec [ MB_CEC | Delta_CEC ]

CPLD  Update MB CPLD / MID CPLD firmware
syntax: update_fw CPLD [ -s | --select-cpld [ MB_CPLD | MID_CPLD ]

2.6. Troubleshooting Update Issues

2.6.1. Missing Software Modules

The container may fail if any of these modules are not installed on the system.
  ▶ nvidia_vgpu_vfio
  ▶ nvidia-uvm
The following are examples of error messages:

**Firmware update not started**
Following service(s)/process(es) are holding onto the resource about to be upgraded. These need to be manually stopped for firmware update to occur. If xorg is holding the resources, try to stop it by 'sudo systemctl stop <display manager>',
where the <display manager> can be acquired by 'cat /etc/X11/default-display-manager':
process nvidia-persiste(pid 7554)
  session-1.scope - Session 1 of user swqa
Loaded: loaded (/run/systemd/system/session-1.scope; static; vendor preset: disabled)
Transient: yes
Drop-In: /run/systemd/system/session-1.scope.d
  50-After-systemd-logind/x2eservice.conf, 50-After-systemd-user-sessions/x2eservice.conf, 50-Description.conf, 50-SendSIGHUP.conf, 50-Slice.conf, 50-TasksMax.conf
Active: active (running) since Wed 2021-11-17 00:36:22 EST; 1min 49s ago
CGroup: /user.slice/user-1000.slice/session-1.scope

**modprobe: FATAL: Module nvidia not found in directory /lib/modules/5.4.0-80-gneric**

To recover, perform an update of the DGX OS (refer to the [DGX OS User Guide](#) for instructions), then retry the firmware update.
Chapter 3. Using the DGX A100 Firmware Update ISO

This section describes how to use the DGX A100 firmware update ISO to efficiently update the firmware in a large fleet of DGX A100 systems.

3.1. About the Firmware Update Menu

Once the system boots up to the firmware update ISO, it sets up the environment and launches a firmware update menu. The menu can be used in the following three different modes:

► **Interactive**
  This displays a text-based UI with the following choices of actions to take:
  
  ► **Start the firmware update container**
    This runs the firmware update container using the `update_fw all` option.
  
  ► **Start the firmware update container with custom options**
    This runs the firmware update container using custom arguments that you enter into a text box. Separate multiple arguments by a space. Example
    ```
    update_fw BMC -f
    ```
    See *List of Arguments* for available arguments.
  
  ► **Set up connection for automation and Exit**
    This sets up an SSH connection (default user name is `fwui` and default password is `fw_update`) so you can run automation scripts from a different system. For example, this lets you use Ansible automation.
  
  ► **Exit**

► **Non-interactive**

  This reads the argument from kernel parameter (`/proc/cmdline`) and then runs the firmware update container automatically. See section “Updating the Firmware Automatically” in *Booting to the Firmware Update ISO from a USB Flash Drive.*

► **Automation**
This sets up an SSH connection. The default user name is fwui and default password is fw_update. From there you can use automation scripts (for example, Ansible) to perform the firmware update.

3.2. Booting to the Firmware Update ISO from a USB Flash Drive

This section describes how to boot to the DGX A100 firmware update ISO from a USB flash drive.

3.2.1. Basic Process

Download the ISO image and create a bootable USB drive that contains the ISO image.

**Important:** Do not use the virtual media from the BMC as the BMC will be reset during the update.

3.2.2. Updating the Firmware Automatically

Perform the following steps to set up the firmware to update automatically when the system boots.

1. Edit the GRUB menu parameters within the ISO at BOOT/GRUB/GRUB.CGF as follows.
   
   Set `fwuc-mode=noninteractive`.

   Set the following parameters as needed.

   ▶ `fwuc-update_args=<arg1>,<arg2> ...`

   ▶ `fwuc-extra_args=<extra-arg1> ...`

   See List of Arguments for available arguments.

   The following example boots the firmware update ISO in non-interactive mode and then updates the SBIOS without first checking the installed version, then reboots the system after the update.

   ```
   menuentry "Start Firmware Update Environment (Non-interactive)" {
     linux /vmlinuz boot=live console=tty0 apparmor=0 elevator=noop nvme-core.
     multipath=n nouveau.modeset=0 boot-live-env start-systemd-networkd fwuc-
     mode=noninteractive fwuc-update_args=update_fw,SBIOS,-f fwuc-extra_args=reboot-
     after-update
     initrd /initrd
   }
   ```

2. Create a bootable USB drive that contains the updated ISO.

3. Boot to the USB drive.

4. If the NVMe drive firmware, the FPGA, or the CEC1712 (Delta_CEC) was updated, then perform a DC power cycle by issuing the following.
3.3. Booting to the Firmware Update ISO by PXE Boot

This section describes how to PXE boot to the DGX A100 firmware update ISO.

3.3.1. Prerequisites

Refer to the following topics for information about enabling PXE boot on the DGX system:

▶ PXE Boot Setup in the NVIDIA DGX OS 6 User Guide.
▶ PXE Boot Setup in the NVIDIA DGX OS 5 User Guide.

3.3.2. Procedure

1. Download the ISO image and then mount it.

   $ sudo mount -o loop ~/DGXA100_FWUI-24.6.1-2024-06-04-18-14-35.iso /mnt

2. Copy the filesystem.squashfs, initrd, and vmlinuz files to the http directory.

   $ sudo mkdir -p /local/http/firmware-update/
   $ sudo cp /mnt/live/filesystem.squashfs /local/http/firmware-update/
   $ sudo cp /mnt/{initrd,vmlinuz} /local/http/firmware-update/
   $ umount /mnt

   The new /local/http folder structure should look like this:

   /local/http/
   dgxbaseos-5.x.y
       base_os_5.x.y.iso
       initrd
       vmlinuz
   firmware-update
       filesystem.squashfs
       initrd
       vmlinuz

3. Edit the /local/syslinux/efi64/pixelinux.cfg/default file to add the following menu option content for the Firmware Update OS.

   label Firmware Update Container
   menu label Firmware Update Container
   kernel http://$SERVER_IP/firmware-update/vmlinuz

   (continues on next page)
initrd http://${SERVER_IP}/firmware-update/initrd
append vga=788 initrd=initrd boot=live console=ttys0 console=ttys1,115200n8
apparmor=0 elevator=noop nvme-core.multipath=nouveau.modeset=0 boot-live-env
start-systemd-networkd fetch=http://${SERVER_IP}/firmware-update/filesystem.squashfs

**Important:** If the system is booting from the LAN port connection (enp226s0), connections to
slot 4 (enp225s0f0 and enp225s0f1) must be on the same domain as the LAN port. If they are
not on the same domain, then add live-netdev=enp226s0 to the append line.

**Example:**

append vga=788 initrd=initrd boot=live console=ttys0 apparmor=0 live-netdev=enp226s0 elevator=noop nvme-core.multipath=nouveau.modeset=0 boot-live-env start-systemd-networkd fetch=http://${SERVER_IP}/filesystem.squashfs

4. Optional: To set up the boot configuration to run the container automatically when booting, edit
the following parameters at pxelinux.cfg/default:

Set fwuc-mode=noninteractive.

Set the following parameters as needed.

▸ fwuc-update_args=<arg1>,<arg2> ...

▸ fwuc-extra_args=<extra-arg1> ...

See List of Arguments for available arguments.

The following example boots the package in non-interactive mode and updates the SBIOS without first checking the installed version, then reboots the system after the update.

append vga=788 initrd=initrd boot=live console=ttys0 apparmor=0 live-netdev=enp226s0 elevator=noop nvme-core.multipath=nouveau.modeset=0 fwuc-mode=noninteractive fwuc-update_args=update_fw,SBIOS,-f fwuc-extra_args=reboot-after-updateboot-live-env start-systemd-networkd fetch=http://${SERVER_IP}/filesystem.squashfs

5. Change permissions on /local.

$ sudo chmod 755 -R /local

6. PXE boot by restarting the system using ipmitool.

$ ipmitool -I lanplus -H <DGX-BMC-IP> -U <username> -P <password> chassis bootdev pxe options=efiboot
$ ipmitool -I lanplus -H <DGX-BMC-IP> -U <username> -P <password> chassis power reset

When the system PXE menu comes up, choose the Firmware Update Container option. The
firmware is updated automatically once the system has booted. If not set to update automatical-
ly, then follow the instructions to update the firmware.

7. If the NVMe drive firmware, the FPGA, or the CEC1712 (Delta_CEC) was updated, then perform
a DC power cycle by issuing the following.
3.3. Booting to the Firmware Update ISO by PXE Boot

$ sudo ipmitool -I lanplus -H ${BMC_IP} -U ${BMC_USER} -P ${BMC_PW} chassis power --cycle
Chapter 4. DGX A100 System Firmware Update Container Version 24.6.1

The DGX Firmware Update container version 24.6.1 is available.

<table>
<thead>
<tr>
<th>Package name</th>
<th>nvfw-dgxa100_24.6.1_240604.tar.gz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runfile name</td>
<td>nvfw-dgxa100_24.6.1_240604.run</td>
</tr>
<tr>
<td>Container image name</td>
<td>nvfw-dgxa100:24.6.1</td>
</tr>
<tr>
<td>ISO image name</td>
<td>DGXA100_FWUI-24.6.1-2024-06-04-18-14-35.iso</td>
</tr>
<tr>
<td>PXE netboot name</td>
<td>pxeboot-DGXA100_FWUI-24.6.1.tgz</td>
</tr>
</tbody>
</table>

4.1. Highlights and Changes in this Release

4.1.1. Operating System Support

This release is supported with the following DGX OS software:

▶ DGX OS 6.2
▶ DGX OS 5.5
▶ EL9-23.12
▶ EL8-24.01
4.1.2. Fixed BMC Issues

▶ Prevented unwanted logging of certain debug messages to the BMC critical event log file.
▶ Improved the compliance of the external authentication configuration implementation through Active Directory (AD).
  ▶ BMC allows users to configure an AD username that does not match the BMC domain name.
  ▶ BMC allows users to configure an AD or LDAP distinguished name (DN) with a maximum length of 255 characters.
▶ Resolved buffer overflow issues in the IPMI handler routines, such as the Platform Event Filter (PEF) configuration and Set Sensor Event Enable.
▶ Fixed security vulnerabilities in the BMC KVM and the REST API handler.
  ▶ The following table lists BMC fixes to potential security vulnerabilities that have been reported by AMI.

<table>
<thead>
<tr>
<th>CVE IDs Addressed</th>
<th>Vendor (per NVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVE-2023-34343</td>
<td>AMI</td>
</tr>
<tr>
<td>CVE-2023-34332</td>
<td></td>
</tr>
<tr>
<td>CVE-2024-2315</td>
<td></td>
</tr>
</tbody>
</table>

4.1.3. Fixed SBIOS Issues

▶ Updated AMI RomeBIOS to 0.28 and AMD AGESA to 1.0.0.H.
▶ The following table lists SBIOS fixes to potential security vulnerabilities that have been reported by AMD and AMI.
<table>
<thead>
<tr>
<th>CVE IDs Addressed</th>
<th>Vendor (per NVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVE-2022-23820</td>
<td>AMD</td>
</tr>
<tr>
<td>CVE-2021-46774</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20533</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20519</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20566</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-46770</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20521</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-46766</td>
<td></td>
</tr>
<tr>
<td>CVE-2022-23830</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20526</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-26345</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20576</td>
<td></td>
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<tr>
<td>CVE-2023-20577</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20579</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-20587</td>
<td></td>
</tr>
<tr>
<td>CVE-2022-36763</td>
<td>AMI</td>
</tr>
<tr>
<td>CVE-2022-36764</td>
<td></td>
</tr>
</tbody>
</table>

### 4.1.4. Known Issues

- Refer to [DGX A100 Firmware Known Issues](#).

### 4.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.

- If you are updating from 23.12.1, the total update time is approximately 97 minutes.
- If you are updating from 23.06.3, the total update time is approximately 100 minutes.
<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update time from 23.12.1 (minutes)</th>
<th>Update time from 23.06.3 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.23.04</td>
<td>Refer to <a href="#">DGX A100 BMC Changes</a>.</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td>SBIOS</td>
<td>1.27</td>
<td>Refer to <a href="#">DGX A100 SBIOS Changes</a>.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMC CEC SPI (MB_CEC)</td>
<td>3.28</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>3.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U225)</td>
<td>3.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U666)</td>
<td>4.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NVSwitch BIOS</td>
<td>92.10.18.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU200 (40GB))</td>
<td>92.00.45.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU210 (80GB))</td>
<td>92.00.9E.00.0</td>
<td>New update</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU200 (40GB))</td>
<td>92.00.81.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU210 (80GB))</td>
<td>92.00.9E.00.0</td>
<td>New update</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU215 (80GB))</td>
<td>92.00.AC.00.1</td>
<td>New update</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG510 SKU215 (80GB))</td>
<td>92.00.AC.00.1</td>
<td>New update</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU260 (80GB))</td>
<td>92.00.AC.00.0</td>
<td>New update</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG510 SKU260 (80GB))</td>
<td>92.00.AC.00.1</td>
<td>New update</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A100 SystemB 80GB)</td>
<td>92.00.81.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK9GB5Q</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.2 NVMe (Kioxia)</td>
<td>107</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 1)</td>
<td>EDA7602Q</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 2)</td>
<td>GDC7502Q</td>
<td>No change</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>M.2 Micron 7400 Gen4</td>
<td>E1MU23BC</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>4.02</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>4</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PSU (Delta rev04)</td>
<td></td>
<td>New update</td>
<td>59</td>
<td>60</td>
</tr>
<tr>
<td>PSU (Delta rev03)</td>
<td></td>
<td>New update</td>
<td>59</td>
<td>60</td>
</tr>
<tr>
<td>PSU (Delta rev02)</td>
<td></td>
<td>New update</td>
<td>59</td>
<td>60</td>
</tr>
<tr>
<td>PSU (LiteOn)</td>
<td>908</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Chapter 4. DGX A100 System Firmware Update Container Version 24.6.1
4.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.

  When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.

  The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive`. Since the container does not support updating the active image directly, commands such as `update_fw BMC -a -f` will not work.

4.4. DO NOT UPDATE DGX A100 CPLD FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running `update_fw all`). It is possible to update the CPLD firmware using “`update_fw CPLD`”; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.

4.5. Special Instructions for Red Hat Enterprise Linux 7

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.
4.5.1. Option 1: Update to EL7-22.05

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

4.5.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply to the following circumstances:

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

**Note:** If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.

   ```bash
   sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
   sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
   ```

   2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

   ```bash
   yum install -y \
   https://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-\n   →20.03-1.el7.x86_64.rpm
   ```

2. Install mpt3sas 31.101.01.00-0:

   ```bash
   sudo yum install mpt3sas-dkms
   ```

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel:

   ```bash
   sudo modprobe mpt3sas
   ```
You can verify the correct mpt3sas version is installed by issuing the following:

```
yum list installed
```

### 4.6. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container.

The commands use the .run file, but you can also use any method described in *Using the DGX A100 FW Update Utility*.

#### Caution:

- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - `dcgm-exporter`
  - `nvidia-dcgm`
  - `nvidia-fabricmanager`
  - `nvidia-persistenced`
  - `xorg-setup`
  - `lightdm`
  - `nvsm-core`
  - `kubelet`
  
  The container will attempt to stop these services automatically, but will be unable to stop any that are launched from Docker.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

```
$ sudo ./nvfw-dgxa100_24.6.1_240604.run show_version
```

- If there is "no" in any up-to-date column for updatable firmware, then continue with the next step.
If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

$ sudo ./nvfw-dgxa100_24.6.1_240604.run update_fw all

Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

- If you are prompted to reboot, issue

  $ sudo reboot

- If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

  $ sudo ipmitool raw 0x3c 0x04
  $ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another `update_fw all` to update other firmware.

- Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
- Repeat Step 2 just in case updates are needed.

If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

Refer to `DGX A100 Firmware Update Process` for more information about the update process.

You can verify the update by issuing the following.

$ sudo ./nvfw-dgxa100_24.6.1_240604.run show_version

**Example Output for a DGX A100 640GB System**

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC</td>
<td>4.00</td>
<td>4.00</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active</td>
<td>Boot</td>
<td>Online</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable</td>
<td>Local</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
</tbody>
</table>

Switches

(continues on next page)
### PCI Bus

<table>
<thead>
<tr>
<th>Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
<th>Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>U261</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>U260</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>U262</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
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<td>yes</td>
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<tr>
<td>U225</td>
<td>88080_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
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<td>yes</td>
</tr>
<tr>
<td>U1</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>U3</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
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<td>yes</td>
</tr>
<tr>
<td>U4</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
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<td>yes</td>
</tr>
<tr>
<td>U2</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
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<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<td>92.10.18.00.01</td>
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<td>92.10.18.00.01</td>
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<td>yes</td>
<td>yes</td>
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### Video BIOS

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Power Supply

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(continues on next page)
PSU 5: Primary Delta ECD16010092 Delta 03 ok

CPLD

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</table>

* CPLD won’t be updated by default (`update_fw all`), use `update_fw CPLD` if it’s needed.

FPGA

<table>
<thead>
<tr>
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Chapter 5. DGX A100 Firmware Changes

This chapter contains the list of changes for the following DGX A100 firmware components.

5.1. DGX A100 BMC Changes

5.1.1. Changes in 00.23.04

- Prevented unwanted logging of certain debug messages to the BMC critical event log file.
- Improved the compliance of the external authentication configuration implementation through Active Directory (AD).
  - BMC allows users to configure an AD username that does not match the BMC domain name.
  - BMC allows users to configure an AD or LDAP distinguished name (DN) with a maximum length of 255 characters.
- Resolved buffer overflow issues in the IPMI handler routines, such as the Platform Event Filter (PEF) configuration and Set Sensor Event Enable.
- Fixed security vulnerabilities in the BMC KVM and the REST API handler.
  - The following table lists BMC fixes to potential security vulnerabilities that have been reported by AMI.

<table>
<thead>
<tr>
<th>CVE IDs Addressed</th>
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<td>CVE-2024-2315</td>
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5.1.2. Changes in 00.22.05

▶ Improved the security of BMC Redfish Host Interface and KVM interfaces.
▶ Improved the correctness and accuracy of Data Center Infrastructure Management (DCMI) power sensor value reporting.
▶ Implemented a mechanism to user-initiated BMC resets while a firmware update action is in progress.
▶ Fixed the username validation with respect to certain special characters for LDAP Authentication to avoid security vulnerabilities.
▶ Resolved a security vulnerability issue in the Service Location Protocol (SLP) feature.
▶ The following table lists potential security vulnerabilities that have been reported by AMI or third-party vendors. They are addressed in DGX A100 BMC version 00.22.05.

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<td>CVE-2021-44769</td>
<td>Nozomi Networks Inc.</td>
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5.1.3. Changes in 00.21.01

▶ Improved how sensor values are read to avoid intermittent errors. Previously, the sensor read errors could cause the system to power off unexpectedly.

5.1.4. Changes in 00.20.04

▶ Fixed a BMC web interface login failure that reported a Session Expired message.
▶ Updated validation of the LDAP configuration settings done via BMC web UI to match LDAP specification.
▶ Enhanced the BMC to detect BIOS hangs before POST starts.
▶ Improved the validation of new firewall rule addition using ipmitool.
▶ The BMC update includes software security enhancements. See the NVIDIA Security Bulletin DGX - June 2023 for details.
5.1.5. Changes in 00.19.07

▶ Added a new version of GPU baseboard support.
▶ Improved SNMP trap handling and updated SNMP MIB with additional description for better trap information.
▶ Handled a rare NTP server configuration settings issue from BMC WebUI.
▶ The BMC update includes software security enhancements. See the NVIDIA Security Bulletin DGX - December 2022 for details.

5.1.6. Changes in 00.18.03

▶ Added a new version of GPU baseboard support.

5.1.7. Changes in 00.17.07

▶ Fixed an issue so that certain sensors are now displayed in the BMC Web UI.
▶ Fixed the graceful handling of system power loss, which prevents the BMC Flash file system consistency issue and improves recovery.
▶ Fixed issues that caused the BMC usage to dramatically increase, which resulted in a POST failure with error code 91 or B4.
▶ Improves Redfish interface error handling.
▶ Fixed the BMC Web UI security settings and page refresh during full screen mode.
▶ Fixed BMC SEL Event page, which was causing an error in certain SEL record parsing.
▶ Fixed an issue where the Power/Status LED was flashing continuously after the server was re-booted, and the Power/Status LED stayed on after the server was powered off.

5.1.8. Changes in 00.16.09

▶ Fixed incorrect temperatures reported for sensors on the NVIDIA Networking ConnectX-6 single-port and dual-port VPI cards.
▶ Fixed a bug to ensure that the BMC will boot to the latest version updated on the system.
▶ Fixed SEL log not showing the correct BMC or SBIOS version after an update.
▶ Added ability to set the BMC to local time instead of default UTC.
▶ Added ability to sync local time to NTP servers. (enable NTP time sync).
▶ Removed unnecessary SEL log messages pointing to high CPU power consumption.
▶ Fixed “/” character not allowed in BMC web UI LDAP Role Group settings.
▶ Added authentication capabilities to the RESTful API.
Added new capabilities to identify firmware updates in the System Event Log (SEL) via “NVIDIA-firmware” event.
Adds SEL information for BMC (end), BIOS, CPLD, and PSU.

5.1.9. Changes in 00.14.17
- Added support for second source SPI ROM.

5.1.10. Changes in 00.14.16
- Fixed an issue where a cold boot might put the BMC in a non-bootable state.
- Fixed BMC update failing with “Error flashing Inactive image 2: rc = 0x-9”.
- Fixed occasionally needing to log into the BMC WebUI twice.
- Fixed the BMC dashboard system event filter not working.
- Added ability to monitor Mellanox card transceiver temperatures and increase fan speeds.
- Fixed inability to update the BMC after unexpected interruption.
- Fixed missing memory, NIC and storage drive information.

5.1.11. Changes in 00.13.16
- The BMC update includes software security enhancements.
  See the NVIDIA Security Bulletin 5010 for details.

5.1.12. Changes in 00.13.04
- Resolved increased fan speed that occurred when optional components are not installed, even when the system is idle.

