

HP Firmware Installer for Docks



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Overview

Firmware updates to external devices create a challenge in managing devices. This package allows for multiple installation options to fit customer needs.

In addition, firmware updates can be time consuming and disruptive to an end user. The user may see the monitor flicker, hear audio clicks, the internet connection may be intermittent, and the mouse and the keyboard could become unresponsive until the installation is complete.

HP Firmware Installer for Docks allows for two different installation options using the same package. HP Firmware Installer includes all firmware updates for a docking station and provides installation options for different operating system deployment or update scenarios. This document explains the different scenarios and options.

Supported docking stations

- HP USB-C/A Universal Dock G2
- HP USB-C Dock G5
- HP Thunderbolt Dock G2

Terms and definitions

Table 1. Terms and definitions

| Term | Definition |
|--|--|
| Host | The computer that a supported docking station is connected to |
| Docking station firmware package version | The version of the whole firmware package applied to a docking station |
| Device firmware version | The firmware version of a device on a docking station |

Update options

The following installation options, including further customization, are available:

- Stage the firmware to the host computer, and the firmware will be installed when the docking station is connected to the host (later). This is the default and recommended option.
- Install all the applicable firmware to the docking station immediately.
- Stage the firmware to the docking station, and the firmware is installed when the host computer is disconnected from the docking station. (Select docking stations only.)

Staging the firmware to the host

This solution is used to deploy firmware updates to docking stations that might not be connected to the host at the time of installation of the package. HP Firmware Installer is installed onto the host via Windows Installer, similar to most software. The software installed contains the latest firmware binaries. When a supported docking station is connected and you log into the host, the software determines if a firmware update is needed. To prevent disconnection of the device, you must first consent to the firmware update. When the firmware update is running, a UI displays information about the firmware update and the option to postpone.

Enabling firmware deployment through the host

1. To detect the operating system architecture and run the appropriate HP Firmware Installer msi file, run `install.cmd`.
2. After installing HP Firmware Installer is installed, connect a supported docking station and log in to the host (if you are not already logged in).
3. When prompted, agree to the firmware update.

Command line arguments

Standard MSI arguments can be used to stage the firmware; for example, run `Install.cmd /qn` for silent installation.

To add configuration options to the command, specify the argument and value as follows:

```
Install.cmd <MSI_OPTIONS> POSTPONE_TIME=60 POSTPONE_MAX=2
```

Configuration options

There are several configuration options that can be used to customize the firmware update experience. The following configuration options can be added as command line arguments to `install.cmd`, or they can be set in the registry after installation.

Registry Key: `HKLM\SOFTWARE\HP\HP Firmware Installer\DEVICE_NAME`

- Postpone duration
 - Description:* The amount of time (in minutes) that passes between a user hitting postpone and the UI notification reappearing
 - Default:* 60
 - Allowed range:* 2 to 1440 (24 hours)
 - Command-line argument:* `POSTPONE_TIME`
 - Registry value:* `PostponeTime`
- Postpone maximum
 - Description:* The total number of times the user can hit the postpone button
 - Default:* -1 (infinity)
 - Allowed Range:* 0 (none) to -1 (infinity)
 - Command-line argument:* `POSTPONE_MAX`
 - Registry value:* `PostponeMax`
- Disable firmware checks after successful firmware update
 - Description:* HP Firmware Installer only updates the first device it encounters. After the firmware update is successful, or if the device is already up to date, HP Firmware Installer does not verify firmware versions until a new firmware version is staged to the host. If you want a single host to update multiple devices, set this to 0 (false) to ensure that the software always verifies the firmware version of compatible devices it encounters and prompts you to start the firmware update.
 - Default:* 0 (false)
 - Command-line argument:* `FLASH_DISABLE_ON_SUCCESS`
 - Registry value:* `FlashDisableOnSuccess`
- Disable firmware checks after failed firmware update
 - Description:* HP Firmware Installer stops attempting to update firmware after a set number of failed attempts (set in the `FlashAttemptMax` option). After the maximum number of attempts have been made, if this registry key is set to 1 (true), the software stops verifying firmware versions until a new firmware version is staged to the host.
 - Default:* 1 (true)
 - Command-line argument:* `FLASH_DISABLE_ON_FAIL`
 - Registry value:* `FlashDisableOnFail`
- Maximum number of failed attempts
 - Description:* HP Firmware Installer stops attempting to update firmware after a set number of failed attempts. After this maximum number of attempts has been made, the software stops verifying firmware versions until a new firmware version is staged to the host.
 - Default:* 2
 - Command-line argument:* `FLASH_ATTEMPT_MAX`
 - Registry value:* `FlashAttemptMax`
- Force downgrade
 - Description:* Used to force HP Firmware Installer to downgrade docking stations that are newer than the deployed version, as well as upgrade older docking stations. When force is set to 1 (on), any connected devices that are not the exact version as the one deployed cause the install process to begin. When force is set to 0 (off), HP Firmware Installer only upgrades docking stations, and docking stations with a newer firmware version stay as is.
 - Default:* 0 (off)
 - Command-line argument:* `FORCE`
 - Registry value:* `Force`

- Installation log path

Description: Saves the log file to a specified location. If not specified, the log is saved to the default location (%TEMP%). This parameter can be either a file name or a directory. If only a directory is specified, the log file name is HPFirmwareInstaller.log.

