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Enterprise

HPE Cray EX System HPC Firmware Pack Installation Guide (22.02) (S-8037)

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HPE Cray EX HPC Firmware Pack Installation Guide

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1 Copyright and Version

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2 Overview

2.1 Product Details

The HPE Cray EX HPC Firmware Pack (HFP) provides firmware packages for HPE Cray EX system hardware. The HFP product distribution tar.gz file includes a `NOTES.txt` file which lists the recommended firmware packages to be installed.

NOTE: Firmware packages for certain hardware components are not included in HFP and must be acquired from the hardware vendor, for example Dell and Mellanox network switch firmware.

This document uses the terms "install", "update", and "upgrade" interchangeably as the HFP procedure is the same in each scenario. When installing HFP on a system managed by Cray System Management (CSM), the ***HPE Cray EX System Software Getting Started Guide*** provides guidance on when HFP installation should be performed relative to other Cray EX software product installs and upgrades.

2.2 Performing Firmware Upgrades

HFP provides the firmware packages for HPE Cray EX systems, but **HFP does not perform firmware upgrades**. There are two methods to upgrade firmware: with and without the Firmware Action Service (FAS) which is only present on systems managed by CSM. The manner in which HFP is installed depends on whether FAS is installed and operational, as described in the following subsections.

2.2.1 Upgrading Firmware With FAS

Systems managed by CSM most often perform firmware upgrades using FAS. The Install HPC Firmware Pack section of this document describes how to install HFP on a CSM-managed system with FAS installed and operational. The Install HPC Firmware Pack from PIT or LiveCD section of this document describes how to install HFP on a CSM-managed system booted into the Pre-Install Toolkit (PIT) or LiveCD environments (typically only the case when the system is being installed for the first time).

FAS details can be found in the Update Firmware with FAS section of the ***Cray System Management Documentation***.

2.2.2 Upgrading Firmware Without FAS

On systems without FAS, firmware provided by HPF can be installed by following the instructions included in the directory of the HFP product distribution tar.gz file that contains the firmware package.

Each hardware product directory includes firmware packages (fwpkg, rpm, ...) as well as a `DOC` directory with vendor documentation, including installation instructions. The following are example directory listings for `HPE_XL675d-Gen10Plus` (HPE ProLiant XL675d) and `GB_SVR_1264UP_C17_C21` (Gigabyte 1264UP) hardware:

```
HPE_XL675d-Gen10Plus/
    A47_2.40_02_23_2021.fwpkg
    DOC/
        HPCM-Firmware-Flash_v2021.03.04.pdf
        INSTALL.txt
        README.txt
    FAS-BIOS-HPE_XL675d-Gen10Plus-2.40-1-sles15sp1.x86_64.rpm

GB_SVR_1264UP_C17_C21/
    DOC/
        BMCFirmwareUpdate.txt
        Gigabyte-Shasta-Firmware-Update.pdf
        README.txt
        Relnotes_MZ32-AR0-YF_C17_F01.pdf
        Relnotes_MZ32-AR0-YF_C17_Rome.pdf
        Relnotes_MZ32-AR0-YF_Naples.pdf
    sh-svr-1264up-bios-21.00.00-20210325025941_8df4708.x86_64.rpm
```

Focusing on the `HPE_XL675d-Gen10Plus` directory listing:

- The directory name `HPE_XL675d-Gen10Plus` reflects the type of hardware the firmware is for.
- The `A47_2.40_02_23_2021.fwpkg` file is used for manual installation without FAS.
- The `DOC` directory contains documentation files, including release and installation details.

- The `FAS-BIOS-HPE_XL675d-Gen10Plus-2.40-1-sles15sp1.x86_64.rpm` file is used for installation with FAS.

2.2.2.1 iLO Information

Documentation in some, but not all, of the `DOC` directories states that HPE Integrated Lights Out (iLO) server management software can be used to install the firmware. In those cases, the following documentation provides additional details on how to use iLO and may be of interest.

- HPE iLO 5 2.55 User Guide
  - The "Viewing and managing firmware and software" section documents how to use the iLO web interface to install firmware.
- RESTful Interface Tool 1.50 User Guide
  - The "Firmware update command" topic in the "iLO Commands" section documents how to install firmware using the RESTful Interface Tool.

3 Install HPC Firmware Pack

This section describes how to install HFP on a CSM-managed system with FAS installed and operational. Read the Overview section of this document to understand what is and is not executed as part of the HFP install process. Refer to the Upgrading Firmware Without FAS section of this document for instructions on systems not managed by CSM. **NOTE**: Replace any product versions of 2.0.1xxx in the following procedure with the current HFP product version of 22.01.3.

3.1 Prerequisites

1. Nexus must be installed and operational.
2. FAS must be installed and operational.

3.2 Procedure

To install or upgrade HFP, unpack the HFP distribution tar.gz file and execute the `install.sh` script.