5.2. DGX A100 SBIOS Changes

5.2.1. Changes in 1.27
- Updated AMI RomeBIOS to 0.28 and AMD AGESA to 1.0.0.H.
- The following table lists SBIOS fixes to potential security vulnerabilities that have been reported by AMD and AMI.
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#### 5.2.2. Changes in 1.25

- Added error reporting when the system is booted with incorrectly inserted Trusted Platform Module (TPM).
- The following table lists potential security vulnerabilities that have been reported by AMI or third-party vendors. They are addressed in DGX A100 SBIOS version 1.25.
  - Affected SBIOS versions: All SBIOS versions prior to 1.25
  - Updated SBIOS version: 1.25
  - Firmware container version: 23.12.1
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5.2.3. Changes in 1.21

- The SBIOS update includes software security enhancements. Refer to the NVIDIA Security Bulletin DGX - June 2023 for details.
- Fixed SBIOS handling of BMC reset through firmware setup menus.

5.2.4. Changes in 1.18

- Added a new version of GPU baseboard support.
- Fixed issues relating to redfish reporting of PCIe device types and speeds.
- Removed unimplemented setup menu options for User Defaults and Boot NumLock State.
  
  Updated AGESA to version 1.0.0.E

- The SBIOS update includes software security enhancements. See the NVIDIA Security Bulletin DGX - December 2022 for details.
5.2.5. Changes in 1.13

- Fixed two issues that were causing boot order settings to not be saved to the BMC if applied out-of-band, causing settings to be lost after a subsequent firmware update.
- Added interactive countdown messages during boot, to display the Setup Prompt Timeout configurable through the **Boot** > **Setup Prompt Timeout** configuration menu.
- Added reporting of AGESA Version in SMBIOS.
- Updated AGESA to version 1.0.0.D.

5.2.6. Changes in 1.09

- Fixed an issue where changes in the boot order are not preserved after updating the SBIOS.
- Fixed inability to enter the SBIOS Admin/User password from the Serial Over LAN (SOL) console.
- Fixed PXE boot configuration not persisting; helpful for multiple DGX A100 nodes.
- Added Memory correctable ECC Error leaky bucket; prevents unnecessary replacement of working system DIMMs.
- Fixed SBIOS Setup > Main page showing incorrect Admin/User Access level.

5.2.7. Changes in 0.34

- Removed warning message that occurred when the system contained DIMMs from different vendors.

5.2.8. Changes in 0.33

- Fixed mishandling of correctable PCIe errors.

5.2.9. Changes in 0.30

- Added support for HTTP boot.
- Updated DSP/USP preset values to address PCIe advanced error reporting (AER) issues.
- Changed the following default settings.
  - Determinism Control > [Manual]
  - Determinism Slider > [Power]
  - cTDP Control > [Manual]
  - cTDP > [240]
  - Package Power Limit Control > [Manual]
5.3. DGX A100 U.2 NVMe Changes

5.3.1. Changes in EPK9CB5Q

- Fixed drive going into read-only mode if there is a sudden power cycle while performing live firmware update.
- Improved write performance while performing drive wear-leveling; shortens wear-leveling process time.
- Fixed drive going into failed mode when a high number of uncorrectable ECC errors occurred.

5.4. DGX A100 Broadcom 88096 PCIe Switchboard Changes

5.4.1. Changes in 0.2.0

- Fixed the incorrect setting of the switch's Upstream Port Number as Port 0.

5.4.2. Changes in 1.8

- Implemented tuning to address PCIe advanced error reporting (AER) issues.

5.4.3. Changes in 1.3

- Disabled hot-plug and hot-plug surprise capability.

5.5. DGX A100 Broadcom 880xx Retimer Changes

5.5.1. Changes in 4.1.0

- Updated configuration to support Delta baseboard D01.
5.5.2. Changes in 3.1.0

▶ Fixed the issue that was reported in Broadcom v3.0 firmware.

5.5.3. Changes in 1.2f

▶ Fixed an issue that caused NVQual to hang while loading the MODS driver.

5.5.4. Changes in 0.F.0

▶ Improved error handling of downstream switches.

This change modifies the PCIe topology and mapping. Refer to the DGX A100 User Guide for PCIe mapping details.

5.5.5. Changes in 0.13.0

▶ Fixed DPC Notification behavior for Firmware First Platform.

5.6. DGX A100 VBIOS Changes

5.6.1. Changes in 92.00.9E.00.16

▶ Corrected the GPU base clock.

5.6.2. Changes in 92.00.81.00.01

▶ Added support for the PG510 SXM module.

5.6.3. Changes in 92.00.45.00.03/05

▶ Added security protection to the I2C interface.
5.6.4. Changes in 92.00.36.00.04

- Fixed an issue allocating the BAR1 size across resets.
- Fixed MIG capability not being reported correctly if the driver is not loaded; for example, if accessed out-of-band.

5.6.5. Changes in 92.00.19.00.10

- Expanded support for potential alternate HBM sources.

5.6.6. Changes in 92.00.19.00.01

- Fixed Xid 64 (Row Remapper Error)

5.7. DGX A100 BMC CEC Changes

5.7.1. Changes in 3.28

- Fixed the update progress output reporting "Update_timeout" for the motherboard CEC (MB_CEC) when using the .run file without Docker installed.
- Fixed the user’s configuration getting lost if the BMC updated failed.

5.8. DGX A100 BMC CEC SPI Changes

5.8.1. Changes in 01.05.12

- Added LDAPS (secure LDAP) support.
- Resolved network connection getting lost when connected to virtual media.
- Resolved an issue where occasionally the BMC UI would stop responding.
5.8.2. Changes in 01.05.10

► Fixed an issue with BMC 01.05.07 that potentially affected SBIOS stability.
► Fixed BMC configuration settings not getting applied to both primary and secondary images.
► Fixed corrupted primary BMC failing to recover when primary and secondary images are different versions.
► Fixed issue recovering corrupted firmware on Delta PSU.
► Fixed BMC web UI reporting BIOS information incorrectly.
► Fixed BMC Web UI reporting backup BMC version incorrectly.
► Fixed cryptic BMC entries.
► Added BMC capture logs from CPLD/FPGA during power on.
► Added IPMI OEM command to GET and SET which image the SBIOS is pointing to (Change the PIN).
► Fixed MaxP/MaxQ System unable to boot after BMC-initiated shutdown with four or more PSU failures.
► Fixed SEL logs to indicate that a bad fan (or fan speed of zero) may have caused the system to shut down due to GPU overtemp.
► Fixed how the BMC responds when it cannot read a temperature sensor.
► Fixed the IPMI log event decoding through ipmitool to show the same events as the GUI.
► Fixed the BMC to provide more meaningful and useful SEL logs.
► Fixed the GPU sensor name on baseboard 2 to match the service label.
► Changed the naming of U.2 SSDs from “NVME” to “U.2”.
► Resolved BMC SNMP community string limitations.

5.8.3. Changes in 01.04.03

► Fixed BMC Update Timeout issue.
► Fixed BMC configuration backup/restore function not working properly.
► Fixed system not shutting down when all fans in Fan Zone 2 or 3 are not detected.
► Fixed system fans all running at 80% after hot-unplugging/hot-plugging a PSU.
► Fixed system fans running at 80% after hot-plugging an NVMe drive.
► Fixed system shutting down after hot-unplugging one of the fans.
► Fixed system unable to boot after updating BMC image while one BMC module is removed.
► Fixed incorrect SEL timestamp after executing ipmi mc reset cold.
► Fixed missing firmware information in the BMC dashboard. Information is available on the Maintenance->Firmware Information page.
► Fixed missing DIMM information in the BMC dashboard.
► Fixed blinking amber-colored power LED.

5.8. DGX A100 BMC CEC SPI Changes
Fixed BMC update freeze while updating using Yafuflash.
Fixed issues responding to 3.3V/5V/12V sensors.
Fixed incorrect responses to GPU temperature assertion - Fan Zone 1 goes to 80% and DIMM temperature reports ‘device disabled’.
The BMC now saves CPU MCA registers when it detects a fatal MCA error.

5.8.4. Changes in 01.00.01

Fixed BMC update via dashboard erroneously preserving the configuration.
Fixed Network Link Configuration and Network IP Settings pages on the BMC dashboard to reflect changes only when saved.
Added dual FPGA image container update support.
Added PSU firmware container update support.
Enhanced SMBPBI support for GPU sensors, thermal polling and FAN control to avoid anomalous sensor reading for GPU sensors and corresponding thermal actions.
Added support for FPGA update of Image #1 to the BMC dashboard.
Added VLAN support to the BMC dashboard.

5.9. DGX A100 FPGA Release Notes

5.9.1. Features

Changes in 4.02
- Added support to enable alternate HSC components on new Delta board revision D01.
- Enable rollback protection against version 0, 1, and 2.

Changes in 03.14
- FPGA (GPU sled)3.0e: this version of FPGA fixes a GPU Tray failing to power ON during system power cycle (LLC failures will be reported in SEL logs. System fails to boot or comes up with no GPUs ). The new versions of FPGA and CEC (GB sled) address this issue and we recommend every customer upgrade these components.

Changes in 2.A5
- Fixed all reset domain crossing errors and warnings in SMBPBI controllers for better I2C stability.
- Eliminated all the combo loops on all flops' async resets.
- Fixed certain timeout triggers in the clk buf module.
- Fixed dropped or malformed requests that occurred as the result of a premature I2C interface release by the FPGA state machine.
Fixed the DC cycling issue that caused an PCIe enumeration failure due to clock buffer configuration.

Fixed the SMBPBI command to clear LLC C D Alerts.

Fixed the SMBPBI commands to control the individual GPU power brake.

Added proven de-hang logic for all state machines and I2C buses.

Added the metastability synchronizer for all GPIOs, including I2C buses, at the top level.

Updated the FRU Comparator for the chassis area write boundary for RTL.

Updated the I2C access policies for the register table to prevent unintended access.

Updated the reset policies for LR10.

Updated the initial 0x5C read command status to STATUS_READY.

Aligned all the return STATUSes to be compliant with the NonGPU SMBPBI document.

Updated inlet#2, inlet#1, and PEX8725 to configure the thermal parameter and interrupts to align with the spec.

Updated the PCIe buffer configuration logic so that it will not miss ACK or go into a livelock while GPU base power enable is toggling.

Updated the GPU forward Controller to match the GPU spec for the execute command.

Fixed the SMBPBI commands that were non-effective for PCIe SWITCH resets.

Updated the I2C Contention Mutex Logic for better resiliency and stability.

Improved the I2C timing from the FPGA I2C master modules.

5.10. DGX A100 Delta PSU Release Notes

5.10.1. Changes in 1.8/1.7/1.8

- Improved design margins for R281 and R283.
- Fixed an issue of high input current.

5.10.2. Changes in 1.6/1.6/1.7

- Fixed 0W reporting issue.
Chapter 6. DGX A100 Firmware Update Process

This chapter provides an overview of the firmware update process when issuing `update_fw all`. The following table shows the order in which the updates are performed, and whether a reboot or power cycle is required to complete the update. The table assumes that all firmware needs to be updated, and corresponds to the following sequence:

1. Issue `update_fw all`.
2. Power cycle the system.
3. Issue `update_fw all`.
4. Power cycle the system.
5. Issue `update_fw all`.

Table 1: Firmware Updated Upon Initial `update_fw all`

<table>
<thead>
<tr>
<th>Update Order</th>
<th>Component</th>
<th>Reboot or Power Cycle Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BMC-CEC</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>BMC</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>SBIOS</td>
<td>Reboot</td>
</tr>
<tr>
<td>4</td>
<td>Switch PEX88080/PEX88064</td>
<td>Reboot</td>
</tr>
<tr>
<td>5</td>
<td>Switch PEX88096 (U1~U3)</td>
<td>Reboot</td>
</tr>
<tr>
<td>6</td>
<td>NVMe</td>
<td>DC Power Cycle</td>
</tr>
<tr>
<td>7</td>
<td>GPU VBIOS and FUB</td>
<td>Reboot</td>
</tr>
<tr>
<td>8</td>
<td>CEC1712 SPI</td>
<td>DC Power Cycle</td>
</tr>
</tbody>
</table>

Table 2: Firmware Updated Upon Second `update_fw all`

<table>
<thead>
<tr>
<th>Update Order</th>
<th>Component</th>
<th>Reboot or Power Cycle Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch PEX88096 (U4)</td>
<td>Reboot</td>
</tr>
<tr>
<td>2</td>
<td>FPGA</td>
<td>DC Power Cycle</td>
</tr>
</tbody>
</table>
### Table 3: Firmware Updated Upon Third update_fw all

<table>
<thead>
<tr>
<th>Update Order</th>
<th>Component</th>
<th>Reboot or Power Cycle Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NVSwitch</td>
<td>Reboot</td>
</tr>
</tbody>
</table>
Chapter 7. DGX A100 Firmware Known Issues

7.1. Virtualization Not Supported

7.1.1. Issue

The NVIDIA DGX™ A100 system does not support virtualization solutions, such as ESXi hypervisors or kernel-based virtual machines (KVM).

7.2. Random Retry Error Messages in the Log File or the Output of show_version

7.2.1. Issue

After running the firmware update, you might see the Too many retries message in the nvidia-fw. log file or the Err: retry message in the PSU section of the show_version output.

7.2.2. Workaround

You can resolve the issue by running the command again.
7.3. Running Another Firmware Update Container Using Docker or Podman Causes the First Container to Abort

7.3.1. Issue

When you run the Firmware Update Container through Podman, any attempts to start a second Firmware Update Container through Docker or Podman will cause the first instance of the Firmware Update Container to halt. Running multiple instances of the Firmware Update Container concurrently on the same system is not supported and can lead to system issues.

7.4. Unable to Run Firmware Update Container in Containerless Mode When Podman Is Installed

7.4.1. Issue

When you run the Firmware Update Container with either the -docker or -podman argument, but the specified container environment is not installed, you might see a docker: command not found or podman: command not found error message.

7.4.2. Workaround

This is an expected behavior. The container can run in containerless mode, but only if both Docker and Podman are not present. By specifying a specific environment, the container will try to use that environment exclusively, not falling back on the containerless method. If you want to run in containerless mode, uninstall both Docker and Podman and then run the container again without the -docker or -podman argument.

7.5. BMC Web User Interface - Backed-up Username and Credentials not Working

7.5.1. Issue

When attempting to log in to the BMC web user interface after restoring the configuration using the Maintenance > Restore configuration feature, you can encounter an issue where your backed-up
username and credentials do not work. This problem occurs specifically when restoring configuration to a different motherboard tray, such as after a motherboard tray replacement.

7.5.2. Workaround

To resolve this issue, you can create a new user from the host operating system and then delete the old users from the web user interface after logging in with the newly created credentials. To create a new user with administrator privileges, you can perform the following steps.

1. List users from the host operating system using the IPMItool command:
   ```
sudo ipmitool user list
   ```

2. Create a new user and set administrator privilege using the following commands:
   ```
sudo ipmitool user set name <empty-userID-slot> <username>
sudo ipmitool user set password <userID> <password>
sudo ipmitool user enable <userID>
sudo ipmitool user priv <userID> 0x4 1
sudo ipmitool channel setaccess 1 <userID> callin=on ipmi=on link=on
   ```

3. Verify that the new user is created successfully by listing the users again using the IPMItool command:
   ```
sudo ipmitool user list
   ```

7.6. BCM users only: Firmware Update Completes with Error on Base Command Manager

7.6.1. Issue

When attempting to update the -OR4 CPU trays, a failure occurs during the update process where the firmware update container fails to list services.

The failure messages can include the following:

- Failed to install DGX 88064_Retimer dev 91 3.1.0
- Unable to unload NVIDIA drivers. The following process(es)/service(s) need to be stopped in order for switch firmware update to occur:
- <blank>
7.6.2. Workaround

1. Run the following command:

   scontrol update NodeName=hostname State=drain Reason="FW update"

   Wait for jobs on the host to complete and the status of the node to report drained.
   If the output for the following command returns draining, the response implies the node has jobs running and is not ready for the firmware update. Only proceed to the next step if the node status returns drained.

   sinfo --state=drained | grep hostname

2. Stop the slurmd service on the compute node:

   ansible -i /opt/provisioning/inventory/ --become -m shell -a 'systemctl stop slurmd.service ' 'hostname'

   After the firmware update, if the host was rebooted after the firmware update, change the host state to resume:

   scontrol update NodeName=hostname state=resume
Chapter 8. DGX A100 System Firmware Update Container Version 23.12.1

The DGX Firmware Update container version 23.12.1 is available.

<table>
<thead>
<tr>
<th>Package name</th>
<th>nvfw-dgxa100_23.12.1_231122.tar.gz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runfile name</td>
<td>nvfw-dgxa100_23.12.1_231122.run</td>
</tr>
<tr>
<td>Container image name</td>
<td>nvfw-dgxa100:23.12.1</td>
</tr>
<tr>
<td>ISO image name</td>
<td>DGXA100_FWUI-23.12.1-2023-11-22-11-29-20.iso</td>
</tr>
<tr>
<td>PXE netboot name</td>
<td>pxeboot-DGXA100_FWUI-23.12.1.tgz</td>
</tr>
</tbody>
</table>

8.1. Highlights and Changes in this Release

8.1.1. Operating System Support

This release is supported with the following DGX OS software:

- DGX OS 6.1
- DGX OS 5.5
- EL9-23.08
- EL8-23.08
8.1.2. Fixed BMC Issues

- Improved the security of BMC Redfish Host Interface and KVM interfaces.
- Improved the correctness and accuracy of Data Center Infrastructure Management (DCIM) power sensor value reporting.
- Implemented a mechanism to user-initiated BMC resets while a firmware update action is in progress.
- Fixed the username validation with respect to certain special characters for LDAP Authentication to avoid security vulnerabilities.
- Resolved a security vulnerability issue in the Service Location Protocol (SLP) feature.
- The following table lists potential security vulnerabilities that have been reported by AMI or third-party vendors. They are addressed in DGX A100 BMC version 00.22.05.
  
<table>
<thead>
<tr>
<th>CVE IDs Addressed</th>
<th>Vendor (per NVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVE-2023-34472</td>
<td>AMI</td>
</tr>
<tr>
<td>CVE-2023-34330</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-34329</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-28863</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-44769</td>
<td>Nozomi Networks Inc.</td>
</tr>
</tbody>
</table>

8.1.3. Fixed SBIOS Issues

- The SBIOS update includes software security enhancements. Refer to the NVIDIA Security Bulletin DGX - December 2023 for details.
- Added error reporting when the system is booted with incorrectly inserted Trusted Platform Module (TPM).
- The following table lists potential security vulnerabilities that have been reported by AMI or third-party vendors. They are addressed in DGX A100 SBIOS version 1.25.
  
<table>
<thead>
<tr>
<th>CVE IDs Addressed</th>
<th>Vendor (per NVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVE-2023-34472</td>
<td>AMI</td>
</tr>
<tr>
<td>CVE-2023-34330</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-34329</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-28863</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-44769</td>
<td>Nozomi Networks Inc.</td>
</tr>
</tbody>
</table>
## CVE IDs Addressed

<table>
<thead>
<tr>
<th>CVE IDs Addressed</th>
<th>Vendor (per NVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVE-2023-0465</td>
<td>AMI</td>
</tr>
<tr>
<td>CVE-2021-38578</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-38576</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-38575</td>
<td></td>
</tr>
<tr>
<td>CVE-2021-33164</td>
<td></td>
</tr>
<tr>
<td>CVE-2019-14587</td>
<td></td>
</tr>
<tr>
<td>CVE-2019-14586</td>
<td></td>
</tr>
<tr>
<td>CVE-2019-14584</td>
<td></td>
</tr>
<tr>
<td>CVE-2019-14563</td>
<td></td>
</tr>
<tr>
<td>CVE-2019-14559</td>
<td></td>
</tr>
<tr>
<td>CVE-2017-5715</td>
<td></td>
</tr>
<tr>
<td>CVE-2014-4860</td>
<td></td>
</tr>
<tr>
<td>CVE-2014-4859</td>
<td></td>
</tr>
<tr>
<td>CVE-2023-1018</td>
<td>CERT/CC</td>
</tr>
<tr>
<td>CVE-2023-1017</td>
<td></td>
</tr>
</tbody>
</table>

## 8.1.4. Known Issues

- Refer to *DGX A100 Firmware Known Issues*.

## 8.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.

- If you are updating from 23.09.1, the total update time is approximately 38 minutes.
- If you are updating from 23.06.3, the total update time is approximately 38 minutes.
<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update time from 23.09.1 (minutes)</th>
<th>Update time from 23.06.3 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.22.05</td>
<td>Refer to DGX A100 BMC Changes.</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>SBIOS</td>
<td>1.25</td>
<td>Refer to DGX A100 SBIOS Changes.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMC CEC SPI (MB_CEC)</td>
<td>3.28</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>3.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U225)</td>
<td>3.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U666)</td>
<td>4.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NVSwitch BIOS</td>
<td>92.10.18.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU200 (40GB))</td>
<td>92.00.45.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU210 (80GB))</td>
<td>92.00.9E.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU200 (40GB))</td>
<td>92.00.81.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU210 (80GB))</td>
<td>92.00.9E.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU215 (80GB))</td>
<td>92.00.AC.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A800 PG510 SKU215 (80GB))</td>
<td>92.00.AC.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU260 (80GB))</td>
<td>92.00.AC.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A800 PG510 SKU260 (80GB))</td>
<td>92.00.AC.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 SystemB 80GB)</td>
<td>92.00.81.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK9GB5Q</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.2 NVMe (Kioxia)</td>
<td>107</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 1)</td>
<td>EDA7002</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 2)</td>
<td>GDC7502Q</td>
<td>New update</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>M.2 Micron 7400 Gen4</td>
<td>E1MU23BC</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>4.02</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>4</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PSU (Delta rev04)</td>
<td></td>
<td>Primary 1.7/ Secondary 1.7/ Community 1.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.

  When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.

  The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive`. Since the container does not support updating the active image directly, commands such as `update_fw BMC -a -f` will not work.

8.4. DO NOT UPDATE DGX A100 CPLD FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running `update_fw all`). It is possible to update the CPLD firmware using `update_fw CPLD`; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.

8.5. Special Instructions for Red Hat Enterprise Linux 7

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.
8.5.1. Option 1: Update to EL7-22.05

Refer to the **DGX Software for Red Hat Enterprise Linux 7 Release Notes** for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

8.5.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply to the following circumstances:

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

**Note:** If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.

```
sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
```

2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

```
yum install -y \nhttps://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-→20.03-1.el7.x86_64.rpm
```

2. Install mpt3sas 31.101.01.00-0:

```
sudo yum install mpt3sas-dkms
```

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel:

```
sudo modprobe mpt3sas
```
You can verify the correct mpt3sas version is installed by issuing the following:

```
yum list installed
```

## 8.6. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. The commands use the .run file, but you can also use any method described in *Using the DGX A100 FW Update Utility*.

### Caution:

- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - `dcgm-exporter`
  - `nvidia-dcgm`
  - `nvidia-fabricmanager`
  - `nvidia-persistenced`
  - `xorg-setup`
  - `lightdm`
  - `nvsm-core`
  - `kubelet`

The container will attempt to stop these services automatically, but will be unable to stop any that are launched from Docker.

- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

```
$ sudo .nvfw-dgxa100_23.12.1_231122.run show_version
```

- If there is "no" in any up-to-date column for updatable firmware, then continue with the next step.
If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

$ sudo ./nvfw-dgxa100_23.12.1_231122.run update_fw all

Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

- If you are prompted to reboot, issue

  $ sudo reboot

- If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

  $ sudo ipmitool raw 0x3c 0x04
  $ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another update_fw all to update other firmware.

- Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
- Repeat Step 2 just in case updates are needed.

If you perform another update_fw all, you may be prompted again to either reboot the system or power cycle the system.

Refer to DGX A100 Firmware Update Process for more information about the update process.

You can verify the update by issuing the following.

$ sudo ./nvfw-dgxa100_23.12.1_231122.run show_version

Example Output for a DGX A100 640GB System

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC</td>
<td>4.00</td>
<td>4.00</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active</td>
<td>Boot</td>
<td>Online</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable</td>
<td>Local</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
</tbody>
</table>

Switches

(continues on next page)
### PCI Bus# Information

<table>
<thead>
<tr>
<th>Updated?</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DGX - 0000:01:00.0 (U1)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U2)</td>
<td>88080_Retimer</td>
<td>3.1.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U3)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U4)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U5)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U6)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U7)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U8)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U9)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
</tr>
</tbody>
</table>

### Mass Storage

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme1n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme2n1</td>
<td>Samsung</td>
<td>MZ1LB1T9HALS-00007</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme3n1</td>
<td>Samsung</td>
<td>MZ1LB1T9HALS-00007</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme4n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme5n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme6n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme7n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme8n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme9n1</td>
<td>Samsung</td>
<td>MZWLJ3T8HBS-00007</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
</tbody>
</table>

### Video BIOS

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U1)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U2)</td>
<td>88080_Retimer</td>
<td>3.1.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U3)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U4)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U5)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U6)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U7)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U8)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DGX - 0000:00:00.0 (U9)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>
### Power Supply

<table>
<thead>
<tr>
<th>ID</th>
<th>Vendor</th>
<th>Model</th>
<th>MFR ID</th>
<th>Revision</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard Version</td>
<td>MANIFEST</td>
<td>up-to-date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSU 0: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 0: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 0: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
</tbody>
</table>

(continues on next page)
### PSU 5: Primary

<table>
<thead>
<tr>
<th>Delta ECD16010092</th>
<th>Delta 03 ok</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.06</td>
<td>yes</td>
</tr>
</tbody>
</table>

#### CPLD

<table>
<thead>
<tr>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CPLD</td>
<td>1.05</td>
<td>1.05</td>
</tr>
<tr>
<td>MID_CPLD</td>
<td>1.03</td>
<td>1.03</td>
</tr>
</tbody>
</table>

* CPLD won’t be updated by default (``update_fw all``), use `update_fw CPLD` if it's needed.

---

#### FPGA

<table>
<thead>
<tr>
<th>Onboard version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>03.0e</td>
<td>03.0e</td>
<td>yes</td>
</tr>
</tbody>
</table>
Chapter 9. DGX A100 System Firmware Update Container Version 23.09.1

The DGX Firmware Update container version 23.09.1 is available.

<table>
<thead>
<tr>
<th>Package name</th>
<th>nvfw-dgxa100_23.9.1_230906.tar.gz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runfile name</td>
<td>nvfw-dgxa100_23.9.1_230906.run</td>
</tr>
<tr>
<td>Container image name</td>
<td>nvfw-dgxa100:23.9.1</td>
</tr>
<tr>
<td>ISO image name</td>
<td>DGXA100_FWUI-23.9.1-23-09-06-19-35.iso</td>
</tr>
<tr>
<td>PXE netboot name</td>
<td>pxeboot-DGXA100_FWUI-23.9.1.tgz</td>
</tr>
</tbody>
</table>

9.1. Highlights and Changes in this Release

9.1.1. Operating System Support

This release is supported with the following DGX OS software:

- DGX OS 6.0
- DGX OS 5.5 or later
- EL9-23.01
- EL8-22.08 or later
- EL7-22.08 or later (Refer to Special Instructions for Red Hat Enterprise Linux 7.)
9.1.2. Fixed BMC Issues

- Improved how sensor values are read to avoid intermittent errors. Previously, the sensor read errors could cause the system to power off unexpectedly.

9.1.3. Known Issues

- Refer to DGX A100 Firmware Known Issues.

9.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.

- If you are updating from 23.06.3, the total update time is approximately 32 minutes.
- If you are updating from 22.12.1, the total update time is approximately 54 minutes.
## Component Firmware Update Container Release Notes

<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update time from 23.06.3</th>
<th>Update time from 22.12.1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(minutes)</td>
<td>(minutes)</td>
</tr>
<tr>
<td>BMC (via CEC)</td>
<td>21.01</td>
<td>Refer to DGX A100 BMC Changes.</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>SBIOS</td>
<td>1.21</td>
<td>No change</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMC CEC SPI (MB_CEC)</td>
<td>3.28</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>3.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U225)</td>
<td>3.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U666)</td>
<td>4.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NVSwitch BIOS</td>
<td>92.10.18.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU200 (40GB))</td>
<td>92.00.45.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU210 (80GB))</td>
<td>92.00.9E.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU200 (40GB))</td>
<td>92.00.81.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU210 (80GB))</td>
<td>92.00.9E.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU215 (80GB))</td>
<td>92.00.AE.00.0</td>
<td>No change</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG510 SKU215 (80GB))</td>
<td>92.00.AE.00.0</td>
<td>No change</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU260 (80GB))</td>
<td>92.00.AE.00.0</td>
<td>No change</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG510 SKU260 (80GB))</td>
<td>92.00.AE.00.0</td>
<td>No change</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A100 SystemB 80GB)</td>
<td>92.00.81.00.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK9GB5Q</td>
<td>No change</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>U.2 NVMe (Kioxia)</td>
<td>107</td>
<td>No change</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 1)</td>
<td>EDA7602Q</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 2)</td>
<td>GDC7302Q</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 Micron 7400 Gen4</td>
<td>E1MU23BC</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>4.02</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>4</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PSU (Delta rev04)</td>
<td></td>
<td>Primary 1.7/Secondary 1.7/Community</td>
<td>No change</td>
<td>0</td>
</tr>
</tbody>
</table>

9.2. Contents of the DGX A100 System Firmware Container

| PSU (Delta rev03)                |         | Primary 1.6/                        | No change               | 0                        |

9.2. Contents of the DGX A100 System Firmware Container

| PSU (Delta rev04)                |         | Primary 1.7/Secondary 1.7/Community | No change               | 0                        |

9.2. Contents of the DGX A100 System Firmware Container

| PSU (Delta rev03)                |         | Primary 1.6/                        | No change               | 0                        |
9.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.
  
  When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.
  
  The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive`. Since the container does not support updating the active image directly, commands such as `update_fw BMC -a -f` will not work.

9.4. DO NOT UPDATE DGX A100 CPLD FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running `update_fw all`). It is possible to update the CPLD firmware using “`update_fw CPLD`”; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.

9.5. Special Instructions for Red Hat Enterprise Linux 7

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.
9.5.1. Option 1: Update to EL7-22.05

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

9.5.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply to the following circumstances:

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

**Note:** If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.
      
      ```shell
      sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
      sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
      ```
   
   2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.
      
      ```shell
      yum install -y \
      https://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-\n      →20.03-1.el7.x86_64.rpm
      ```

2. Install mpt3sas 31.101.01.00-0:
   
   ```shell
   sudo yum install mpt3sas-dkms
   ```

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel:
   
   ```shell
   sudo modprobe mpt3sas
   ```
You can verify the correct mpt3sas version is installed by issuing the following:

```
$ sudo yum list installed
```

9.6. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container.

The commands use the .run file, but you can also use any method described in Using the DGX A100 FW Update Utility.

Caution:

- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - dcgm-exporter
  - nvidia-dcgm
  - nvidia-fabricmanager
  - nvidia-persistenced
  - xorg-setup
  - lightdm
  - nvsm-core
  - kubelet

  The container will attempt to stop these services automatically, but will be unable to stop any that are launched from Docker.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

   ```
   $ sudo ./nvfw-dgxa100_23.9.1_230906.run show_version
   ```

   - If there is "no" in any up-to-date column for updatable firmware, then continue with the next step.
If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

```
$ sudo ./nvfw-dgxa100_23.9.1_230906.run update_fw all
```

Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

- If you are prompted to reboot, issue

```
$ sudo reboot
```

- If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

```
$ sudo ipmitool raw 0x3c 0x04
$ sudo ipmitool chassis power cycle
```

3. After rebooting or power cycling the system, you may need to perform another `update_fw all` to update other firmware.

- Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
- Repeat Step 2 just in case updates are needed.

If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

Refer to [DGX A100 Firmware Update Process](#) for more information about the update process.

You can verify the update by issuing the following.

```
$ sudo ./nvfw-dgxa100_23.9.1_230906.run show_version
```

### Example Output for a DGX A100 640GB System

<table>
<thead>
<tr>
<th></th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC(enabled)</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC(enabled)</td>
<td>4.00</td>
<td>4.00</td>
<td>yes</td>
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<table>
<thead>
<tr>
<th></th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active Boot Online</td>
<td>Local</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>1:Inactive Updatable</td>
<td>Local</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active Boot Updatable</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive Updatable</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
</tbody>
</table>

(continues on next page)
<table>
<thead>
<tr>
<th>PCI Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
<th>Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:88:00.0</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:48:00.0</td>
<td>88080_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:01:00.0</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:81:00.0</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:41:00.0</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
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<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
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<td>92.10.18.00.01</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
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<tr>
<td>DGX - 0000:c8:00.0</td>
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<td>92.10.18.00.01</td>
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<td>DGX - 0000:c9:00.0</td>
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</table>

Mass Storage
============

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme1n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme2n1</td>
<td>Samsung</td>
<td>MZ1B1T9H8LS-00007</td>
<td>EDA7602Q</td>
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<td>nvme3n1</td>
<td>Samsung</td>
<td>MZ1B1T9H8LS-00007</td>
<td>EDA7602Q</td>
<td></td>
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<tr>
<td>nvme4n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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</tr>
<tr>
<td>nvme5n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme6n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme9n1</td>
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<td>MZWLJ3T8H8LS-00007</td>
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Video BIOS
==========

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

(continues on next page)
<table>
<thead>
<tr>
<th>ID</th>
<th>Vendor</th>
<th>Model</th>
<th>MFR ID</th>
<th>Revision</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000:07:00.0</td>
<td>A100-SXM4-80GB</td>
<td>92.00.45.00.05</td>
<td>92.00.45.00.05</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>0000:0f:00.0</td>
<td>A100-SXM4-80GB</td>
<td>92.00.45.00.05</td>
<td>92.00.45.00.05</td>
<td>yes</td>
<td></td>
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<tr>
<td>0000:47:00.0</td>
<td>A100-SXM4-80GB</td>
<td>92.00.45.00.05</td>
<td>92.00.45.00.05</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>0000:4e:00.0</td>
<td>A100-SXM4-80GB</td>
<td>92.00.45.00.05</td>
<td>92.00.45.00.05</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>0000:87:00.0</td>
<td>A100-SXM4-80GB</td>
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<td>92.00.45.00.05</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>0000:90:00.0</td>
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<td>92.00.45.00.05</td>
<td>92.00.45.00.05</td>
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<td></td>
</tr>
<tr>
<td>0000:b7:00.0</td>
<td>A100-SXM4-80GB</td>
<td>92.00.45.00.05</td>
<td>92.00.45.00.05</td>
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<td></td>
</tr>
<tr>
<td>0000:bd:00.0</td>
<td>A100-SXM4-80GB</td>
<td>92.00.45.00.05</td>
<td>92.00.45.00.05</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

Power Supply
============

9.6. Instructions for Updating Firmware
## CPLD

<table>
<thead>
<tr>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CPLD</td>
<td>1.05</td>
<td>1.05</td>
</tr>
<tr>
<td>MID_CPLD</td>
<td>1.03</td>
<td>1.03</td>
</tr>
</tbody>
</table>

* CPLD won’t be updated by default (`update_fw all`), use `update_fw CPLD` if it’s needed

## FPGA

<table>
<thead>
<tr>
<th>Onboard version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>03.0e</td>
<td>03.0e</td>
<td>yes</td>
</tr>
</tbody>
</table>
Chapter 10. DGX A100 System Firmware Update Container Version 23.06.3

The DGX Firmware Update container version **23.06.3** is available.

<table>
<thead>
<tr>
<th>Package name</th>
<th>nvfw-dgxa100_23.6.3_230608.tar.gz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runfile name</td>
<td>nvfw-dgxa100_23.6.3_230608.run</td>
</tr>
<tr>
<td>Container image name</td>
<td>nvfw-dgxa100:23.6.3</td>
</tr>
<tr>
<td>ISO image name</td>
<td>DGXA100_FWUI-23.6.3-2023-06-09-01-27-23.iso</td>
</tr>
<tr>
<td>PXE netboot name</td>
<td>pxeboot-DGXA100_FWUI-23.6.3.tgz</td>
</tr>
</tbody>
</table>

### 10.1. Highlights and Changes in this Release

#### 10.1.1. Operating System Support

This release is supported with the following DGX OS software:

- DGX OS 6.0
- DGX OS 5.5 or later
- EL9-23.01
- EL8-22.08 or later
- EL7-22.08 or later (Refer to *Special Instructions for Red Hat Enterprise Linux 7.*)
10.1.2. Fixed BMC Issues

- Fixed a BMC web interface login failure that reported a Session Expired message.
- Updated validation of the LDAP configuration settings done via BMC web UI to match LDAP specification.
- Enhanced the BMC to detect BIOS hangs before POST starts.
- Improved the validation of new firewall rule addition using ipmitool.

10.1.3. Improvements In Redfish

- Fixed issues related to Redfish reporting power supply sensor readings.
- Improved redfish session timeout handling.

10.1.4. Fixed SBIOS Issues

- The SBIOS update includes software security enhancements. Refer to the NVIDIA Security Bulletin DGX - June 2023 for details.
- Fixed SBIOS handling of BMC reset through firmware setup menus.

10.1.5. Fixed VBIOS Issues

- Fixed the issue that prevented updating due to running service processes. This is a known issue from the 22.12.1 firmware update container.

10.1.6. Added Support

- Support for Podman.
- Firmware update for Kioxia 7.6TB drive as optional field-installed internal storage.
10.1.7. Known Issues

► Refer to DGX A100 Firmware Known Issues.

10.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.

► If you are updating from 22.5.5, the total update time is approximately seventy-one (71) minutes.
► If you are updating from 22.12.1, the total update time is approximately forty-six (46) minutes.
<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update time from 22.5.5 (minutes)</th>
<th>Update time from 22.12.1 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>20.04</td>
<td>Refer to DGX A100 BMC Changes</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>SBIOS</td>
<td>1.21</td>
<td>Refer to DGX A100 SBIOS Changes</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMC CEC SPI (MB_CEC)</td>
<td>3.28</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>3.1.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U225)</td>
<td>3.1.0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U666)</td>
<td>4.1.0</td>
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<td>0</td>
</tr>
<tr>
<td>NVSwitch BIOS</td>
<td>92.10.18.00.0</td>
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<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU200 (40GB))</td>
<td>92.00.45.00.0</td>
<td>No change</td>
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<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU210 (80GB))</td>
<td>92.00.9E.00.0</td>
<td>No change</td>
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<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU200 (40GB))</td>
<td>92.00.81.00.0</td>
<td>No change</td>
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</tr>
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<td>No change</td>
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<td>0</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU215 (80GB))</td>
<td>92.00.AC.00.03</td>
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<td>2</td>
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<tr>
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<td>New update</td>
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<td>VBIOS (A800 PG510 SKU260 (80GB))</td>
<td>92.00.AC.00.03</td>
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<td>0&lt;sup&gt;Page 75, 1&lt;/sup&gt;</td>
<td>2</td>
</tr>
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<td>VBIOS (A100 SystemB 80GB)</td>
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<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK9GB5Q</td>
<td>New update</td>
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<td>4</td>
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<tr>
<td>U.2 NVMe (Kioxia)</td>
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<td>4</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 1)</td>
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<tr>
<td>M.2 Micron 7400 Gen4</td>
<td>E1MU23BC</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>4.02</td>
<td>No change</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>4</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PSU (Delta rev04)</td>
<td></td>
<td>Primary 1.7/Secondary 1.7</td>
<td>No change</td>
<td>0</td>
</tr>
</tbody>
</table>

- <sup>1</sup> Page 75, 1
10.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.
  
  When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.
  
  The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive`. Since the container does not support updating the active image directly, commands such as `update_fw BMC -a -f` will not work.

10.4. DO NOT UPDATE DGX A100 CPLD FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running `update_fw all`). It is possible to update the CPLD firmware using “`update_fw CPLD`”; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.

10.5. Special Instructions for Red Hat Enterprise Linux 7

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.

---

1 Firmware Update Container 22.5.5 does not support NVIDIA DGX A800.
10.5.1. Option 1: Update to EL7-22.05

Refer to the **DGX Software for Red Hat Enterprise Linux 7 Release Notes** for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

10.5.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply to the following circumstances:

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

**Note:** If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.

```
sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
```

2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

```
yum install -y \nhttps://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-\n--20.03-1.el7.x86_64.rpm
```

2. Install mpt3sas 31.101.01.00-0:

```
sudo yum install mpt3sas-dkms
```

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel:

```
sudo modprobe mpt3sas
```
You can verify the correct `mpt3sas` version is installed by issuing the following:

```
yum list installed
```

## 10.6. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container.

The commands use the `.run` file, but you can also use any method described in *Using the DGX A100 FW Update Utility*.

### Caution:

- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing `nvidia-smi`, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - `dcgm-exporter`
  - `nvidia-dcgm`
  - `nvidia-fabricmanager`
  - `nvidia-persistenced`
  - `xorg-setup`
  - `lightdm`
  - `nvsm-core`
  - `kubelet`
  The container will attempt to stop these services automatically, but will be unable to stop any that are launched from Docker.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

```
$ sudo ./nvfw-dgxa100_23.6.3_230608.run show_version
```

- If there is "no" in any up-to-date column for updatable firmware, then continue with the next step.
If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

```
$ sudo ./nvfw-dgxa100_23.6.3_230608.run update_fw all
```

Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

► If you are prompted to reboot, issue

```
$ sudo reboot
```

► If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

```
$ sudo ipmitool raw 0x3c 0x04
$ sudo ipmitool chassis power cycle
```

3. After rebooting or power cycling the system, you may need to perform another `update_fw all` to update other firmware.

► Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or

► Repeat Step 2 just in case updates are needed.

If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

Refer to [DGX A100 Firmware Update Process](#) for more information about the update process.

You can verify the update by issuing the following.

```
$ sudo ./nvfw-dgxa100_23.6.3_230608.run show_version
```

### Example Output for a DGX A100 640GB System

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC</td>
<td>4.00</td>
<td>4.00</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Id</td>
<td>Status</td>
<td>Location</td>
<td>Onboard Version</td>
</tr>
<tr>
<td>0:Active</td>
<td>Boot</td>
<td>Online</td>
<td>00.17.07</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable</td>
<td></td>
<td>00.17.07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Id</td>
<td>Onboard Version</td>
<td>Manifest</td>
<td>up-to-date</td>
</tr>
<tr>
<td>0:Active</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>1.18</td>
<td>1.18</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switches</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

(continues on next page)
### PCI Bus# | Model | Onboard Version | Manifest | FUB | Updated? | up-to-date
---|---|---|---|---|---|---
DGX - 0000:91:00.0 (U261) | 88064_Retimer | 3.1.0 | 3.1.0 | | yes | up-to-date
DGX - 0000:88:00.0 (U260) | 88064_Retimer | 3.1.0 | 3.1.0 | | yes | up-to-date
DGX - 0000:4f:00.0 (U262) | 88064_Retimer | 3.1.0 | 3.1.0 | | yes | up-to-date
DGX - 0000:48:00.0 (U225) | 88080_Retimer | 3.1.0 | 3.1.0 | | yes | up-to-date
DGX - 0000:01:00.0 (U1) | PEX88096 | 2.0 | 2.0 | | yes | up-to-date
DGX - 0000:81:00.0 (U3) | PEX88096 | 2.0 | 2.0 | | yes | up-to-date
DGX - 0000:b1:00.0 (U4) | PEX88096 | 2.0 | 2.0 | | yes | up-to-date
DGX - 0000:41:00.0 (U2) | PEX88096 | 2.0 | 2.0 | | yes | up-to-date
DGX - 0000:c4:00.0 | LR10 | 92.10.18.00.01 | 92.10.18.00.01 | | yes | up-to-date
DGX - 0000:c5:00.0 | LR10 | 92.10.18.00.01 | 92.10.18.00.01 | | yes | up-to-date
DGX - 0000:c6:00.0 | LR10 | 92.10.18.00.01 | 92.10.18.00.01 | | yes | up-to-date
DGX - 0000:c7:00.0 | LR10 | 92.10.18.00.01 | 92.10.18.00.01 | | yes | up-to-date
DGX - 0000:c8:00.0 | LR10 | 92.10.18.00.01 | 92.10.18.00.01 | | yes | up-to-date
DGX - 0000:c9:00.0 | LR10 | 92.10.18.00.01 | 92.10.18.00.01 | | yes | up-to-date

**Mass Storage**

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme1n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme2n1</td>
<td>Samsung MZLB1T9HALS-00007</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme3n1</td>
<td>Samsung MZLB1T9HALS-00007</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme4n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme5n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme6n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme7n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme8n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme9n1</td>
<td>Samsung MZWLJ3T8HBL-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Video BIOS**

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
<th>Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
</table>

(continues on next page)
Power Supply

<table>
<thead>
<tr>
<th>ID</th>
<th>Vendor</th>
<th>Model</th>
<th>MFR ID</th>
<th>Revision</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Onboard Version</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSU 0: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 0: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 0: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Primary</td>
<td>Delta ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>-------</td>
<td>----</td>
<td>----</td>
<td></td>
</tr>
<tr>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CPLD**

<table>
<thead>
<tr>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CPLD</td>
<td>1.05</td>
<td>1.05</td>
</tr>
<tr>
<td>MID_CPLD</td>
<td>1.03</td>
<td>1.03</td>
</tr>
</tbody>
</table>

* CPLD won’t be updated by default (`update_fw all`), use `update_fw CPLD` if it’s needed.