NOTE: The `ncn` hostname is used as a generic placeholder for the non-compute node where these steps are run.

```
ncn# script -af product-hfp.$(date +%Y-%m-%d).txt
ncn# export PS1='\u@\H \D{%Y-%m-%d} \t \w # '
ncn# cd [path to location of HFP tar.gz file]
ncn# tar -zxf HFP-firmware-22.01.101916-0.tar.gz
ncn# cd HFP-firmware-2.0.101916-0
ncn# ./install.sh
ncn# exit
```

3.3 Example output

The following is abbreviated example output from the HFP install script. The FAS loader job runs automatically as part of this process. The install script automatically executes post-install validation scripts to ensure firmware content was uploaded to Nexus and FAS correctly. As seen in the example, some steps may temporarily report failure messages, but the install script retries those operations. Once the HFP install process completes, the FAS CLI will report the new firmware content provided by HFP.

```
Install HFP-firmware-2.0.101916-0
Load install tools
...
Configure Nexus
Creating file blobstore: HFP-firmware... 500 FAIL
Creating file blobstore: HFP-firmware... 204 OK created
Creating raw/hosted repository: HFP-firmware-2.0.101916-0...201 OK created
Creating raw/group repository: HFP-firmware...201 OK created
Creating raw/group repository: shasta-firmware...201 OK created
Upload repository HFP-firmware-2.0.101916-0
...
Update product catalog entry
```

```
Trying to pull registry.local/cray/cray-product-catalog-update:1.1.37...
  manifest unknown: manifest unknown
Error: unable to pull registry.local/cray/cray-product-catalog-update:1.1.37: Error initializing source ...
WARN: product catalog update failed first try, trying again
Trying to pull registry.local/csm-docker-remote/stable/cray-product-catalog-update:0.1.3...
Getting image source signatures
...
INFO: command 'cray fas loader list' shows ready status, continuing with reload.
loaderRunID = "dd7644bc-0738-4a9f-bc47-9351a8680188"

INFO: command 'cray fas loader nexus create' was successful.
      'cray fas images list' will contain the new content in a few minutes.

INFO: Starting post-install tests...
INFO: Launching ./post-install-test-nexus.sh
INFO: Found 20 rpm's in local dir: rpm
INFO: Checking that repo exists...  "name": "shasta-firmware",
INFO: 20 Files found in https://packages.local/service/rest/v1/components?repository=shasta-firmware:
...
INFO: ./post-install-test-nexus.sh Passed.

INFO: Launching ./post-install-test-fas.sh
INFO: FAS contains 0 entries. Sleeping for 30sec to allow FAS to work in the background...
INFO:   FOUND file A43_2.40_02_23* from FAS-BIOS-HPE_DL325*.rpm in FAS
INFO:     NOT FOUND file A42_2.40_02_23* from FAS-BIOS-HPE_DL385*.rpm does NOT exist yet in FAS
INFO:     NOT FOUND file ilo5_246* from FAS-HPE_ILO5-2.46-1*.rpm does NOT exist yet in FAS
INFO:     NOT FOUND file ilo5_244* from FAS-HPE_ILO5-2.44-1*.rpm does NOT exist yet in FAS
INFO:     NOT FOUND file A48_2.40_02_24* from FAS-BIOS-HPE_XL675d-Gen10*.rpm does NOT exist yet in FAS
INFO:     NOT FOUND file A47_2.40_02_23* from FAS-BIOS-HPE_XL675d-Gen10Plus*.rpm does NOT exist yet in FAS
INFO: Sleeping 15sec and rechecking. 5 files not found. Loop count 1 of 20.
INFO:   FOUND file A42_2.40_02_23* from FAS-BIOS-HPE_DL385*.rpm in FAS
INFO:     NOT FOUND file ilo5_246* from FAS-HPE_ILO5-2.46-1*.rpm does NOT exist yet in FAS
INFO:   FOUND file ilo5_244* from FAS-HPE_ILO5-2.44-1*.rpm in FAS
INFO:   FOUND file A48_2.40_02_24* from FAS-BIOS-HPE_XL675d-Gen10*.rpm in FAS
INFO:   FOUND file A47_2.40_02_23* from FAS-BIOS-HPE_XL675d-Gen10Plus*.rpm in FAS
INFO: Sleeping 15sec and rechecking. 1 files not found. Loop count 2 of 20.
INFO:   FOUND file ilo5_246* from FAS-HPE_ILO5-2.46-1*.rpm in FAS
INFO: PASS - All expected files found in FAS
INFO: ./post-install-test-fas.sh Passed.

OK HFP-firmware-2.0.101916-0
```

At this point, the HFP install process is complete and FAS can be used to perform firmware updates on supported hardware as described in the Upgrading Firmware With FAS section of this document. If other HPE Cray EX software products are being installed in conjunction with HFP, refer to the ***HPE Cray EX System Software Getting Started Guide*** to determine what step to perform next.

4 Install HPC Firmware Pack from PIT or LiveCD

The procedure to install HFP on a CSM-managed system from the PIT or LiveCD environment is the same as the procedure documented in the Install HPC Firmware Pack section of this document.

If firmware updates are required from the PIT or LiveCD environment before FAS is installed and operational, refer the Upgrading Firmware Without FAS section of this document for instructions.