**FPGA**

<table>
<thead>
<tr>
<th>Onboard version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>03.0e</td>
<td>03.0e</td>
<td>yes</td>
</tr>
</tbody>
</table>

10.6. Instructions for Updating Firmware
Chapter 11. DGX A100 System Firmware Update Container Version 22.12.1

The DGX Firmware Update container version 22.12.1 is available.

▶ Package name: nvfw-dgxa100_22.12.1_221208.tar.gz
▶ Run file name: nvfw-dgxa100_22.12.1_221208.run
▶ Image name: nvfw-dgxa100:22.12.1
▶ PXE netboot: pxeboot-DGXA100_FWUI-22.12.1.tgz

11.1. Highlights and Changes in this Release

This release is supported with the following DGX OS software:

DGX OS 5.4 or later.

Important: This firmware update container does NOT support DGX OS 4.99.xx. To use the container on DGX A100 servers, update to DGX OS 5.4 or later.

▶ EL7-22.08 or later (See “Special Instructions for Red Hat Enterprise Linux 7” in the DGX A100 System Firmware Container Release Notes) EL8-21.08 Update 1 or later.
▶ EL8-22.08 or later

Fixed BMC issues

▶ Improved SNMP trap handling and updated SNMP MIB with additional description for better trap information.
▶ Handled a rare NTP server configuration settings issue from BMC WebUI.
▶ The BMC update includes software security enhancements. See the NVIDIA Security Bulletin DGX - December 2022 for details.
▶ Improvements In Redfish
NVIDIA DGX A100 System Firmware Update Container Release Notes

- Addressed a redfish URI timeout issue by appropriately handling the session authentication mechanism.
- Addressed a rare redfish URI connection failure issue by appropriately handling the Redfish session authentication mechanism.
- Fixed Redfish’ chassis power state inconsistencies.
- Fixed redfish to fetch accurate values of thermal and power sensors states and readings.
- Revised redfish chassis to identify LED status reporting issue.
- Reduced frequency of UPNP (Universal Plug and Play) SSDP (Simple Service Discovery Protocol) advertisements from BMC
- Fixed SBIOS Issues - Fixed issues relating to redfish reporting of PCIe device types and speeds.
  - Removed unimplemented setup menu options for User Defaults and Boot NumLock State.
  - Updated AGESA to version 1.0.0.E.
  - The SBIOS update includes software security enhancements.
  - See the NVIDIA Security Bulletin DGX - May 2023 for details.
- Added Support - Added M.2 Micron 7400 Gen4 drive.
- Known Issues - For more information, see Known Issues.

11.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.

- If you are updating from 21.11.4 the total update time is approximately sixty-eight (68) minutes.
- If you are updating from 22.5.5 the total update time is approximately sixty-one (61) minutes.
<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update time from 21.11.4 (minutes)</th>
<th>Update time from 22.5.4 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.19.07</td>
<td>See <a href="#">DGX A100 BMC Changes</a></td>
<td>32</td>
<td>31</td>
</tr>
<tr>
<td>SBIOS</td>
<td>1.18</td>
<td>See <a href="#">DGX A100 SBIOS Changes</a></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMC CEC SPI (MB_CEC)</td>
<td>3.28</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>3.1.0</td>
<td>No change</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U225)</td>
<td>3.1.0</td>
<td>No change</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>PEX88080 Retimer (U666)</td>
<td>4.1.0</td>
<td>New update</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NVSwitch BIOS</td>
<td>92.10.18.00.00</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU200 (40GB))/VBIOS (A100 40GB)</td>
<td>92.00.45.00.03</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VBIOS (A100 PG506 SKU210 (80GB))/VBIOS (A100 80GB)</td>
<td>92.00.9E.00.00</td>
<td>New update</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG506 SKU215 (80GB))</td>
<td>92.00.A4.00.01</td>
<td>New support</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU200 (40GB))</td>
<td>92.00.81.00.00</td>
<td>New support</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A100 PG510 SKU210 (80GB))</td>
<td>92.00.9E.00.00</td>
<td>New support</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A800 PG510 SKU215 (80GB))</td>
<td>92.00.A4.00.05</td>
<td>New support</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VBIOS (A100 SystemB 80GB)</td>
<td>92.00.81.00.00</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK9CB5Q</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.2 NVMe (Kioxia)</td>
<td>105</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 1)</td>
<td>EDA7602Q</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 2)</td>
<td>GDC7302Q</td>
<td>No change</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>M.2 Micron 7400 Gen4</td>
<td>E1MU23BC</td>
<td>New support</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>4.02</td>
<td>New update</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>4</td>
<td>No change</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

### 11.2. Contents of the DGX A100 System Firmware Container

<table>
<thead>
<tr>
<th>PSU (Delta rev04)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary 1.7/Secondary 1.7/Community 1.7</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PSU (Delta rev03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary 1.6/Secondary 1.6/Community 1.6</td>
<td>No change</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
11.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.
  
  When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.
  
  The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive`. Since the container does not support updating the active image directly, commands such as `update_fw BMC -a -f` will not work.

11.4. DO NOT UPDATE DGX A100 CPLD Firmware UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running `update_fw all`). It is possible to update the CPLD firmware using "update_fw CPLD "; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.

11.5. Special Instructions for Red Hat Enterprise Linux 7

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.
11.5.1. Option 1: Update to EL7-22.05

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

11.5.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply if:

▶ You do not want to update your Red Hat Enterprise Linux installation, and
▶ Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

**Note:** If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.
      
      sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
      sudo subscription-manager repos --enable=rhel-7-server-optional-rpms

   2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

   ```bash
   yum install -y \n   https://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-\n   →20.03-1.el7.x86_64.rpm
   ```

2. Install mpt3sas 31.101.01.00-0
   ```bash
   sudo yum install mpt3sas-dkms
   ```

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel:
   ```bash
   sudo modprobe mpt3sas
   ```

11.5. Special Instructions for Red Hat Enterprise Linux 7
You can verify the correct mpt3sas version is installed by issuing the following:

```
yum list installed
```

### 11.6. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container.

The commands use the .run file, but you can also use any method described in *Using the DGX A100 FW Update Utility*.

**Caution:**

- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - `dcgm-exporter`
  - `nvidia-dcgm`
  - `nvidia-fabricmanager`
  - `nvidia-persistenced`
  - `xorg-setup`
  - `lightdm`
  - `nvsm-core`
  - `kubelet` The container will attempt to stop these services automatically, but will be unable to stop any that are launched from Docker.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

```
$ sudo ./nvfw-dgxa100_22.12.1_221208.run show_version
```

- If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.
If all up-to-date column entries are "yes", then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

   $ sudo ./nvfw-dgxa100_22.12.1_221208.run update_fw all

   Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

   ▶ If you are prompted to reboot, issue

   $ sudo reboot

   ▶ If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

   $ sudo ipmitool raw 0x3c 0x04
   $ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another update_fw all to update other firmware.

   ▶ Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or

   ▶ Repeat Step 2 just in case updates are needed.

   If you perform another update_fw all, you may be prompted again to either reboot the system or power cycle the system.

   See DGX A100 Firmware Update Process for more information about the update process.

You can verify the update by issuing the following.

   $ sudo ./nvfw-dgxa100_22.12.1_221208.run show_version

Sample output for a DGX A100 640GB system:

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MB_CEC(enabled)</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC(enabled)</td>
<td>4.00</td>
<td>4.00</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image Id</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0:Active</td>
<td>Boot</td>
<td>Online</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable</td>
<td>Local</td>
<td>00.17.07</td>
<td>00.19.07</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image Id</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0:Active</td>
<td>Boot Updatable</td>
<td>1.18</td>
<td>1.18</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable</td>
<td>1.18</td>
<td>1.18</td>
</tr>
</tbody>
</table>

Switches

(continues on next page)
<table>
<thead>
<tr>
<th>PCI Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0(U261)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:88:00.0(U260)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0(U262)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:48:00.0(U225)</td>
<td>88080_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:01:00.0(U1)</td>
<td>PEX8896</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:81:00.0(U3)</td>
<td>PEX8896</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0(U4)</td>
<td>PEX8896</td>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>DGX - 0000:41:00.0(U2)</td>
<td>PEX8896</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
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<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c8:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c9:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
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</tbody>
</table>

**Mass Storage**

----------

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme1n1</td>
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<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme2n1</td>
<td>Samsung</td>
<td>MZ1L81T9H8LS-00007</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
</tr>
<tr>
<td>nvme3n1</td>
<td>Samsung</td>
<td>MZ1L81T9H8LS-00007</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
</tr>
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<td>nvme4n1</td>
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<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
</tr>
<tr>
<td>nvme5n1</td>
<td>Samsung</td>
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<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
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<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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</tr>
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<td>nvme7n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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</tr>
<tr>
<td>nvme8n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
</tr>
<tr>
<td>nvme9n1</td>
<td>Samsung</td>
<td>MZWLJ3T8H8LS-00007</td>
<td>EPK9CB5Q</td>
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</tbody>
</table>

**Video BIOS**

--------

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

(continues on next page)
### Power Supply

<table>
<thead>
<tr>
<th>ID</th>
<th>Vendor</th>
<th>Model</th>
<th>MFR ID</th>
<th>Revision</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard Version</td>
<td></td>
<td>Manifest up-to-date</td>
<td></td>
<td></td>
<td>ok</td>
</tr>
<tr>
<td>PSU 0: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 0: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 0: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 1: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 2: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 3: Primary</td>
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<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 4: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Communication</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
<tr>
<td>PSU 5: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>03</td>
<td>ok</td>
</tr>
</tbody>
</table>
11.7. Known Issues

11.7.1. VBIOS cannot update due to running service processes

11.7.1.1. Issue

VBIOS update fails on Red Hat Enterprise Linux 9 due to system service/process caching the resource to be upgraded.

11.7.1.2. Explanation

The following services (system processes) must be stopped manually for the firmware update to start:

- process nvidia-persistenced(pid 5372)
- process nv-hostengine(pid 2723)
- process cache_mgr_event(pid 5276)
- process cache_mgr_main(pid 5278)
- process dcmg_ipc(pid 5279)

If xorg is holding the resources, try to stop it by running

```bash
$ sudo systemctl stop <display manager> where the (display manager) can be acquired by

$ cat /etc/X11/default-display-manager
```
11.7.2. [BCM users only] Firmware Update Completes with Error on Base Command Manager

11.7.2.1 Issue

When attempting to update the new -OR4 CPU Trays, a failure occurs during the update process where FWUC fails to list services:

Failure messages may include:

- Failed to install DGX 88064_Retimer dev 91 3.1.o
- Unable to unload NVIDIA drivers. The following process(es)/service(s) need to be stopped in order for switch firmware update to occur:
- <blank>

11.7.2.2 Workaround

1. Run:

   ```
   $ scontrol update NodeName=hostname State=drain Reason="FW update"
   ```

2. Wait for jobs on the host to complete and the status of node shows drained.

   NOTE: if the output for the following command returns draining implies the node has jobs running and not ready; only proceed to step 2 only if the node status returns drained.

   ```
   $ sinfo --state=drained | grep hostname
c
   ```

   1. Stop `slurmd` service on compute node

   ```
   $ ansible -i /opt/provisioning/inventory/ --become -m shell -a 'systemctl stop slurmd.service ' 'hostname'
   ```

   2. Post firmware update: if host has been rebooted after firmware update, change host state to resume:

   ```
   $ scontrol update NodeName=hostname state=resume
   ```
Chapter 12. DGX A100 System Firmware Update Container Version 22.5.5

The DGX Firmware Update container version **22.5.5** is available.

▶ Package name: `nvfw-dgxa100_22.5.5_220518.tar.gz`
▶ Run file name: `nvfw-dgxa100_22.5.5_220518.run`
▶ Image name: `nvfw-dgxa100:22.5.5`
▶ ISO image: `DGXA100_FWUI-22.5.5-2022-05-19-00-23-59.iso`
▶ PXE netboot: `pxeboot-DGXA100_FWUI-22.5.5.tgz`

12.1. Highlights and Changes in this Release

▶ This release is supported with the following DGX OS software:
  ▶ DGX OS 5.1 or later.

---

**Important:** This firmware update container does not support DGX OS 4.99.xx. To use the container on DGX A100 servers, update to DGX OS 5.1 or later.

▶ EL7-21.10 or later (See *Special Instructions for Red Hat Enterprise Linux 7* )
▶ EL8-21.08 Update 1 or later

▶ Fixed BMC issues
  ▶ Fixed an issue so that certain sensors are now displaying in the BMC Web UI.
  ▶ Fixed the graceful handling of system power loss, which prevents the BMC Flash file system consistency issue and improves recovery.
  ▶ Fixed issues that caused the BMC usage to dramatically increase, which resulted in a POST failure with error code 91 or B4.
    This fix also improves the error handling in the Redfish interface.
  ▶ Fixed the BMC Web UI security settings and page refresh during full screen mode.
NVIDIA DGX A100 System Firmware Update Container Release Notes

- Fixed BMC SEL Event page, which was causing an error in certain SEL record parsing.
- Fixed an issue where the Power/Status LED was flashing continuously after the server was rebooted, and the Power/Status LED stayed on after the server was powered off.
- Added Redfish API support.
  - For more information, see Redfish API support in the DGX A100 User Guide.
  - For a list of known issues, see Known Issues.
- Fixed SBIOS issues
  - Fixed two issues that were causing boot order settings to not be saved to the BMC if applied out-of-band, causing settings to be lost after a subsequent firmware update.
  - Added interactive countdown messages during boot, to display the Setup Prompt Timeout configurable through the **Boot** > **Setup Prompt Timeout** configuration menu.
  - Added reporting of AGESA Version in SMBIOS.
  - Updated AGESA to version 1.0.0.D.

12.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.

- If you are updating from 21.11.4 to 22.5.5, the total update time is approximately **1 hour and 3 minutes**.
- If you are updating from 21.03.6 or earlier to 22.5.5, the total update time is approximately **2 hours and 51 minutes**.

The update time for each component is provided in the following table.
<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time from 21.03.6 or earlier</th>
<th>Update Time from 21.11.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.17.07</td>
<td>Refer to <a href="#">DGX A100 BMC Changes</a> for the list of changes.</td>
<td>31 minutes</td>
<td>31 minutes</td>
</tr>
<tr>
<td>SBIOS</td>
<td>1.13</td>
<td>Refer to <a href="#">DGX A100 SBIOS Changes</a> for the list of changes.</td>
<td>6 minutes</td>
<td>6 minutes</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>1 minute</td>
<td>0 minute</td>
</tr>
<tr>
<td>BMC CEC SPI (MB_CEC)</td>
<td>3.28</td>
<td>No change</td>
<td>7 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>3.1.0</td>
<td>New support</td>
<td>1 minute</td>
<td>1 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>3.1.0</td>
<td>New support</td>
<td>1 minute</td>
<td>1 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.18.00.01</td>
<td>No change</td>
<td>2 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 40GB)</td>
<td>92.00.45.00.03</td>
<td>Added security protection to the I2C interface.</td>
<td>2 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 80GB)</td>
<td>92.00.45.00.05</td>
<td>Added security protection to the I2C interface.</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>VBIOS (A100 SystemB 80GB)</td>
<td>92.00.81.00.06</td>
<td>New support</td>
<td>N/A</td>
<td>Same as above.</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK9CB5Q</td>
<td>Refer to <a href="#">DGX A100 U.2 NVMe Changes</a> for the list of changes.</td>
<td>5 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>U.2 NVMe (Kioxia)</td>
<td>105</td>
<td>No change</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 1)</td>
<td>EDA7602Q</td>
<td>No change</td>
<td>0 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 2)</td>
<td>GDC7302Q</td>
<td>New support</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>3.0e</td>
<td>New support</td>
<td>22 minutes</td>
<td>21 minutes</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>4.0</td>
<td>New support</td>
<td>3 minutes</td>
<td>3 minutes</td>
</tr>
<tr>
<td>PSU (Delta rev04)</td>
<td>Primary 1.7/ Secondary 1.7/ Community 1.7</td>
<td>New support</td>
<td>0 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>PSU (Delta rev03)</td>
<td>Primary 1.6/ Secondary 1.6/ Community 1.7</td>
<td>No change</td>
<td>90 minutes</td>
<td>Same as above.</td>
</tr>
<tr>
<td>PSU (Delta rev02)</td>
<td>Primary 1.6/ Secondary 1.6/ Community 1.7</td>
<td>No change</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
</tbody>
</table>
12.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

▶ **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.

When using `update_fw all`, the update container updates both active and inactive images.

▶ **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image.

The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive`. Since the container does not support updating the active image directly, commands such as `update_fw BMC -a -f` will not work.

12.4. DO NOT UPDATE DGX A100 CPLD FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running `update_fw all`). It is possible to update the CPLD firmware using `update_fw CPLD`; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.

12.5. Special Instructions for Red Hat Enterprise Linux 7

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.
12.5.1. Option 1: Update to EL7-22.05

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

12.5.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply if:

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

**Note:** If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.

   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.

      ```
      $ sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
      $ sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
      ```

   2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

      **Attention:** By running these commands you are confirming that you have read and agree to be bound by the DGX Software License Agreement. You are also confirming that you understand that any pre-release software and materials available that you elect to install in a DGX may not be fully functional, may contain errors or design flaws, and may have reduced or different security, privacy, availability, and reliability standards relative to commercial versions of NVIDIA software and materials, and that you use pre-release versions at your risk.

      ```
      $ yum install -y \https://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup--20.03-1.el7.x86_64.rpm
      ```

   3. Install mpt3sas 31.101.01.00-0.

      ```
      $ sudo yum install mpt3sas-dkms
      ```

   4. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel.

      ```
      $ sudo modprobe mpt3sas
      ```
You can verify the correct mpt3sas version is installed by issuing the following.

```
$ yum list installed
```

12.6. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container.

The commands use the .run file, but you can also use any method described in Using the DGX A100 FW Update Utility.

Caution:

- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - dcgm-exporter
  - nvidia-dcgm
  - nvidia-fabricmanager
  - nvidia-persistenced
  - xorg-setup
  - lightdm
  - nvsm-core
  - kubelet The container will attempt to stop these services automatically, but will be unable to stop any that are launched from Docker.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

```
$ sudo ./nvfw-dgxa100_22.5.5_220518.run show_version
```

- If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.
2. Perform the update for all firmware supported by the container.

$ sudo .∕nvfw-dgxa100_22.5.5_220518.run update_fw all

Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

► If you are prompted to reboot, issue

$ sudo reboot

► If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

$ sudo ipmitool raw 0x3c 0x04
$ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another `update_fw all` to update other firmware.

► Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or

► Repeat Step 2 just in case updates are needed.

If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

See `DGX A100 Firmware Update Process` for more information about the update process.

You can verify the update by issuing the following.

$ sudo .∕nvfw-dgxa100_22.5.5_220518.run show_version

Example output for a DGX A100 640GB system

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MB_CEC(enabled)</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC(enabled)</td>
<td>4.00</td>
<td>4.00</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>00.17.07</td>
<td>00.17.07</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.13</td>
<td>1.13</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switches</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

(continues on next page)
### PCI Bus#

<table>
<thead>
<tr>
<th>Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0 (U261)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:88:00.0 (U260)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0 (U262)</td>
<td>88064_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:48:00.0 (U225)</td>
<td>88080_Retimer</td>
<td>3.1.0</td>
<td>3.1.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:01:00.0 (U1)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:81:00.0 (U3)</td>
<td>PEX88096</td>
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<td>2.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0 (U4)</td>
<td>PEX88096</td>
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<tr>
<td>DGX - 0000:41:00.0 (U2)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
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<td></td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
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<td></td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
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<td></td>
</tr>
<tr>
<td>DGX - 0000:c8:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:c9:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
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### Mass Storage

<table>
<thead>
<tr>
<th>Drive</th>
<th>Name/Slot</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung MZWLJ3T8H8LSS-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
<td></td>
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<tr>
<td>nvme1n1</td>
<td>Samsung MZWLJ3T8H8LSS-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme2n1</td>
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<td>EDA7602Q</td>
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<td>nvme3n1</td>
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<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
<td></td>
</tr>
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<td>nvme4n1</td>
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<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
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<tr>
<td>nvme5n1</td>
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<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
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<td>nvme6n1</td>
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<td>nvme7n1</td>
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<td>EPK9CB5Q</td>
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<tr>
<td>nvme8n1</td>
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<td></td>
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<tr>
<td>nvme9n1</td>
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</table>

### Video BIOS

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
<th>Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>(continues on next page)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Power Supply

<table>
<thead>
<tr>
<th>ID</th>
<th>Vendor Model</th>
<th>MFR ID</th>
<th>Revision</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard Version Manifest</td>
<td>up-to-date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSU 0: Communication</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 0: Secondary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 0: Primary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 1: Communication</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
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<tr>
<td>PSU 1: Secondary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 1: Primary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 2: Communication</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 2: Secondary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 2: Primary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 3: Communication</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
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<tr>
<td>PSU 3: Secondary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 3: Primary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 4: Communication</td>
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<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 4: Secondary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 4: Primary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 5: Communication</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
<tr>
<td>PSU 5: Secondary</td>
<td>Delta ECD16010092</td>
<td>Delta 03</td>
<td>ok</td>
<td></td>
</tr>
</tbody>
</table>
12.7. Known Issues

12.7.1. Chassis Power State Remains On

12.7.1.1 Issue

When the system completes a GracefulShutdown and is queried by using Redfish, the Chassis Power State remains On, but the system power status will be correctly reported by using IPMI and in the BMC Web UI.

12.7.1.2 Explanation

The system can be powered on by using the IPMI command or by using BMC Web UI.

12.7.2. Incorrect Thermal and Voltage Sensor and Fan RPM Values are Displayed

12.7.2.1 Issue

Some thermal and voltage sensors and FAN RPMs might show incorrect (Zero reading) values when retrieved by using the Redfish APIs.
12.7.2.2 Explanation
This issue is currently under investigation.

12.7.3. Processor Power Limit and Power Metrics are Not Supported

12.7.3.1 Issue
Some thermal sensor reading and FAN RPMs might show incorrect (a zero reading) value when they are retrieved through the Redfish API.

12.7.3.2 Explanation
This issue is currently under investigation.

12.7.4. IndicatorLED Status Might Display an Incorrect State

12.7.4.1 Issue
The IndicatorLED status in Redfish might display an incorrect state for the system and disk resources.

12.7.4.2 Explanation
This issue is currently under investigation.

12.7.5. Unable to Update BMC Firmware

12.7.5.1 Issue
To run Firmware Update Container Version 22.5.5, you must use MB_CEC version 3.28.
12.7.5.2 Explanation

If you are using an MB_CEC version that is earlier than 3.28, you must first update to firmware update container version 21.03.6 or later.

12.7.6. Firmware Update Container Unable to Recover PSU with Corrupted Firmware

12.7.6.1 Issue

The firmware update container cannot recover the PSU firmware when the container cannot determine the hardware revision of the PSU.

12.7.6.2 Explanation

To recover a PSU that is revision 00-03, use firmware update container version 21.11.4.

12.7.7. Setting Up Active Directory Settings Might Fail with “Invalid Domain Name” Error

12.7.7.1 Issue

After logging into the BMC dashboard UI and setting up and enabling Active Directory Authentication, an “Invalid Domain Name” error may occur.

12.7.7.2 Explanation

If you encounter this error, set up the DNS manually as follows:

1. Login to the BMC UI dashboard.
2. Navigate to Settings > Network Settings > DNS Configuration > “Domain Name Server Setting”
3. Find “Domain Name Server Setting” and change "Automatic " to "Manual ".
4. Replace “DNS Server 1” IP to "8.8.8.8" (the IP is dns.google)
5. Click Save and accept the alert to restart the BMC network.
12.7.8. NVSM Incorrectly Reports the Delta PSU Part Number Instead of the Model Numbers

12.7.8.1 Issue

When issuing `show_version` or `show_fw_manifest`, the number associated with the Delta PSU is the part number instead of the model number.

12.7.8.2 Explanation

This will be resolved in a future release.

12.7.9. BMC KVM Screen May Show “No Signal” Under Certain Conditions

12.7.9.1 Issue

When attempting to view the DGX A100 console from the BMC Web UI KVM, the screen might show ``No Signal`` if you cold reset the BMC and reboot the server. This is due to a rare condition between BMC and the SBIOS.

For example, the issue might occur after performing the following:

1. Issue the command to cold reset the BMC.
   
   ```
   $ sudo ipmitool mc reset cold
   ```

2. Wait about 30 seconds and issue the command to reboot the system.
   
   ```
   $ sudo reboot
   ```

12.7.9.2 Explanation

You can recover the system by issuing a hard reset from the Web UI.

12.7.10. SBIOS “Bootup NumLock State” not Enforced

12.7.10.1 Issue

When turning NumLock to OFF after setting “`Boot NumLock State` " to ON from the SBIOS setup menu, NumLock remains off after rebooting the server. Similarly, when turning NumLock to ON after setting "`Boot NumLock State` " to OFF from the SBIOS setup menu, NumLock remains on after rebooting the server.
12.7.10.2 Explanation

This feature is currently not implemented in the DGX A100 SBIOS.

12.7.11. NVSM Fails to Run the FWUC show_version Command

12.7.11.1 Issue

This is an issue with NGC access without entering an email address for authentication.

12.7.11.2 Explanation

To resolve this issue, upgrade to NVSM version 20.09.37 and later.

12.7.12. NVSM Exits With an Error Message When Updating Firmware by Using NVSM

12.7.12.1 Issue

When the firmware update container uses NVSM to update the firmware, after a few minutes, NVSM exits with the following message:

```python
('Connection broken: IncompleteRead(0 bytes read)', IncompleteRead(0 bytes read)).
```

In the nvidia-fw.log, the update process continues in the background until it has completed.

12.7.12.2 Explanation

The system can be powered on by using the IPMI command or by using BMC Web UI.

12.7.13. After an FPGA Update, BMC Sel Log Shows Sensor-Related Errors

12.7.13.1 Issue

After a firmware update, the BMC sel log might show sensor-related errors.
12.7.13.2 Explanation

These errors can be safely ignored. To resolve this issue, upgrade to DGX OS 5.3 and later.


12.7.14.1 Issue

After a firmware update, the Delta PSU version and the Delta manifest version should be displayed, but only the Delta manifest version appears.

12.7.14.2 Explanation

This issue will be fixed in a future release.

12.7.15. PSUs Sometimes Display an Error after an Update

12.7.15.1 Issue

When you run `show_version`, you might see ERR: retries in the container output and components might be listed as not-supported.

12.7.15.2 Explanation

To see the correct firmware versions and component status, run `show_version` again.

12.7.16. Force FPGA Update Sometimes Fails

12.7.16.1 Issue

When you force-update FPGA firmware, the update might fail, and the `Auto updates are not allowed on a busy system` message is displayed.
12.7.16.2 Explanation

This issue will be fixed in a future release.

12.7.17. Updating to Firmware Container Version 22.5.5 Fails for SSDs

12.7.17.1 Issue

The firmware container version 22.5.5 fails to update SSDs on systems where NVMe multipathing is enabled.

12.7.17.2 Explanation

If the container fails to update a device that has c<number>, for example nvme0c0n1, in its name. This is because the device was a multipath device.

Disabling multipathing depends on the type of multipathing and the way it was enabled. As a result, you can update each SSD individually without disabling multipathing by running the following command:

```
update_fw SSD --select-ssd <ssd_name>
```

For example, here is a system with the following devices in show version:

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme1n1</td>
<td>Samsung</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme2n1</td>
<td>Samsung</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
</tbody>
</table>

To update nvme0n1, run the following command:

```
update_fw SSD --select-ssd nvme0n1
```
Chapter 13. DGX A100 System Firmware Update Container Version 21.11.4

The DGX Firmware Update container version 21.11.4 is available.

- Package name: nvfw-dgxa100_21.11.4_211111.tar.gz
- Run file name: nvfw-dgxa100_21.11.4_211111.run
- Image name: nvfw-dgxa100:21.11.4
- ISO image: DGXA100_FWUI-21.11.4-2021-11-12-09-20-53.iso
- PXE netboot: pxeboot-DGXA100-FWUI-21.11.4.tgz

13.1. Highlights and Changes in this Release

- This release is supported with the following DGX OS software -
  - DGX OS 5.0.1 or later

  **Important:** This firmware update container does not support DGX OS 4.99.xx. To use the container on DGX A100 servers, update to DGX OS 5.0.1 or later.

- EL7-21.04 or later (See *Special Instructions for Red Hat Enterprise Linux 7*)
- EL8-20.11 or later
- Fixed BMC issues
  - Fixed incorrect temperatures reported for sensors on the NVIDIA Networking ConnectX-6 single-port and dual-port VPI cards.
  - Fixed BMC user data (username, password, privileges) getting lost after BMC upgrade.
  - Added ability to set the BMC to local time instead of the default UTC.
  - Added authentication capabilities to the BMC RESTful API.
  - Added new capabilities to identify firmware update in the System Event Log (SEL) on the BMC.
Fixed the bug to ensure that the BMC will boot to the latest version updated on the system.

Fixed SBIOS issues

▶ Added Memory correctable ECC Error leaky bucket, preventing unnecessary replacement of working system DIMMs.

▶ Fixed PXE boot configuration not persisting, helpful for multiple DGX A100 nodes.

▶ Fixed inability to enter SBIOS Admin/User password from the Serial over LAN console.

▶ Fixed U.2 NVMe driver issues

▶ Improved write performance while performing drive wear-leveling.

▶ Addressed the needs of security-conscious customers who no longer support Python 2.7 by using Python 3 in the NVIDIA containerless .run file.

▶ IPMITool: "ipmitool -I lan" is no longer supported. Instead, use "ipmitool -I lanplus".

13.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.

▶ If updating from 21.05.7 or 21.03.6, the total update time is approximately 44 minutes.

▶ If updating from 20.12.3.3 or earlier, the total update time is approximately 3 hours and 22 minutes.

The update time for each component is provided in the following table.
<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time from 20.12.3.3 or earlier</th>
<th>Update Time from 21.05.7 or 21.03.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.16.09</td>
<td>Refer to <a href="#">DGX A100 BMC Changes</a> for the list of changes.</td>
<td>32 minutes</td>
<td>32 minutes</td>
</tr>
<tr>
<td>SBIOS</td>
<td>1.09</td>
<td>Refer to <a href="#">DGX A100 SBIOS Changes</a> for the list of changes.</td>
<td>5 minutes</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>1 minute</td>
<td>0 minute</td>
</tr>
<tr>
<td>BMC CEC SPI</td>
<td>v3.28</td>
<td>No change</td>
<td>22 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>1.2f</td>
<td>No change</td>
<td>1 minute</td>
<td>0 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>1.2f</td>
<td>No change</td>
<td>1 minute</td>
<td>0 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.18.00.01</td>
<td>No change</td>
<td>2 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 40GB)</td>
<td>92.00.45.00.03</td>
<td>Added security protection to the I2C interface.</td>
<td>7 minutes</td>
<td>3 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 80GB)</td>
<td>92.00.45.00.05</td>
<td>Added security protection to the I2C interface.</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK9CB5Q</td>
<td>Refer to <a href="#">DGX A100 U.2 NVMe Changes</a> for the list of changes.</td>
<td>4 minutes</td>
<td>4 minutes</td>
</tr>
<tr>
<td>U.2 NVMe (Kioxia)</td>
<td>0105</td>
<td>No change</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 1)</td>
<td>EDA7602Q</td>
<td>No change</td>
<td>4 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>M.2 NVMe (Samsung version 2)</td>
<td>GDC7202Q</td>
<td>New support</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>2.A5</td>
<td>No change</td>
<td>22 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>3.9</td>
<td>No change</td>
<td>3 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>PSU (Delta)</td>
<td>Primary 1.6/ Secondary 1.6/ Community 1.7</td>
<td>No change</td>
<td>90 minutes</td>
<td>0 minutes</td>
</tr>
<tr>
<td>PSU (LiteOn)</td>
<td>v0908</td>
<td>New support</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
</tbody>
</table>
13.3. BMC 00.16.12 on Newer CPU Motherboards

Newer CPU motherboards are manufactured and shipped with BMC version 00.16.12. This BMC version provides an updated PCIe setting that is required by the newer (-004) motherboards. Do not attempt to downgrade the BMC on these motherboards using the firmware update container.

13.4. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive`. Since the container does not support updating the active image directly, commands such as `update_fw BMC -a -f` will not work.

13.5. Updating the PSU FW

- If the PSU update fails due to a failure in the PSU recovery, power cycle the PSU and then perform the PSU update again. The following are some methods for power cycling the PSU:
  - Remove power from the failed PSU by turning off the rack PDU output to that PSU and then turning it back on after a few moments. (If necessary, run the container using the `show_version` option to determine which PSU is reported as "not-ok").
  - Physically disconnect power to the PSU by disconnecting one end of the PSU power cord and then reconnect after a few moments. (If necessary, run the container using the `show_version` option to determine which PSU is reported as "not-ok").
  - AC power cycle the server.

$ sudo ipmitool raw 0x3c 0x04
$ sudo ipmitool chassis power cycle
13.6. DO NOT UPDATE DGX A100 CPLD FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running `update_fw all`). It is possible to update the CPLD firmware using "update_fw CPLD "; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.

13.7. Special Instructions for Red Hat Enterprise Linux 7

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.

13.7.1. Option 1: Update to EL7-21.01 or later

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

13.7.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply if

► You do not want to update your Red Hat Enterprise Linux installation, and

► Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

**Note:** If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.
NVIDIA DGX A100 System Firmware Update Container Release Notes

2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

```
sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
```

**Attention:** By running these commands you are confirming that you have read and agree to be bound by the DGX Software License Agreement. You are also confirming that you understand that any pre-release software and materials available that you elect to install in a DGX may not be fully functional, may contain errors or design flaws, and may have reduced or different security, privacy, availability, and reliability standards relative to commercial versions of NVIDIA software and materials, and that you use pre-release versions at your risk.

```
yum install -y \\nhttps://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-20.03-1.el7.x86_64.rpm
```

2. Install `mpt3sas` 31.101.01.00-0.

```
sudo yum install mpt3sas-dkms
```

3. Load the `mpt3sas` driver into the Red Hat Enterprise Linux kernel.

```
sudo modprobe mpt3sas
```

You can verify the correct `mpt3sas` version is installed by issuing the following.

```
yum list installed
```

### 13.8. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. The commands use the .run file, but you can also use any method described in *Using the DGX A100 FW Update Utility.*

**Caution:**
- Do not log into the BMC dashboard UI while a firmware update is in progress.
- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing `nvidia-smi`, as this can prevent the VBIOS from updating.
- When issuing `update_fw all`, stop the following services if they are launched from Docker through the `docker run` command:
  - `dcgm-exporter`
  - `nvidia-dcgm`
1. Check if updates are needed by checking the installed versions.

   $ sudo ./nvfw-dgxa100:21.11.4_211111.run show_version

   ▶ If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.
   ▶ If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

   $ sudo ./nvfw-dgxa100:21.11.4_211111.run update_fw all

   Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.
   ▶ If you are prompted to reboot, issue
      $ sudo reboot
   ▶ If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).
      $ sudo ipmitool raw 0x3c 0x04
      $ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another update_fw all to update other firmware.
   ▶ Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
   ▶ Repeat Step 2 just in case updates are needed.

   If you perform another update_fw all, you may be prompted again to either reboot the system or power cycle the system.

   See DGX A100 Firmware Update Process for more information about the update process.

   You can verify the update by issuing the following.
$ sudo ./nvfw-dgxa100:21.11.4_211111.run show_version

Example output for a DGX A100 320GB system

CEC
=====
Onboard Version  Manifest  up-to-date
MB_CEC(enabled)  3.28        3.28  yes
Delta_CEC(enabled) 3.09    3.09  yes

BMC DGX
=======

<table>
<thead>
<tr>
<th>Image Id</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active</td>
<td>Boot</td>
<td>Online</td>
<td>00.16.09</td>
<td>00.16.09</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive Updatable</td>
<td>Local</td>
<td>00.16.09</td>
<td>00.16.09</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

SBIOS
=====

<table>
<thead>
<tr>
<th>Image Id</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Inactive Updatable</td>
<td>1.09</td>
<td>1.09</td>
<td>yes</td>
</tr>
<tr>
<td>1:Active Boot</td>
<td>1.09</td>
<td>1.09</td>
<td>yes</td>
</tr>
</tbody>
</table>

Switches
========

<table>
<thead>
<tr>
<th>PCI Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:81:00.0(U1)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:81:00.0(U2)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:81:00.0(U3)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>N/A</td>
<td>yes</td>
</tr>
</tbody>
</table>

Mass Storage
============

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung MZWLJ3T8HBL5-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme1n1</td>
<td>Samsung MZ1LB1T9HAL5-00007</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme2n1</td>
<td>Samsung MZ1LB1T9HAL5-00007</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme3n1</td>
<td>Samsung MZWLJ3T8HBL5-00007</td>
<td>EPK9CB5Q</td>
<td>EPK9CB5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme4n1</td>
<td>Samsung MZWLJ3T8HBL5-00007</td>
<td>EPK9CB5Q</td>
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Video BIOS
----------

(continues on next page)
### Bus Model

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<th>up-to-date</th>
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### FPGA

- **Onboard version Manifest up-to-date**
  - 02.a5     02.a5     yes

### Power Supply

- **Onboard ID Vendor Model MFR ID Status Version Manifest up-to-date**

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<th>Model</th>
<th>MFR ID</th>
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<th>Manifest</th>
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<td>ECD160100092</td>
<td>Delta</td>
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<td>ECD160100092</td>
<td>Delta</td>
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<td>yes</td>
</tr>
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<td>ECD160100092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
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<td>Delta</td>
<td>ok</td>
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<td>PSU 4: Secondary</td>
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<td>Delta</td>
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### CPLD

- **Onboard Version Manifest up-to-date**
  - MID_CPLD 1.03 1.03 yes
  - MB_CPLD 1.03 1.03 yes

* CPLD won’t be updated by default (`update_fw all`), use `update_fw CPLD` if it’s needed

---

13.8. Instructions for Updating Firmware
13.9. Known Issues

13.9.1. BMC Incorrectly Reports CPU Motherboard Overvoltage

13.9.1.1 Issue

The BMC incorrectly reports that the sensors for 3.3V and 5V_STBY on the CPU motherboard exceed the non-critical thresholds. The assertion is reported in the SEL logs.

13.9.1.2 Explanation

This is an issue with the BMC where it is not interpreting the sensor information properly. The SEL gets filled with voltage messages but otherwise there is no functional impact. The values reported in the SEL confirm that the threshold has not been exceeded.

13.9.2. TEMP_IO0_IB0_P0 Reading not Reported in BMC “Disabled Sensors” List

13.9.2.1 Issue

The TEMP_IO0_IB0_P0 sensor does not appear in the BMC web UI when it is disabled.

13.9.2.2 Explanation

This is an issue with the BMC web UI and will be resolved in the future release. You can issue `ipmitool sensor` or `ipmitool sdr list` to see information on disabled sensors.

13.9.3. nvipmitool Reports PCIe Correctable Errors as “Asserted”

13.9.3.1 Issue

The nvipmitool includes an Asserted text when reporting PCIe correctable errors without further explanation.
13.9.3.2 Explanation

"Asserted" just means that correctable errors were found in the test.

13.9.4. KVM “Power On Server” Option is Grayed Out

13.9.4.1 Issue

If the system is powered off, you may not be able to “power on” the system using the BMC KVM (“Power On Server” option is grayed out).

13.9.4.2 Explanation

To work around, log in to the BMC Web UI, then navigate to the Power Control dialog and select “Power On”.

13.9.5. BMC Web UI Performance Drop

13.9.5.1 Issue

Several BMC web UI tasks - such as BMC login, getting SEL lists, or getting SDR lists - may be slower to complete compared to previous BMC versions.

13.9.5.2 Explanation

NVIDIA is investigating this issue.

13.9.6. SOL Cannot be Activated for a Newly Created User Account

13.9.6.1 Issue

After created a new user account, attempts to activate SOL for that account fail.
13.9.6.2 Explanation

NVIDIA is investigating the issue. To work around, enable the SOL payload for the new user.

**Example:**

```
$ sudo ipmitool sol payload enable 1 5
```

Then retry activating SOL again.

13.9.7. Unable to Set Static IPv6 Address Using BMC Web UI

13.9.7.1 Issue

1. From the BMC web UI, navigate to **Settings -> Network -> Network IP Settings**.
2. Deselect **Enable IPv6 DHCP** and input an IPv6 Address and Subnet Prefix length, then click **Save**.

The changes are not made.

13.9.7.2 Explanation

To work around, set the IPv6 address using the command line.

13.9.8. The BMC KVM May Stop Accepting Keyboard Input on the OS Command Line

13.9.8.1 Issue

When this occurs, the terminal will hang or not accepting any key strokes. After continuing to press keys, an error message appears indicating the HID queue is getting full.

13.9.8.2 Explanation

This may occur if the USB service is not enabled. To resolve, enable USB in the kernel and try again. The following is an example on Red Hat Enterprise Linux:

1. Remove "nousb" from `/boot/efi/EFI/redhat/grub.cfg`.
3. Reboot.
4. Verify USB is enabled by using the command "`lsscsi -H | grep usb-storage`".
5. Try KVM console.
13.9.9. BMC Kernel Panic Upon Power Cycle then BMC Reset Sequence

13.9.9.1 Issue

BMC kernel panic may occur when performing the following:
   1. Issue 'ipmitool chassis power cycle'.
   2. Wait several seconds.
   3. Issue 'impitool mc reset cold'

13.9.9.2 Explanation

This is a timing issue that results in the loss of IRQ 8, resulting in the kernel panic. The BMC will continue to reboot until it is successful.

13.9.10. REDUNDANCY_PSU Sensor May Report 0x0a80 for Sensor Status

13.9.10.1 Issue

The REDUNDANCY_PSU sensor status of 0x0a80 indicates that redundancy is lost.

13.9.10.2 Explanation

NVIDIA is investigating this issue. The reported sensor status is misleading but has no functional impact.

13.9.11. SBIOS “Bootup NumLock State” not Enforced

13.9.11.1 Issue

When turning NumLock to OFF after setting "Boot NumLock State" to ON from the SBIOS setup menu, NumLock remains off after rebooting the server. Similarly, when turning NumLock to ON after setting "Boot NumLock State" to OFF from the SBIOS setup menu, NumLock remains on after rebooting the server.
13.9.11.2 Explanation

This feature is currently not implemented in the DGX A100 SBIOS.

13.9.12. Updating only Active or Inactive SBIOS Can Cause Internal Compatibility Issues

13.9.12.1 Issue

If you use the \(-a\) (active image only) or \(-i\) (inactive image only) option when updating the SBIOS, the fail-safe flag may get set and not removed upon reboot.

13.9.12.2 Explanation

When updating the SBIOS, both active and inactive SBIOS images must be updated. Do not use the \(-a\) or \(-i\) option. Instead, let the firmware update container automatically update both active and inactive images by using either "update_fw all" or "update_fw SBIOS".

13.9.13. IPMITool “Persistent” Flag Does not Work

13.9.13.1 Issue

The ipmitool persistent flag does not take effect when using the standard command format; for example,

```
ipmitool chassis bootdev options=persistent, efiboot The persistent flag does work when part of the raw command.
```

13.9.13.2 Explanation

This is an issue with IPMITool. To use the persistent flag, use in conjunction with a raw command.

**Example:** The following raw command corresponds to the example command in the issue description:

```
ipmitool raw 01 05 e0 04 00 00 00
```

"e0"

" specifies PXE boot with EFI.

13.9.14.1 Issue

To reproduce the issue:
1. AC power cycle the system.
2. Log into the BMC web UI and then power on the system, such as through the BMC KVM.

The user is logged out of the BMC web UI.

13.9.14.2 Explanation

This behavior is the result of the BMC erroneously concluding that the BMC was idle for too long. The AC power cycle resets the BMC RTC to the default value (1999). After powering on the system, the current time is compared to the BMC RTC value and the difference exceeds the timeout value. This is a limitation in the DGX A100 BMC.

13.9.15. SBIOS Versions Might not be Reported After BMC Cold Reboot

13.9.15.1 Issue

After performing a BMC cold boot, the SBIOS versions (both primary and secondary) are reported as “0” either in the BMC web UI or on the command line.

13.9.15.2 Explanation

To work around, perform the following.
1. Reboot
2. Verify that the active SBIOS version is populated:
   ```
   $ sudo ipmitool raw 0x3c 0x24 ($ sudo ipmitool raw 0x3c 0x22)
   ```
3. Switch to the inactive SBIOS.
   ```
   $ sudo ipmitool raw 0x3c 0x23 $((($sudo ipmitool raw 0x3c 0x22)^1))
   ```
4. Reboot again.
5. Verify that both active and inactive SBIOS versions are populated.
   ```
   $ sudo ipmitool raw 0x3c 0x24 0 && sudo ipmitool raw 0x3c 0x24 1
   ```
13.9.16. NVSM Incorrectly Reports the Delta PSU Part Number Instead of the Model Numbers

13.9.16.1 Issue

When issuing `show_version` or `show_fw_manifest`, the number associated with the Delta PSU is the part number instead of the model number.

13.9.16.2 Explanation

This will be resolved in a future release.

13.9.17. BMC KVM Screen May Show “No Signal” Under Certain Conditions

13.9.17.1 Issue

When attempting to view the DGX A100 console from the BMC Web UI KVM, the screen may show “No Signal” if you cold reset the BMC and then reboot the server.

For example, the issue might occur after performing the following.

1. Issue the command to cold reset the BMC.

   ```
   sudo ipmitool mc reset cold
   ```

2. Wait about 30 seconds, then issue the command to reboot the system.

   ```
   sudo reboot
   ```

13.9.17.2 Explanation

This is due to a rare race condition between BMC and the SBIOS, and will be resolved in a future update.

13.9.18. “Power On Server” Option in KVM is Grayed Out

13.9.18.1 Issue

If the system is powered off, you may not be able to “power on” the system using the BMC KVM (“Power On Server” option is grayed out).
13.9.18.2 **Explanation**

To work around, log in to the BMC Web UI, then navigate to the Power Control dialog and select "**Power On**".

13.9.19. **BMC SEL Log May Show a Negative Value for Sensor “TEMP_MB_AD_CARD” During AC/DC/Warm reboot**

13.9.19.1 **Issue**

After any kind of reboot (AC/DC/warm reboot), the BMC SEL log may show a negative value for "**Temperature TEMP_MB_AD_CARD0**".

13.9.19.2 **Explanation**

This issue will be resolved in a future release.

13.9.20. **Setting Up Active Directory Settings May Fail with “Invalid Domain Name” Error**

13.9.20.1 **Issue**

After logging into the BMC dashboard UI and setting up and enabling Active Directory Authentication, an "**Invalid Domain Name**" error may occur.

13.9.20.2 **Explanation**

If you encounter this error, set up the DNS manually as follows:

1. Login to the BMC UI dashboard.

2. Navigate to Settings > Network Settings > DNS Configuration > "Domain Name Server Setting"

3. Find "Domain Name Server Setting" and change "**Automatic**" to "**Manual**".

4. Replace "DNS Server 1" IP to "**8.8.8.8**" (the IP is dns.google)

5. Click **Save** and accept the alert to restart the BMC network.
13.9.21. Systems Won’t PXE Boot After BMC and CEC FW Update

13.9.21.1 Issue

After updating the BMC and CEC firmware, the system may fail to PXE boot.

13.9.21.2 Explanation

If you encounter this issue, perform a factory reset of the BMC and reconfigure usernames and passwords.**Using the BMC web UI**

1. Navigate to Maintenance > Preserve Configuration, then clear all check boxes and click Save.

2. Navigate to Maintenance > Restore Factory Defaults, then click Save.**Using the IPMI Tool OEM Commands**

3. Specify “do not preserve configuration”.

   sudo ipmitool raw 0x32 0xba 0x00 0x00

4. Restore defaults.

   sudo ipmitool raw 0x32 0x66

13.9.22. BMC UI May not be Accessible from Mac OS

13.9.22.1 Issue

When attempting to connect to the DGX A100 BMC from a system with Mac OS, a “Your connection is not private” message appears that prevents access to the BMC.

13.9.22.2 Explanation

Starting with version 0.13.6, the BMC provides a self-signed certificate which Mac OS flags in the browser. Most browsers will let you either accept the risk and continue, or add the certificate to the keychain and continue. The Chrome and Opera browsers, however, do not provide these options and so Mac OS users will not be able to access the BMC from the Chrome or Opera browser.

To access the DGX A100 BMC, Mac OS users can use Safari or Firefox, which provide an access path.
13.9.23. Unable to Launch BMC Dashboard under Pre-84.01 Firefox

13.9.23.1 Issue

After updating the BMC, attempts to access the BMC dashboard using Firefox versions earlier than 84.01 fail with a “Secure Connection Fail” message.

13.9.23.2 Explanation

To work around, update Firefox to version 84.01 or later.

13.9.24. The system starts the POST process several times during boot after updating the SBIOS.

13.9.24.1 Issue

After updating the SBIOS and rebooting the system, the NVIDIA splash screen appears and disappears several times before boot is completed.

13.9.24.2 Explanation

After updating the SBIOS, several component states are cleared and the system may reboot automatically 3-4 times to reset all the components. This is expected behavior.

13.9.25. Restoring BMC Default Affects Power LED

13.9.25.1 Issue

After restoring the factory default settings using the BMC,

- The Power/Status LED flashes continuously after the rebooting the server.
- The Power/Status LED stays on after powering off the server.

13.9.25.2 Explanation

NVIDIA is investigating this issue. There is no functional impact.
13.9.26. The “Relative Mouse Mode” Option is grayed out in the KVM Menu

13.9.26.1 Issue

In the BMC Remote KVM, the Mouse > Relative Mouse Mode option is grayed out and unavailable.

13.9.26.2 Explanation

To work around, enable Relative Mouse Mode from the BMC web UI as follows:

Navigate to Settings > KVM Mouse Setting, then select “Relative Positioning (Linux)” from the Mouse Mode Configuration dialog and click Save.
Chapter 14. DGX A100 System Firmware Update Container Version 21.05.7

The DGX Firmware Update container version 21.05.7 is available.

- Package name: nvfw-dgxa100_21.05.7_210519.tar.gz
- Run file name: nvfw-dgxa100_21.05.7_210519.run
- Image name: nvfw-dgxa100:21.05.7
- ISO image: DGXA100_FWUI-21.05.7-2021-05-19-07-26-16.iso
- PXE netboot: pxeboot-dgxa100-21.05.7.tgz

14.1. Highlights and Changes in this Release

- This release is supported with the following DGX OS software -
  - DGX OS 5.0 or later

  **Important:** This firmware update container does not support DGX OS 4.99.xx. To use the container on DGX A100 servers, update to DGX OS 5.0 or later.

- EL7-21.01 or later (See *Special Instructions for Red Hat Enterprise Linux*)
- EL8-20.11 or later
- Eliminated the need for the workaround when updating the CEC 1712 SPI from 3.5 to 3.9.
- Fixed 0W reporting issue with Delta PSU.
14.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table. The update time for each component is provided for reference. Total update time if all components are updated is approximately 2 hours and 20 minutes.

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<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.14.17</td>
<td>See DGX A100 BMC Changes</td>
<td>25 minutes</td>
</tr>
<tr>
<td>SBIOS</td>
<td>0.34</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>BMC CEC SPI</td>
<td>v3.28</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>1.2f</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>1.2f</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.18.00.01</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 40GB)</td>
<td>92.00.36.00.04</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
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<td>Same as above.</td>
</tr>
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<td>6 minutes</td>
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<td>FPGA (GPU sled)</td>
<td>2.A5</td>
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<td>40 minutes</td>
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<td>CEC1712 SPI (GPU sled)</td>
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<td>7 minutes</td>
</tr>
<tr>
<td>PSU (Delta)</td>
<td>Primary 1.6 / Secondary 1.6 / Community 1.7</td>
<td>Added to container</td>
<td>90 minutes</td>
</tr>
</tbody>
</table>

14.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

▶ SBIOS: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. When using `update-fw all`, the update container updates both active and inactive images.
BMC: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent update_fw all commands will not update the inactive image. To update the inactive image in this case, use update_fw BMC --inactive.

14.4. Updating the PSU FW

If one of the PSU firmware slots (primary, secondary, or community) is corrupted, updating the PSU firmware will fail if attempts are made to update other slots.

- If you know the slot that is corrupted, then update that slot as follows (where <psu> is 0, 1, 2, 3, 4, or 5; <Slot> is Primary, Secondary, or Community);

  $ sudo ./nvfw-dgxa100_21.05.7_210519.run update_fw PSU -s <psu> -S <Slot> -f

- If you do not know which slot is corrupted, then use the SKIP_FAIL flag to update all three slots.

  $ sudo ./nvfw-dgxa100_21.05.7_210519.run set_flags SKIP_FAIL=1 update_fw PSU -s <psu> -f

The FWUC may display a message about the PSU update failing in the non-corrupted slots, but the PSU should actually be recovered because the corrupted slot is successfully updated.

14.5. DO NOT UPDATE DGX A100 CPLD
FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD firmware unless the DGX A100 system is being upgraded from 320GB to 640GB. The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware (for example, when running update_fw all). It is possible to update the CPLD firmware using "update_fw CPLD "; however, it is strongly recommended that the CPLD firmware not be updated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisesupport@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update should be performed as instructed.
14.6. Special Instructions for Red Hat Enterprise Linux

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.

14.6.1. Option 1: Update to EL7-21.01 or later

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

14.6.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply if

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.

   ```
sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
   ```

2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

   ```
yum install -y https://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-20.03-1.el7.x86_64.rpm
   ```
2. Install mpt3sas 31.101.01.00-0.

   ```bash
   sudo yum install mpt3sas-dkms
   ```

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel.

   ```bash
   sudo modprobe mpt3sas
   ```

   You can verify the correct mpt3sas version is installed by issuing the following.

   ```bash
   yum list installed
   ```

14.7. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use any method described in Using the DGX A100 FW Update Utility.

**Caution:**

- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

   ```bash
   $ sudo ./nvfw-dgxa100:21.05.7_210519.run show_version
   ```

   - If there is "no" in any up-to-date column for updatable firmware, then continue with the next step.
   - If all up-to-date column entries are "yes", then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

   ```bash
   $ sudo ./nvfw-dgxa100:21.05.7_210519.run update_fw all
   ```

   Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

   - If you are prompted to reboot, issue
$ sudo reboot

If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

$ sudo ipmitool raw 0x3c 0x04
$ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another `update_fw all` to update other firmware.

   ▶ Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
   ▶ Repeat Step 2 just in case updates are needed.

   If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

   See [DGX A100 Firmware Update Process](#) for more information about the update process.

You can verify the update by issuing the following.

$ sudo ./nvfw-dgxa100:21.05.7_210519.run show_version

Example output for a DGX A100 320GB system

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC(enabled)</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC(enabled)</td>
<td>3.09</td>
<td>3.09</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active</td>
<td>Boot Online Local</td>
<td>00.14.17</td>
<td>00.14.17</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable Local</td>
<td>00.14.17</td>
<td>00.14.17</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Inactive</td>
<td>Updatable</td>
<td>0.34</td>
<td>0.34</td>
</tr>
<tr>
<td>1:Active</td>
<td>Boot Updatable</td>
<td>0.34</td>
<td>0.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switches</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0(U261)</td>
<td>88064_Retimer</td>
<td>1.2.0</td>
<td>1.2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:88:00.0(U260)</td>
<td>88064_Retimer</td>
<td>1.2.0</td>
<td>1.2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0(U262)</td>
<td>88064_Retimer</td>
<td>1.2.0</td>
<td>1.2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:48:00.0(U225)</td>
<td>88080_Retimer</td>
<td>1.2.0</td>
<td>1.2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
</tbody>
</table>

DGX - 0000:01:00.0(U1) | PEX88096 | 2.0 | 2.0 | N/A | yes |
DGX - 0000:b1:00.0(U4) | PEX88096 | 2.0 | 2.0 | N/A | yes |
DGX - 0000:41:00.0(U2) | PEX88096 | 2.0 | 2.0 | N/A | yes |
DGX - 0000:81:00.0(U3) | PEX88096 | 2.0 | 2.0 | N/A | yes |

(continues on next page)
**Mass Storage**

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model Number</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme1n1</td>
<td>Samsung</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme2n1</td>
<td>Samsung</td>
<td>EDA7602Q</td>
<td>EDA7602Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme3n1</td>
<td>Samsung</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme4n1</td>
<td>Samsung</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme5n1</td>
<td>Samsung</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Video BIOS**

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000:0f:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.36.00.04</td>
<td>92.00.36.00.04</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>0000:07:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.36.00.04</td>
<td>92.00.36.00.04</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>0000:04:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.36.00.04</td>
<td>92.00.36.00.04</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Power Supply**

<table>
<thead>
<tr>
<th>ID</th>
<th>Vendor</th>
<th>Model</th>
<th>MFR ID</th>
<th>Status</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSU 0: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 0: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 0: Community</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 1: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 1: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 1: Community</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 2: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 2: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 2: Community</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 3: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 3: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 3: Community</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 4: Primary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
<tr>
<td>PSU 4: Secondary</td>
<td>Delta</td>
<td>ECD16010092</td>
<td>Delta</td>
<td>ok</td>
<td>01.06</td>
<td>01.06</td>
<td>yes</td>
</tr>
</tbody>
</table>
14.8. Known Issues

14.8.1. BMC UI May not be Accessible from Mac OS

14.8.1.1 Issue

When attempting to connect to the DGX A100 BMC from a system with Mac OS, a “Your connection is not private” message appears that prevents access to the BMC.

14.8.1.2 Explanation

Starting with version 0.13.6, the BMC provides a self-signed certificate which Mac OS flags in the browser. Most browsers will let you either accept the risk and continue, or add the certificate to the keychain and continue. The Chrome and Opera browsers, however, do not provide these options and so Mac OS users will not be able to access the BMC from the Chrome or Opera browser.

To access the DGX A100 BMC, Mac OS users can use Safari or Firefox, which provide an access path.

14.8.2. Boot Order in the SBIOS Reverts to the Default

14.8.2.1 Issue

After updating the SBIOS, any changes in the boot order that you have made are not preserved and the boot order specified in the SBIOS reverts to the following.

- Boot Option #1 [Hard Disk]
- Boot Option #2 [NVME]
- Boot Option #3 [USB CD/DVD]
- Boot Option #4 [USB Hard Disk]
- Boot Option #5 [USB Key]
- Boot Option #6 [Network]
14.8.2.2 Explanation

You will need to prepare for the change when restarting the system, and then enter the SBIOS setup to edit the boot order as needed.

14.8.3. Unable to Launch BMC Dashboard under Pre-84.01 Firefox

14.8.3.1 Issue

After updating the BMC, attempts to access the BMC dashboard using Firefox versions earlier than 84.01 fail with a “Secure Connection Fail” message.

14.8.3.2 Explanation

To work around, update Firefox to version 84.01 or later.

14.8.4. The system starts the POST process several times during boot after updating the SBIOS.

14.8.4.1 Issue

After updating the SBIOS and rebooting the system, the NVIDIA splash screen appears and disappears several times before boot is completed.

14.8.4.2 Explanation

After updating the SBIOS, several component states are cleared and the system may reboot automatically 3-4 times to reset all the components. This is expected behavior.
Chapter 15. DGX A100 System Firmware Update Container Version 21.03.6

The DGX Firmware Update container version 21.03.6 is available.

▶ Package name: nvfw-dgxa100_21.03.6_210321.tar.gz
▶ Run file name: nvfw-dgxa100_21.03.6_210321.run
▶ Image name: nvfw-dgxa100:21.03.6
▶ ISO image: DGXA100_FWUI-21.03.6-2021-03-23-22-03-47.iso
▶ PXE netboot: pxeboot-dgxa100-21.03.6.tgz

15.1. Highlights and Changes in this Release

▶ This release is supported with the following DGX OS software -
  ▶ DGX OS 4.99.11
  ▶ DGX OS 5.0 or later
  ▶ EL7-21.01 or later (See Special Instructions for Red Hat Enterprise Linux)
  ▶ EL8-20.11 or later
▶ Added ISO and netboot package for efficiently updating multiple systems.
▶ Added code to prevent use of hardware that is being updated, such as NVIDIA GPUs.
15.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table. The update time for each component is provided for reference. Total update time if all components are updated is approximately 2 hours and 20 minutes.

<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.14.16</td>
<td>See DGX A100 BMC Changes</td>
<td>25 minutes</td>
</tr>
<tr>
<td>SBIOS</td>
<td>0.34</td>
<td>See DGX A100 SBIOS Changes</td>
<td>7 minutes</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.2.0</td>
<td>See DGX A100 Broadcom 88096 PCIe Switchboard Changes</td>
<td>8 minutes</td>
</tr>
<tr>
<td>BMC CEC SPI</td>
<td>v3.28</td>
<td>See DGX A100 BMC CEC Changes</td>
<td>8 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>1.2f</td>
<td>See DGX A100 Broadcom 880xx Retimer Changes</td>
<td>7 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>1.2f</td>
<td>See DGX A100 Broadcom 880xx Retimer Changes</td>
<td>7 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.18.00</td>
<td>See DGX A100 BMC Changes</td>
<td>8 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 40GB)</td>
<td>92.00.36.00</td>
<td>See A100 VBIOS Changes</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>
| VBIOS (A100 80GB)         | 92.00.36.00   | No change                                            | Same as above.
| U.2 NVMe (Samsung)        | EPK99B5Q      | No change                                            | 6 minutes   |
| U.2 NVMe (Kioxia)         | 0105          | Added to the container                                | Same as above.
| M.2 NVMe (Samsung)        | EDA7602Q      | Added to the container                                | 3 minutes   |
| FPGA (GPU sled)           | 2.A5          | See DGX A100 FPGA Release Notes                       | 40 minutes  |
| CEC1712 SPI (GPU sled)    | 3.9           | See DGX A100 BMC CEC SPI Changes                      | 7 minutes   |

15.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently
running image and the inactive is the backup image. The update container can only update the
inactive image, and will update it only if the active image needs to be updated. After the update
is completed, the updated inactive image becomes the active image. Because the active image
is now updated, subsequent update fw all commands will not update the inactive image. To
update the inactive image in this case, use update fw BMC --inactive.

15.4. Updating the CEC 1712 (Delta-CEC)

The firmware update container may fail to update the Delta_CEC. To work around, perform the follow-
ing.

1. sudo .∕nvfw-dgxa100_21.03.6_210321.run update_fw CEC -s Delta_CEC -m
2. sudo ipmitool chassis power cycle
3. sudo .∕nvfw-dgxa100_21.03.6_210321.run update_fw all

15.5. DO NOT UPDATE DGX A100 CPLD
FIRMWARE UNLESS INSTRUCTED

When updating DGX A100 firmware using the Firmware Update Container, do not update the CPLD
firmware unless the DGX A100 system is being upgraded from 320GB to 640GB.

The current DGX A100 Firmware Update Container will not automatically update the CPLD firmware
(for example, when running update_fw all). It is possible to update the CPLD firmware using
"update_fw CPLD "; however, it is strongly recommended that the CPLD firmware not be up-
dated manually unless specifically instructed by NVIDIA Enterprise Support (or email enterprisepor-
t@nvidia.com). If the DGX A100 is upgraded from 320GB to 640GB, the CPLD firmware update
should be performed as instructed.

15.6. Special Instructions for Red Hat Enterprise Linux

This section describes the actions that must be taken before updating firmware on DGX A100 systems
installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.
15.6.1. Option 1: Update to EL7-21.01 or later

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

15.6.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply if

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.
   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.
      ```
sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
      ```
   2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.
      ```
yum install -y https://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-20.03-1.el7.x86_64.rpm
      ```

2. Install mpt3sas 31.101.01.00-0.
   ```
sudo yum install mpt3sas-dkms
      ```

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel.
   ```
sudo modprobe mpt3sas
      ```

You can verify the correct mpt3sas version is installed by issuing the following.
15.7. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use any method described in Using the DGX A100 FW Update Utility.

Caution:

▶ Stop all unnecessary system activities before attempting to update firmware.
▶ Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
▶ Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
▶ When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

   $ sudo ./nvfw-dgxa100:21.03.6_210321.run show_version

   ▶ If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.
   ▶ If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

   $ sudo ./nvfw-dgxa100:21.03.6_210321.run update_fw all

   Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

   ▶ If you are prompted to reboot, issue

     $ sudo reboot

   ▶ If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

     $ sudo ipmitool raw 0x3c 0x04
     $ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another update_fw all to update other firmware.
Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
Repeat Step 2 just in case updates are needed.

If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

See [DGX A100 Firmware Update Process](#) for more information about the update process.

You can verify the update by issuing the following.

```bash
$ sudo ./nvfw-dgxa100:21.03.6_210321.run show_version
```

Example output for a DGX A100 320GB system

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC(enabled)</td>
<td>3.28</td>
<td>3.28</td>
<td>yes</td>
</tr>
<tr>
<td>Delta_CEC(enabled)</td>
<td>3.09</td>
<td>3.09</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Location</th>
<th>Status</th>
<th>Image Id</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active Boot Online</td>
<td>Local</td>
<td>00.14.16</td>
<td>00.14.16</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:Inactive Updatable</td>
<td>Local</td>
<td>00.14.16</td>
<td>00.14.16</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Location</th>
<th>Status</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Inactive Updatable</td>
<td></td>
<td>0.34</td>
<td>0.34</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>1:Active Boot Updatable</td>
<td></td>
<td>0.34</td>
<td>0.34</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switches</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB Updated?</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0(U261)</td>
<td>88064_Retimer</td>
<td>1.2f</td>
<td>1.2f</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:88:00.0(U260)</td>
<td>88064_Retimer</td>
<td>1.2f</td>
<td>1.2f</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0(U262)</td>
<td>88064_Retimer</td>
<td>1.2f</td>
<td>1.2f</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:48:00.0(U225)</td>
<td>88080_Retimer</td>
<td>1.2f</td>
<td>1.2f</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:01:00.0(U1)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0(U4)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:41:00.0(U2)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:81:00.0(U3)</td>
<td>PEX88096</td>
<td>2.0</td>
<td>2.0</td>
<td>N/A</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c8:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c9:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.18.00.01</td>
<td>92.10.18.00.01</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Mass Storage

(continues on next page)
15.8. Known Issues

15.8.1. BMC UI May not be Accessible from Mac OS

15.8.1.1 Issue

When attempting to connect to the DGX A100 BMC from a system with Mac OS, a “Your connection is not private” message appears that prevents access to the BMC.
15.8.2. Boot Order in the SBIOS Reverts to the Default

15.8.2.1 Issue

After updating the SBIOS, any changes in the boot order that you have made are not preserved and the boot order specified in the SBIOS reverts to the following.

<table>
<thead>
<tr>
<th>Boot Option #1</th>
<th>Hard Disk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boot Option #2</td>
<td>NVME</td>
</tr>
<tr>
<td>Boot Option #3</td>
<td>USB CD/DVD</td>
</tr>
<tr>
<td>Boot Option #4</td>
<td>USB Hard Disk</td>
</tr>
<tr>
<td>Boot Option #5</td>
<td>USB Key</td>
</tr>
<tr>
<td>Boot Option #6</td>
<td>Network</td>
</tr>
</tbody>
</table>

15.8.2.2 Explanation

You will need to prepare for the change when restarting the system, and then enter the SBIOS setup to edit the boot order as needed.

15.8.3. Unable to Launch BMC Dashboard under Pre-84.01 Firefox

15.8.3.1 Issue

After updating the BMC, attempts to access the BMC dashboard using Firefox versions earlier than 84.01 fail with a “Secure Connection Fail” message.

15.8.3.2 Explanation

To work around, update Firefox to version 84.01 or later.
15.8.4. The system starts the POST process several times during boot after updating the SBIOS.

15.8.4.1 Issue

After updating the SBIOS and rebooting the system, the NVIDIA splash screen appears and disappears several times before boot is completed.

15.8.4.2 Explanation

After updating the SBIOS, several component states are cleared and the system may reboot automatically 3-4 times to reset all the components. This is expected behavior.
Chapter 16. DGX A100 System Firmware Update Container Version 20.12.3.3

The DGX Firmware Update container version 20.12.3.3 is available.

▶ Package name: nvfw-dgxa100_20.12.3.3_210205.tar.gz
▶ Run file name: nvfw-dgxa100_20.12.3.3_210205.run
▶ Image name: nvfw-dgxa100:20.12.3.3

16.1. Highlights and Changes in this Release

▶ This release is supported with the following DGX OS software -
  ▶ DGX OS 4.99.11
  ▶ DGX OS 5.0 or later
  ▶ EL7-21.01 or later (See Special Instructions for Red Hat Enterprise Linux)
  ▶ EL8-20.11 or later
▶ Fixed the mishandling of correctable PCIe errors.

16.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table. The update time for each component is provided for reference. Total update time if all components are updated is approximately 2 hours and 20 minutes.
### Component | Version | Key Changes | Update Time
--- | --- | --- | ---
BMC (via CEC) | 00.13.16 | No change | 25 minutes
SBIOS | 0.33 | See DGX A100 SBIOS Changes | 7 minutes
Broadcom 88096 PCIe switch board | 0.1.8 | No change | 8 minutes
BMC CEC SPI | v3.25 | No change | 8 minutes
PEX88064 Retimer | 0.F.0 | No change | 7 minutes
PEX88080 Retimer | 0.F.0 | No change | 7 minutes
NvSwitch BIOS | 92.10.14.00.01 | No change | 8 minutes
VBIOS (A100 40GB) | 92.00.19.00.10 | No change | 7 minutes
VBIOS (A100 80GB) | 92.00.36.00.01 | No change | Same as above.
U.2 NVMe (Samsung) | EPK99B5Q | No change | 6 minutes
FPGA (GPU sled) | 2.9c | No change | 40 minutes
CEC1712 SPI (GPU sled) | 3.5 | No change | 7 minutes

### 16.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive --force`.
16.4. Special Instructions for Red Hat Enterprise Linux

This section describes the actions that must be taken before updating firmware on DGX A100 systems installed with Red Hat Enterprise Linux. There are two options for meeting these requirements.

16.4.1. Option 1: Update to EL7-21.01 or later

Refer to the DGX Software for Red Hat Enterprise Linux 7 Release Notes for more information.

**Important:** Updating the DGX software for Red Hat Enterprise Linux will update the Red Hat Enterprise Linux installation to 7.9 or later. If you do not want to update your Red Hat Enterprise Linux 7 installation, then choose Option 2.

16.4.2. Option 2: Install mpt3sas 31.101.01.00-0

These instructions apply if

- You do not want to update your Red Hat Enterprise Linux installation, and
- Your system is currently installed with Red Hat Enterprise Linux 7.7 or later.

If your system is installed with Red Hat Enterprise Linux 7.6 or earlier, contact NVIDIA Enterprise Support for assistance.

1. Perform this step if your system is no longer pointing to the NVIDIA DGX software repository.

   1. On Red Hat Enterprise Linux, run the following commands to enable additional repositories required by the DGX software.

   ```
   sudo subscription-manager repos --enable=rhel-7-server-extras-rpms
   sudo subscription-manager repos --enable=rhel-7-server-optional-rpms
   ```

   2. Run the following command to install the DGX software installation package and enable the NVIDIA DGX software repository.

   ```
   yum install -y https://international.download.nvidia.com/dgx/repos/rhel-files/dgx-repo-setup-20.03-1.el7.x86_64.rpm
   ```

**Attention:** By running these commands you are confirming that you have read and agree to be bound by the DGX Software License Agreement. You are also confirming that you understand that any pre-release software and materials available that you elect to install in a DGX may not be fully functional, may contain errors or design flaws, and may have reduced or different security, privacy, availability, and reliability standards relative to commercial versions of NVIDIA software and materials, and that you use pre-release versions at your risk.
2. Install mpt3sas 31.101.01.00-0.

   sudo yum install mpt3sas-dkms

3. Load the mpt3sas driver into the Red Hat Enterprise Linux kernel.

   sudo modprobe mpt3sas

   You can verify the correct mpt3sas version is installed by issuing the following.

   yum list installed

16.5. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use any method described in Using the DGX A100 FW Update Utility.

Caution:

- Stop all unnecessary system activities before attempting to update firmware.
- Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
- Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
- When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

   $ sudo ./nvfw-dgxa100_20.12.3.3_210205.run show_version

   - If there is "no" in any up-to-date column for updatable firmware, then continue with the next step.
   - If all up-to-date column entries are "yes", then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

   $ sudo ./nvfw-dgxa100_20.12.3.3_210205.run update_fw all

   Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

   - If you are prompted to reboot, issue
If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

$ sudo ipmitool raw 0x3c 0x04
$ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another `update_fw all` to update other firmware.

   Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
   Repeat Step 2 just in case updates are needed.

If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

See [DGX A100 Firmware Update Process](#) for more information about the update process.

You can verify the update by issuing the following.

$ sudo ./nvfw-dgxa100_20.12.3.3_210205.run show_version

Example output for a DGX A100 320GB system

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.25</td>
<td>3.25</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>3.05</td>
<td>3.05</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Active</td>
<td>Online</td>
<td>00.13.16</td>
<td>00.13.16</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable</td>
<td>Local</td>
<td>00.13.16</td>
<td>00.13.16</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Inactive</td>
<td>Updateable</td>
<td>0.33</td>
<td>yes</td>
</tr>
<tr>
<td>1:Active</td>
<td>Boot Uupdateable</td>
<td>0.33</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switches</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI Bus#</td>
<td>up-to-date</td>
<td>Model</td>
<td>Onboard Version</td>
<td>Manifest</td>
</tr>
<tr>
<td>DGX - 0000:91:00.0(U261)</td>
<td>88064_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:88:00.0(U260)</td>
<td>88064_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0(U262)</td>
<td>88064_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td></td>
</tr>
<tr>
<td>DGX - 0000:48:00.0(U225)</td>
<td>88080_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td></td>
</tr>
</tbody>
</table>

(continues on next page)
## Mass Storage

<table>
<thead>
<tr>
<th>Drive Name/Slot</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>nvme0n1</td>
<td>Samsung MZWLJ3T8HBLS-00007</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme1n1</td>
<td>Samsung MZ1LB1T9HALS-00007</td>
<td>EDA7202Q</td>
<td>EDA7202Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme2n1</td>
<td>Samsung MZ1LB1T9HALS-00007</td>
<td>EDA7202Q</td>
<td>EDA7202Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme3n1</td>
<td>Samsung MZWLJ3T8HBLS-00007</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme4n1</td>
<td>Samsung MZWLJ3T8HBLS-00007</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
<tr>
<td>nvme5n1</td>
<td>Samsung MZWLJ3T8HBLS-00007</td>
<td>EPK99B5Q</td>
<td>EPK99B5Q</td>
<td>yes</td>
</tr>
</tbody>
</table>

## Video BIOS

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>FUB Updated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000:07:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:0f:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:47:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:4e:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:87:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:90:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:b7:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:bd:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
</tbody>
</table>

(continues on next page)
16.6. Known Issues

16.6.1. BMC UI May not be Accessible from Mac OS

16.6.1.1 Issue

When attempting to connect to the DGX A100 BMC from a system with Mac OS, a “Your connection is not private” message appears that prevents access to the BMC.

16.6.1.2 Explanation

Starting with version 0.13.6, the BMC provides a self-signed certificate which Mac OS flags in the browser. Most browsers will let you either accept the risk and continue, or add the certificate to the keychain and continue. The Chrome and Opera browsers, however, do not provide these options and so Mac OS users will not be able to access the BMC from the Chrome or Opera browser.

To access the DGX A100 BMC, Mac OS users can use Safari or Firefox, which provide an access path.

16.6.2. Update Timeout Reported for Motherboard CEC

16.6.2.1 Issue

The update progress output reports "Update_timeout" for the motherboard CEC (MB_CEC) when using the .run file without Docker installed.**Example**

```
+----------------------------------------------------------------------------------+
|+--------------------------------------------------------------------------------+|
|| !!!!! Firmware Update In Progress !!!!! |
```

(continues on next page)
<table>
<thead>
<tr>
<th>Status: reflash BMC firmware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard</td>
</tr>
<tr>
<td>MB_CEC</td>
</tr>
</tbody>
</table>

16.6.2.2 Explanation

This message can be ignored provided that the MB_CEC update is successful.

Example success message:

Success:
Installed firmware 3.25 on MB_CEC

16.6.3. Boot Order in the SBIOS Reverts to the Default

16.6.3.1 Issue

After updating the SBIOS, any changes in the boot order that you have made are not preserved and the boot order specified in the SBIOS reverts to the following.

| Boot Option #1 | [Hard Disk] |
| Boot Option #2 | [NVME] |
| Boot Option #3 | [USB CD/DVD] |
| Boot Option #4 | [USB Hard Disk] |
| Boot Option #5 | [USB Key] |
| Boot Option #6 | [Network] |

16.6.3.2 Explanation

You will need to prepare for the change when restarting the system, and then enter the SBIOS setup to edit the boot order as needed.
Chapter 17. DGX A100 System Firmware Update Container Version 20.12.3

The DGX Firmware Update container version 20.12.3 is available.

▶ Package name: nvfw-dgxa100_20.12.3_201209.tar.gz
▶ Run file name: nvfw-dgxa100_20.12.3_201209.run
▶ Image name: nvfw-dgxa100:20.12.3

17.1. Highlights and Changes in this Release

▶ This release is supported with the following DGX OS software -
  ▶ DGX OS 4.99.11
  ▶ DGX OS 5.0 or later
  ▶ Fixed an issue where running the container generated an overly large log file.

17.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table. The update time for each component is provided for reference. Total update time if all components are updated is approximately 2 hours and 20 minutes.
### Component Version Key Changes Update Time

<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.13.16</td>
<td>No change</td>
<td>25 minutes</td>
</tr>
<tr>
<td>SBIOS</td>
<td>0.30</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.1.8</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>BMC CEC SPI</td>
<td>v3.25</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>0.F.0</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>0.F.0</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.14.00.01</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 40GB)</td>
<td>92.00.19.00.10</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 80GB)</td>
<td>92.00.36.00.01</td>
<td>No change</td>
<td>Same as above.</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK99B5Q</td>
<td>No change</td>
<td>6 minutes</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>2.9c</td>
<td>No change</td>
<td>40 minutes</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>3.5</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>

### 17.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive --force`.

### 17.4. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use any method described in *Using the DGX A100 FW Update Utility*. 

---

160 Chapter 17. DGX A100 System Firmware Update Container Version 20.12.3
Caution:

▶ Stop all unnecessary system activities before attempting to update firmware.
▶ Stop all GPU activity, including accessing nvidia-smi, as this can prevent the VBIOS from updating.
▶ Do not add additional loads on the system (such as user jobs, diagnostics, or monitoring services) while an update is in progress. A high workload can disrupt the firmware update process and result in an unusable component.
▶ When initiating an update, the update software assists in determining the activity state of the DGX system and provides a warning if it detects that activity levels are above a predetermined threshold. If the warning is encountered, you are strongly advised to take action to reduce the workload before proceeding with the update.

1. Check if updates are needed by checking the installed versions.

   $ sudo nvfw-dgxa100_20.12.3_201209.run show_version

   ▶ If there is "no" in any up-to-date column for updatable firmware, then continue with the next step.
   ▶ If all up-to-date column entries are "yes", then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

   $ sudo nvfw-dgxa100_20.12.3_201209.run update_fw all

   Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.
   ▶ If you are prompted to reboot, issue
     $ sudo reboot
   ▶ If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).
     $ sudo ipmitool raw 0x3c 0x04
     $ sudo ipmitool chassis power cycle

3. After rebooting or power cycling the system, you may need to perform another update_fw all to update other firmware.
   ▶ Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
   ▶ Repeat Step 2 just in case updates are needed.

   If you perform another update_fw all, you may be prompted again to either reboot the system or power cycle the system.

   See DGX A100 Firmware Update Process for more information about the update process.

You can verify the update by issuing the following.

$ sudo nvfw-dgxa100_20.12.3_201209.run show_version

Example output for a DGX A100 320GB system
### BMC DGX

<table>
<thead>
<tr>
<th>Image Id</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active</td>
<td>Boot Online</td>
<td>Local</td>
<td>00.13.16</td>
<td>00.13.16</td>
<td>yes</td>
</tr>
<tr>
<td>1:Inactive</td>
<td>Updatable</td>
<td>Local</td>
<td>00.13.16</td>
<td>00.13.16</td>
<td>yes</td>
</tr>
</tbody>
</table>

### CEC

<table>
<thead>
<tr>
<th>MB_CEC(enabled)</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.25</td>
<td>3.25</td>
<td>yes</td>
</tr>
</tbody>
</table>

### SBIOS

<table>
<thead>
<tr>
<th>Image Id</th>
<th>Method</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Inactive</td>
<td>updnx</td>
<td>0.30</td>
<td>0.30</td>
<td>yes</td>
</tr>
<tr>
<td>1:Active</td>
<td>Boot</td>
<td>0.30</td>
<td>0.30</td>
<td>yes</td>
</tr>
</tbody>
</table>

### Video BIOS

<table>
<thead>
<tr>
<th>Bus</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000:07:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:08:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:47:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:4e:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:87:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:90:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:b7:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
<tr>
<td>0000:bd:00.0</td>
<td>A100-SXM4-40GB</td>
<td>92.00.19.00.10</td>
<td>92.00.19.00.10</td>
<td>yes</td>
</tr>
</tbody>
</table>

### Switches

<table>
<thead>
<tr>
<th>PCI Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0</td>
<td>88064_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:88:00.0</td>
<td>88064_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:4F:00.0</td>
<td>88064_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:48:00.0</td>
<td>88000_Retimer</td>
<td>0.F.0</td>
<td>0.F.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.14.00.01</td>
<td>92.10.14.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.14.00.01</td>
<td>92.10.14.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c2:00.0</td>
<td>LR10</td>
<td>92.10.14.00.01</td>
<td>92.10.14.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
<td>92.10.14.00.01</td>
<td>92.10.14.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c3:00.0</td>
<td>LR10</td>
<td>92.10.14.00.01</td>
<td>92.10.14.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.14.00.01</td>
<td>92.10.14.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:01:00.0</td>
<td>PEX88096</td>
<td>1.8</td>
<td>1.8</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:08:00.0</td>
<td>PEX88096</td>
<td>1.8</td>
<td>1.8</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:41:00.0</td>
<td>PEX88096</td>
<td>1.8</td>
<td>1.8</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0</td>
<td>PEX88096</td>
<td>1.8</td>
<td>1.8</td>
<td>yes</td>
</tr>
</tbody>
</table>
17.5. Known Issues

17.5.1. BMC UI May not be Accessible from Mac OS

17.5.1.1 Issue

When attempting to connect to the DGX A100 BMC from a system with Mac OS, a “Your connection is not private” message appears that prevents access to the BMC.

17.5.1.2 Explanation

Starting with version 0.13.6, the BMC provides a self-signed certificate which Mac OS flags in the browser. Most browsers will let you either accept the risk and continue, or add the certificate to the keychain and continue. The Chrome and Opera browsers, however, do not provide these options and so Mac OS users will not be able to access the BMC from the Chrome or Opera browser.

To access the DGX A100 BMC, Mac OS users can use Safari or Firefox, which provide an access path.

17.5.2. Update Timeout Reported for Motherboard CEC

17.5.2.1 Issue

The update progress output reports "Update_timeout" for the motherboard CEC (MB_CEC) when using the .run file without Docker installed.**Example**

```
+----------------------------------------------------------------------------------+
|+--------------------------------------------------------------------------------+|
|!!!! Firmware Update In Progress !!!!!                                           |
| Status: reflash BMC firmware                                                     |
|+----------------------------------------------------------------------------------|
|   MB_CEC   Onboard Manifest Update Status                                    |
|           3.05  3.25   Update timeout |
```

17.5.2.2 Explanation

This message can be ignored provided that the MB_CEC update is successful.

Example success message:

```
Success:
   Installed firmware 3.25 on MB_CEC
```
17.5.3. Boot Order in the SBIOS Reverts to the Default

17.5.3.1 Issue

After updating the SBIOS, any changes in the boot order that you have made are not preserved and the boot order specified in the SBIOS reverts to the following.

<table>
<thead>
<tr>
<th>Boot Option #1</th>
<th>[Hard Disk]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boot Option #2</td>
<td>[NVME]</td>
</tr>
<tr>
<td>Boot Option #3</td>
<td>[USB CD/DVD]</td>
</tr>
<tr>
<td>Boot Option #4</td>
<td>[USB Hard Disk]</td>
</tr>
<tr>
<td>Boot Option #5</td>
<td>[USB Key]</td>
</tr>
<tr>
<td>Boot Option #6</td>
<td>[Network]</td>
</tr>
</tbody>
</table>

17.5.3.2 Explanation

You will need to prepare for the change when restarting the system, and then enter the SBIOS setup to edit the boot order as needed.
Chapter 18. DGX A100 System Firmware Update Container Version 20.11.3

The DGX Firmware Update container version 20.11.3 is available.
- Package name: nvfw-dgxa100_20.11.3_201124.tar.gz
- Run file name: nvfw-dgxa100_20.11.3_201124.run
- Image name: nvfw-dgxa100:20.11.3

18.1. Highlights and Changes in this Release

- This release is supported with the following DGX OS software -
  - DGX OS 4.99.11
  - DGX OS 5.0 or later
- Includes firmware updates to resolve PCIe advanced error reporting (AER) issues.
- The BMC update includes software security enhancements.
  See the NVIDIA Security Bulletin 5010 for details.
- Changed the policy for updating the active/inactive BMC images. See Updating Components with Secondary Images.
- Removed the need to manually stop certain services before updating on DGX OS 5.0.
- See DGX A100 System Firmware Changes for the list of changes in individual components.
### 18.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table. The update time for each component is provided for reference. Total update time if all components are updated is approximately 2 hours and 20 minutes.

<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.13.16</td>
<td>The BMC update includes software security enhancements. See the NVIDIA Security Bulletin 5010 for details.</td>
<td>25 minutes</td>
</tr>
<tr>
<td>SBIOS</td>
<td>0.30</td>
<td>See SBIOS Release Notes</td>
<td>7 minutes</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>0.1.8</td>
<td>Updated preset values to address PCIe advanced error reporting (AER) issues.</td>
<td>8 minutes</td>
</tr>
<tr>
<td>BMC CEC SPI</td>
<td>v3.25</td>
<td>Improved BMC update time and reliability.</td>
<td>8 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>0.F.0</td>
<td>Improved error handling of downstream switches.</td>
<td>7 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>0.F.0</td>
<td>Improved error handling of downstream switches.</td>
<td>7 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.14.00.01</td>
<td>Added support for a new out-of-band SMBPBI query to retrieve FUB revocation status.</td>
<td>8 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 40GB)</td>
<td>92.00.19.00.10</td>
<td>Improved VBIOS compatibility.</td>
<td>7 minutes</td>
</tr>
<tr>
<td>VBIOS (A100 80GB)</td>
<td>92.00.36.00.01</td>
<td>Same as above.</td>
<td>7 minutes</td>
</tr>
<tr>
<td>U.2 NVMe (Samsung)</td>
<td>EPK99B</td>
<td>Enabled Relaxed Ordering.</td>
<td>6 minutes</td>
</tr>
<tr>
<td>FPGA (GPU sled)</td>
<td>2.9c</td>
<td>Added to the container. Implements miscellaneous bug fixes.</td>
<td>40 minutes</td>
</tr>
<tr>
<td>CEC1712 SPI (GPU sled)</td>
<td>3.5</td>
<td>Added to the container. Improved update time and reliability.</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>
18.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. When using `update_fw all`, the update container updates both active and inactive images.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image, and will update it only if the active image needs to be updated. After the update is completed, the updated inactive image becomes the active image. Because the active image is now updated, subsequent `update_fw all` commands will not update the inactive image. To update the inactive image in this case, use `update_fw BMC --inactive --force`.

18.4. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use any method described in *Using the DGX A100 FW Update Utility*.

**Caution**: Stop all unnecessary system activities before attempting to update firmware, and do not add additional loads on the system (such as Kubernetes jobs or other user jobs or diagnostics) while an update is in progress. A high GPU workload can disrupt the firmware update process and result in an unusable component.

1. Check if updates are needed by checking the installed versions.

   ```
   $ sudo nvfw-dgxa100_20.11.3_201124.run show_version
   ```

   - If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.
   - If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

2. Perform the update for all firmware supported by the container.

   ```
   $ sudo nvfw-dgxa100_20.11.3_201124.run update_fw all
   ```

   Depending on the firmware that is updated, you may be prompted to either reboot the system or power cycle the system.

   ```
   - If you are prompted to reboot, issue
   ```

   ```
   $ sudo reboot
   ```
If you are prompted to power cycle, you can issue the following two commands (there is no output with the first command).

```
$ sudo ipmitool raw 0x3c 0x04
$ sudo ipmitool chassis power cycle
```

3. After rebooting or power cycling the system, you may need to perform another `update_fw all` to update other firmware.

   ▶ Either repeat Step 1 to check if updates are needed and then perform Step 2 if needed, or
   ▶ Repeat Step 2 just in case updates are needed.

If you perform another `update_fw all`, you may be prompted again to either reboot the system or power cycle the system.

See [DGX A100 Firmware Update Process](#) for more information about the update process.

4. Rename the firmware update log file (the update generates `/var/log/nvidia-fw.log` which you should rename).

   **Example:**

   ```
   $ sudo mv /var/log/nvidia-fw.log /var/log/nvidia-fw-large.log
   ```

   Refer to [Firmware Update Log File Size Impacts nvsm dump health](#) for more information.

You can verify the update by issuing the following.

```
$ sudo nvfw-dgxa100_20.11.3_201124.run show_version
```

**Example output for a DGX A100 320GB system**

```markdown
<table>
<thead>
<tr>
<th>BMC DGX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Id</td>
</tr>
<tr>
<td>0:Active</td>
</tr>
<tr>
<td>1:Inactive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC(enabled)</td>
</tr>
<tr>
<td>Onboard Version</td>
</tr>
<tr>
<td>3.25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Id</td>
</tr>
<tr>
<td>0:Inactive</td>
</tr>
<tr>
<td>1:Active</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Video BIOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
</tr>
<tr>
<td>0000:07:00.0</td>
</tr>
<tr>
<td>0000:0f:00.0</td>
</tr>
<tr>
<td>0000:47:00.0</td>
</tr>
<tr>
<td>0000:4e:00.0</td>
</tr>
<tr>
<td>0000:87:00.0</td>
</tr>
<tr>
<td>0000:90:00.0</td>
</tr>
<tr>
<td>0000:b7:00.0</td>
</tr>
</tbody>
</table>
```
18.5. Known Issues

18.5.1. Firmware Update Log File Size Impacts `nvsm dump health`

18.5.1.1 Issue

After running the container, the generated log file (`/var/log/nvidia-fw.log`) can grow to up to tens of gigabytes in size, depending on the firmware that gets updated. If, at a later time, you run `nvsm dump health`, the command might time out and fail if the file size is too large.

18.5.1.2 Explanation

To avoid problems running `nvsm dump health`, rename the generated firmware update log file after updating the firmware.

Example:

```
$ sudo mv /var/log/nvidia-fw.log /var/log/nvidia-fw-large.log
```
18.5.2. BMC UI May not be Accessible from Mac OS

18.5.2.1 Issue

When attempting to connect to the DGX A100 BMC from a system with Mac OS, a “Your connection is not private” message appears that prevents access to the BMC.

18.5.2.2 Explanation

Starting with version 0.13.6, the BMC provides a self-signed certificate which Mac OS flags in the browser. Most browsers will let you either accept the risk and continue, or add the certificate to the keychain and continue. The Chrome and Opera browsers, however, do not provide these options and so Mac OS users will not be able to access the BMC from the Chrome or Opera browser.

To access the DGX A100 BMC, Mac OS users can use Safari or Firefox, which provide an access path.

18.5.3. Update Timeout Reported for Motherboard CEC

18.5.3.1 Issue

The update progress output reports "Update_timeout" for the motherboard CEC (MB_CEC) when using the .run file without Docker installed.**Example**

```
+----------------------------------------------------------------------------------+
|+--------------------------------------------------------------------------------+|
|!!!! Firmware Update In Progress !!!!! |
| Status: reflash BMC firmware |
+----------------------------------------------------------------------------------+
| MB_CEC | Onboard | Manifest | Update Status |
| 3.05   | 3.25    |         | Update timeout |
```

18.5.3.2 Explanation

This message can be ignored provided that the MB_CEC update is successful.

Example success message:

```
Success:
  Installed firmware 3.25 on MB_CEC
```
18.5.4. Boot Order in the SBIOS Reverts to the Default

18.5.4.1 Issue

After updating the SBIOS, any changes in the boot order that you have made are not preserved and the boot order specified in the SBIOS reverts to the following.

<table>
<thead>
<tr>
<th>Boot Option #1</th>
<th>Hard Disk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boot Option #2</td>
<td>NVME</td>
</tr>
<tr>
<td>Boot Option #3</td>
<td>USB CD/DVD</td>
</tr>
<tr>
<td>Boot Option #4</td>
<td>USB Hard Disk</td>
</tr>
<tr>
<td>Boot Option #5</td>
<td>USB Key</td>
</tr>
<tr>
<td>Boot Option #6</td>
<td>Network</td>
</tr>
</tbody>
</table>

18.5.4.2 Explanation

You will need to prepare for the change when restarting the system, and then enter the SBIOS setup to edit the boot order as needed.
Chapter 19. DGX A100 System Firmware Update Container Version 20.05.12.3

The DGX Firmware Update container version 20.05.12.3 is available.

▶ Package name: nvfw-dgxa100_20.05.12.3_200716.tar.gz
▶ Run file name: nvfw-dgxa100_20.05.12.3_200716.run
▶ Image name: nvfw-dgxa100:20.05.12.3

19.1. Highlights and Changes in this Release

▶ This release is supported with the following DGX OS software -
  ▶ DGX OS 4.99.9 or later
  ▶ DGX OS 5.0.x

Before using the container to update firmware on DGX OS 5.0.x or later, first stop certain NVIDIA services. See Updating Firmware on DGX Systems Installed with DGX OS Release 5.0 or Later.

▶ Fixed an issue where the DGX A100 fans would run at high speed when the optional dual-port network card was not installed.

19.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.
## Component Update Notes

<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.12.06</td>
<td>Fixed high fan speed bug.</td>
<td>31 minutes</td>
</tr>
<tr>
<td>SBIOS</td>
<td>0.25</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>1.3</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>BMC CEC SPI</td>
<td>v3.05</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>0.13.0</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>0.13.0</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.12.00.01</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>VBIOS</td>
<td>92.00.19.00.01</td>
<td>No change</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>

### 19.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image. After reboot, the updated image becomes the active image. You can perform the update again to update the current inactive image so that both images are updated.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image. After the update is completed, the updated image becomes the active image. You can perform the update again to update the current inactive image so that both images are updated.

### 19.4. Updating Firmware on DGX Systems Installed with DGX OS Release 5.0 or Later

You need to stop certain NVIDIA services before using the container to update firmware on systems installed with DGX OS 5.0.x or later.

- If you run the container using either the `docker run` or `.run` file method, then stop services first by issuing the following:

  ```bash
  $ sudo systemctl stop nvsm dcgm nvidia-fabricmanager nvidia-persistenced.service
  ```

- If you run the container using NVSM CLI, then stop services first by issuing the following (does not include stopping nvsm):

  ```bash
  ```

---

174 Chapter 19. DGX A100 System Firmware Update Container Version 20.05.12.3
19.5. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use any method described in Using the DGX A100 FW Update Utility.

**Caution:** Stop all unnecessary system activities before attempting to update firmware, and do not add additional loads on the system (such as Kubernetes jobs or other user jobs or diagnostics) while an update is in progress. A high GPU workload can disrupt the firmware update process and result in an unusable component.

1. Perform a transitional update if needed.

   Depending on the BMC and MB_CEC versions on the system, you may need to perform a transitional update before updating the BMC and SBIOS to the latest versions.

   1. Check if the transitional update is needed.

      ```
      $ sudo nvfw-dgxa100_20.05.12.3_200716.run run_script --command "fw_transition.py show_version"
      ```

      The following message appears if a transition update is needed.

      **BMC/MB_CEC firmware needs update to Active/Inactive, secure boot mode**
      **This is a one-time update required for DGXA100. All future updates require BMC in this mode**

      - If the one-time update is required, continue with the next step to perform the transitional update.
      - If the one-time update is not required, then skip to step 2.

2. Check if other updates are needed by checking the installed versions.

   ```
   $ sudo nvfw-dgxa100_20.05.12.3_200716.run show_version
   ```
If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.
If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

3. Perform the final update for all firmware supported by the container and reboot the system.
   1. Refer to Updating Firmware on DGX Systems Installed with DGX OS Release 5.0 or Later to see if services need to be stopped and how to do it.
   2. Perform the update.

```
$ sudo nvfw-dgxa100_20.05.12.3_200716.run update_fw all
$ sudo reboot
```

**Note:** The `update_fw all` command updates the inactive BMC and SBIOS images only. After rebooting the system, the updated images become “active”. You can then update the inactive images using `nvfw-dgxa100_20.05.12.3_200716.run update_fw [BMC] [SBIOS]` as needed.

You can verify the update by issuing the following.

```
$ sudo nvfw-dgxa100_20.05.12.3_200716.run show_version
```

**Expected output.**

```
BMC DGX
========
Image Id     Status  Location  Onboard Version  Manifest  up_to_date
0:Active     Boot   Online   00.12.06          00.12.06  yes
1:Inactive   Updatable Local 00.12.06          00.12.06  yes

CEC
=====
MB_CEC(enabled)  Onboard Version  Manifest  up_to_date
3.05          3.05              yes

SBIOS
======
Image Id     Method  Onboard Version  Manifest  up_to_date
0:Inactive   updatabl  0.25          0.25              yes
1:Active     Boot   0.25          0.25              yes

Video BIOS
===========
Bus         Model      Onboard Version  Manifest  up_to_date
0000:07:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes
0000:08:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes
0000:47:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes
0000:4e:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes
0000:87:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes
0000:90:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes
0000:b7:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes
0000:bd:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01  yes

Switches
(continues on next page)
```
<table>
<thead>
<tr>
<th>PCI Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0(U261)</td>
<td>88064_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:88:00.0(U260)</td>
<td>88064_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0(U262)</td>
<td>88064_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:48:00.0(U225)</td>
<td>80800_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c2:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c3:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:01:00.0(U1)</td>
<td>PEX8896</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:81:00.0(U3)</td>
<td>PEX8896</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:41:00.0(U2)</td>
<td>PEX8896</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0(U4)</td>
<td>PEX8896</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
</tbody>
</table>
Chapter 20. DGX A100 System Firmware Update Container Version 20.05.12.2

The DGX Firmware Update container version 20.05.12.2 is available.

- Package name: nvfw-dgxa100_20.05.12.2_200630.tar.gz
- Run file name: nvfw-dgxa100_20.05.12.2_200630.run
- Image name: nvfw-dgxa100:20.05.12.2

20.1. Highlights and Changes in this Release

- This release is supported with the following DGX OS software -
  - DGX OS 4.99.9 or later
  - Restored ability to view hidden options in the SBIOS setup screens.

20.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.
## 20.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image. After reboot, the updated image becomes the active image. You can perform the update again to update the current inactive image so that both images are updated.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image. After the update is completed, the updated image becomes the active image. You can perform the update again to update the current inactive image so that both images are updated.

## 20.4. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use the container image directly.

1. Perform a transitional update if needed.

   Depending on the BMC and MB_CEC versions on the system, you may need to perform a transitional update before updating the BMC and SBIOS to the latest versions.

   1. Check if the transitional update is needed.
The following message appears if a transition update is needed.

```
$ sudo nvfw-dgxa100_20.05.12.2_200630.run run_script --command "fw_transition,py show_version"
```

**BMC/MB_CEC firmware needs update to Active/Inactive, secure boot mode**

This is a one-time update required for DGXA100. All future updates require BMC in this mode.

- ► If the one-time update is required, continue with the next step to perform the transitional update.
- ► If the one-time update is not required, then skip to step 2.

2. Perform the transitional update.

```
$ sudo nvfw-dgxa100_20.05.12.2_200630.run run_script --command "fw_transition,py update_fw"
$ sudo reboot
```

3. Verify that BMC (both images) and the MB_CEC are up to date.

```
$ sudo nvfw-dgxa100_20.05.12.2_200630.run run_script --command "fw_transition,py show_version"
```

2. Check if other updates are needed.

```
$ sudo nvfw-dgxa100_20.05.12.2_200630.run show_version
```

- ► If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.
- ► If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

3. Perform the final update for all firmware supported by the container and reboot the system.

```
$ sudo nvfw-dgxa100_20.05.12.2_200630.run update_fw all
$ sudo reboot
```

**Note:** The `update_fw all` command updates the inactive BMC and SBIOS images only. After rebooting the system, the updated images become “active”. You can then update the inactive images using `nvfw-dgxa100_20.05.12.2_200630.run update_fw [BMC] [SBIOS] --inactive` as needed.

You can verify the update by issuing the following.

```
$ sudo nvfw-dgxa100_20.05.12.2_200630.run show_version
```

**Expected output.**

```
BMC DGX
=======
Image Id Status Location Onboard Version Manifest up_to_date
0:Active Boot Online Local 00.12.05 00.12.05 yes
1:Inactive Updatable Local 00.12.05 00.12.05 yes
```

(continues on next page)
## CEC

<table>
<thead>
<tr>
<th>MB_CEC(enabled)</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.05</td>
<td>3.05</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

## SBIOS

<table>
<thead>
<tr>
<th>Image Id Method Onboard Version Manifest up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Inactive Updatabl 0.25 0.25 yes</td>
</tr>
<tr>
<td>1:Active Boot 0.25 0.25 yes</td>
</tr>
</tbody>
</table>

## Video BIOS

<table>
<thead>
<tr>
<th>Bus Model Onboard Version Manifest up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000:07:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
<tr>
<td>0000:0f:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
<tr>
<td>0000:47:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
<tr>
<td>0000:4e:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
<tr>
<td>0000:87:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
<tr>
<td>0000:90:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
<tr>
<td>0000:b7:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
<tr>
<td>0000:bd:00.0 A100-SXM4-40GB 92.00.19.00.01 92.00.19.00.01 yes</td>
</tr>
</tbody>
</table>

## Switches

<table>
<thead>
<tr>
<th>PCI Bus# Model Onboard Version Manifest up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0(U261) 88064_Retimer 0.13.0 0.13.0 yes</td>
</tr>
<tr>
<td>DGX - 0000:88:00.0(U260) 88064_Retimer 0.13.0 0.13.0 yes</td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0(U262) 88064_Retimer 0.13.0 0.13.0 yes</td>
</tr>
<tr>
<td>DGX - 0000:48:00.0(U225) 88080_Retimer 0.13.0 0.13.0 yes</td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0 LR10 92.10.12.00.01 92.10.12.00.01 yes</td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0 LR10 92.10.12.00.01 92.10.12.00.01 yes</td>
</tr>
<tr>
<td>DGX - 0000:c2:00.0 LR10 92.10.12.00.01 92.10.12.00.01 yes</td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0 LR10 92.10.12.00.01 92.10.12.00.01 yes</td>
</tr>
<tr>
<td>DGX - 0000:c3:00.0 LR10 92.10.12.00.01 92.10.12.00.01 yes</td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0 LR10 92.10.12.00.01 92.10.12.00.01 yes</td>
</tr>
<tr>
<td>DGX - 0000:01:00.0(U1) PEX88096 1.3 1.3 yes</td>
</tr>
<tr>
<td>DGX - 0000:81:00.0(U3) PEX88096 1.3 1.3 yes</td>
</tr>
<tr>
<td>DGX - 0000:41:00.0(U2) PEX88096 1.3 1.3 yes</td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0(U4) PEX88096 1.3 1.3 yes</td>
</tr>
</tbody>
</table>
Chapter 21. DGX A100 System Firmware Update Container Version 20.05.12

The DGX Firmware Update container version 20.05.12 is available.

▶ Package name: nvfw-dgxa100_20.05.12_200603.tar.gz
▶ Run file name: nvfw-dgxa100_20.05.12_200603.run
▶ Image name: nvfw-dgxa100:20.05.12

21.1. Highlights and Changes in this Release

▶ This release is supported with the following DGX OS software -
  ▶ DGX OS 4.99.8 or later
▶ Enabled BMC Secure Flash
▶ Enabled PCI-Compliant DPC and AER error propagation
▶ Implemented critical VBIOS fixes

21.2. Contents of the DGX A100 System Firmware Container

This container includes the firmware binaries and update utilities for the firmware listed in the following table.
<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
<th>Key Changes</th>
<th>Update Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC (via CEC)</td>
<td>00.12.05</td>
<td>Added to container.</td>
<td>31 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ BMC now recognizes the level of CEC installed, and enforces Secure Flash if the CEC supports it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Removed the ability to update the BMC via the UI.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Added microcontroller assist (MCA) SEL, downloadable from the UI.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Added Logs &amp; Reports &gt; Debug Log &gt; Download Debug log control to BMC UI.</td>
<td></td>
</tr>
<tr>
<td>SBIOS</td>
<td>0.23</td>
<td>Added to container</td>
<td>7 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Removed Hidden Options and made TPM Configuration options visible</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Fixed NVSM Show Health Errors related to DIMMs and DIMM population</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Fixed system getting stuck at POST after enabling and then disabling drive encryption</td>
<td></td>
</tr>
<tr>
<td>Broadcom 88096 PCIe switch board</td>
<td>1.3</td>
<td>Added to container</td>
<td>8 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Disabled hot-plug and hot-plug surprise capability</td>
<td></td>
</tr>
<tr>
<td>BMC CEC SPI</td>
<td>v3.05</td>
<td>Added to container</td>
<td>8 minutes</td>
</tr>
<tr>
<td>PEX88064 Retimer</td>
<td>0.13.0</td>
<td>Updated</td>
<td>7 minutes</td>
</tr>
<tr>
<td>PEX88080 Retimer</td>
<td>0.13.0</td>
<td>Updated</td>
<td>7 minutes</td>
</tr>
<tr>
<td>NvSwitch BIOS</td>
<td>92.10.12.00.01</td>
<td>No change</td>
<td>8 minutes</td>
</tr>
<tr>
<td>VBIOS</td>
<td>92.00.19.00.01</td>
<td>Updated. Fixed Xid 64 (Row Remapper Error)</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>
21.3. Updating Components with Secondary Images

Some firmware components provide a secondary image as backup. The following is the policy when updating those components:

- **SBIOS**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image. After reboot, the updated image becomes the active image. You can perform the update again to update the current inactive image so that both images are updated.

- **BMC**: The two images are referred to as active and inactive, where the active is the currently running image and the inactive is the backup image. The update container can only update the inactive image. After the update is completed, the updated image becomes the active image. You can perform the update again to update the current inactive image so that both images are updated.

21.4. Instructions for Updating Firmware

This section provides a simple way to update the firmware on the system using the firmware update container. It includes instructions for performing a transitional update for systems that require it. The commands use the .run file, but you can also use the container image directly.

1. Perform a transitional update if needed.

   Depending on the BMC and MB_CEC versions on the system, you may need to perform a transitional update before updating the BMC and SBIOS to the latest versions.

   1. Check if the transitional update is needed.

      $ sudo nvfw-dgxa100_20.05.12_2006003.run run_script --command "fw_transition.py show_version"

      The following message appears if a transition update is needed.

      BMC/MB_CEC firmware needs update to Active/Inactive, secure boot mode
      This is a one-time update required for DGXA100. All future updates require BMC in this mode

      ▶ If the one-time update is required, continue with the next step to perform the transitional update.

      ▶ If the one-time update is not required, then skip to step 2.

2. Perform the transitional update.

   $ sudo nvfw-dgxa100_20.05.12_2006003.run run_script --command "fw_transition.py update_fw"
   $ sudo reboot

3. Verify that BMC (both images) and the MB_CEC are up to date.

   $ sudo nvfw-dgxa100_20.05.12_2006003.run run_script --command "fw_transition.py show_version"
2. Check if other updates are needed.

   $ sudo nvfw-dgxa100_20.05.12_2006003.run show_version

   ▶ If there is “no” in any up-to-date column for updatable firmware, then continue with the next step.

   ▶ If all up-to-date column entries are “yes”, then no updates are needed and no further action is necessary.

3. Perform the final update for all firmware supported by the container and reboot the system.

   $ sudo nvfw-dgxa100_20.05.12_2006003.run update_fw all
   $ sudo reboot

**Note:** The `update_fw all` command updates the inactive BMC and SBIOS images only. After rebooting the system, the updated images become “active”. You can then update the inactive images using `nvfw-dgxa100_20.05.12_2006003.run update_fw [BMC] [SBIOS] --inactive` as needed.

You can verify the update by issuing the following.

   $ sudo nvfw-dgxa100_20.05.12_2006003.run show_version

**Expected output.**

<table>
<thead>
<tr>
<th>BMC DGX</th>
<th>Status</th>
<th>Location</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Active Boot Online</td>
<td>Local</td>
<td>00.12.05</td>
<td>00.12.05</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>1:Inactive Updatable Local</td>
<td>00.12.05</td>
<td>00.12.05</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CEC</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB_CEC(enabled)</td>
<td>3.05</td>
<td>3.05</td>
<td>yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SBIOS</th>
<th>Method</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:Inactive Updatable Afulnx</td>
<td>0.24</td>
<td>0.24</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>1:Active Boot</td>
<td>0.24</td>
<td>0.24</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Video BIOS</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up_to_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000:07:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>0000:0f:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>0000:47:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>0000:4e:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>0000:87:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>0000:98:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>0000:b7:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>0000:bd:00.0 A100-SXM4-40GB</td>
<td>92.00.19.00.01</td>
<td>92.00.19.00.01</td>
<td>yes</td>
</tr>
</tbody>
</table>

Switches (continues on next page)
## 21.4. Instructions for Updating Firmware

<table>
<thead>
<tr>
<th>PCI Bus#</th>
<th>Model</th>
<th>Onboard Version</th>
<th>Manifest</th>
<th>up-to-date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGX - 0000:91:00.0(U261)</td>
<td>88064_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:88:00.0(U260)</td>
<td>88064_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:4f:00.0(U262)</td>
<td>88064_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:48:00.0(U225)</td>
<td>88080_Retimer</td>
<td>0.13.0</td>
<td>0.13.0</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c4:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c5:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c2:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c6:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c3:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:c7:00.0</td>
<td>LR10</td>
<td>92.10.12.00.01</td>
<td>92.10.12.00.01</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:01:00.0(U1)</td>
<td>PEX88096</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:81:00.0(U3)</td>
<td>PEX88096</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:41:00.0(U2)</td>
<td>PEX88096</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
<tr>
<td>DGX - 0000:b1:00.0(U4)</td>
<td>PEX88096</td>
<td>1.3</td>
<td>1.3</td>
<td>yes</td>
</tr>
</tbody>
</table>
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