Default: Not specified (%TEMP%\HPFirmwareInstaller.log)

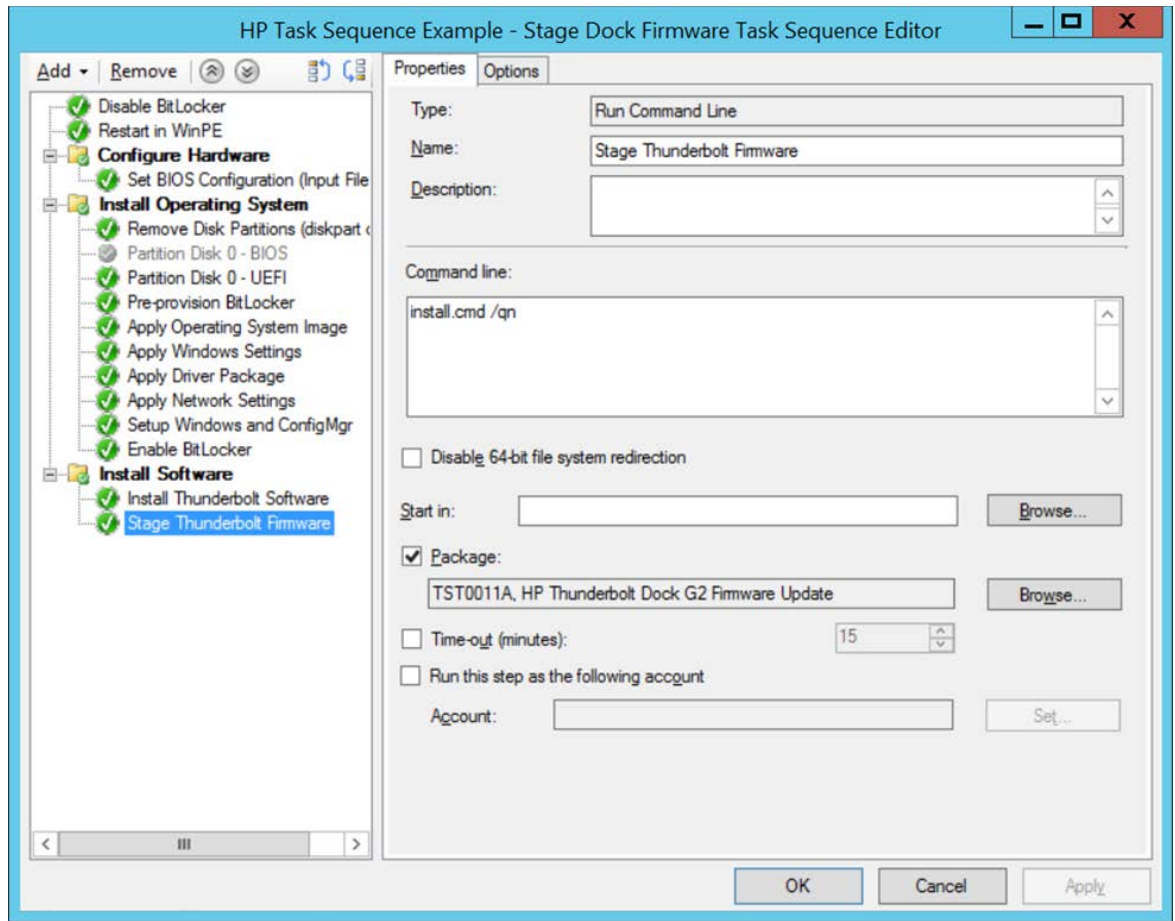
Command-line argument: INSTALL_LOG_PATH

Registry value: InstallLogPath

Example

The following example demonstrates how to install the HP Thunderbolt software first, and then set up HP Firmware Installer to trigger a firmware update.

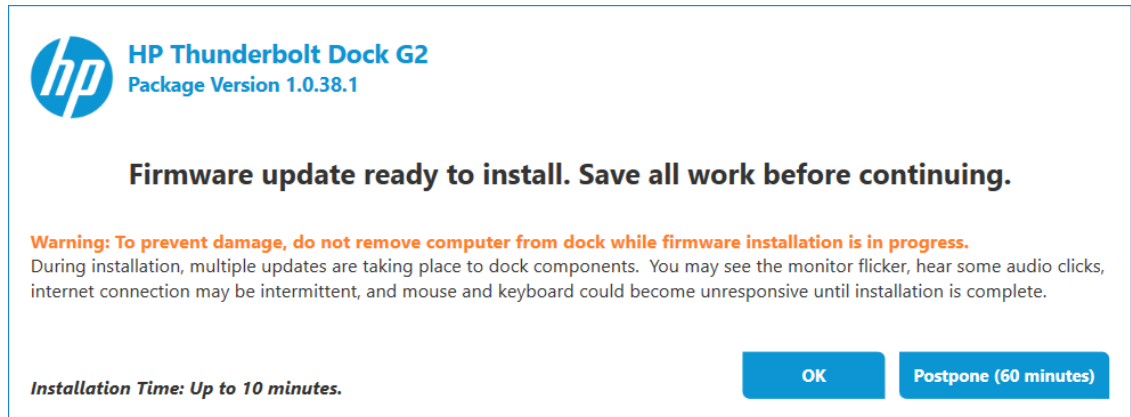
Figure 1. HP Task Sequence Example



End-user experience

When the software determines that firmware update is required, a notification is displayed. The firmware update does not start until this notification is accepted; however, the notification cannot be closed or minimized. The upgrade can only be postponed; the number of postpones and the time of postponement is configurable.

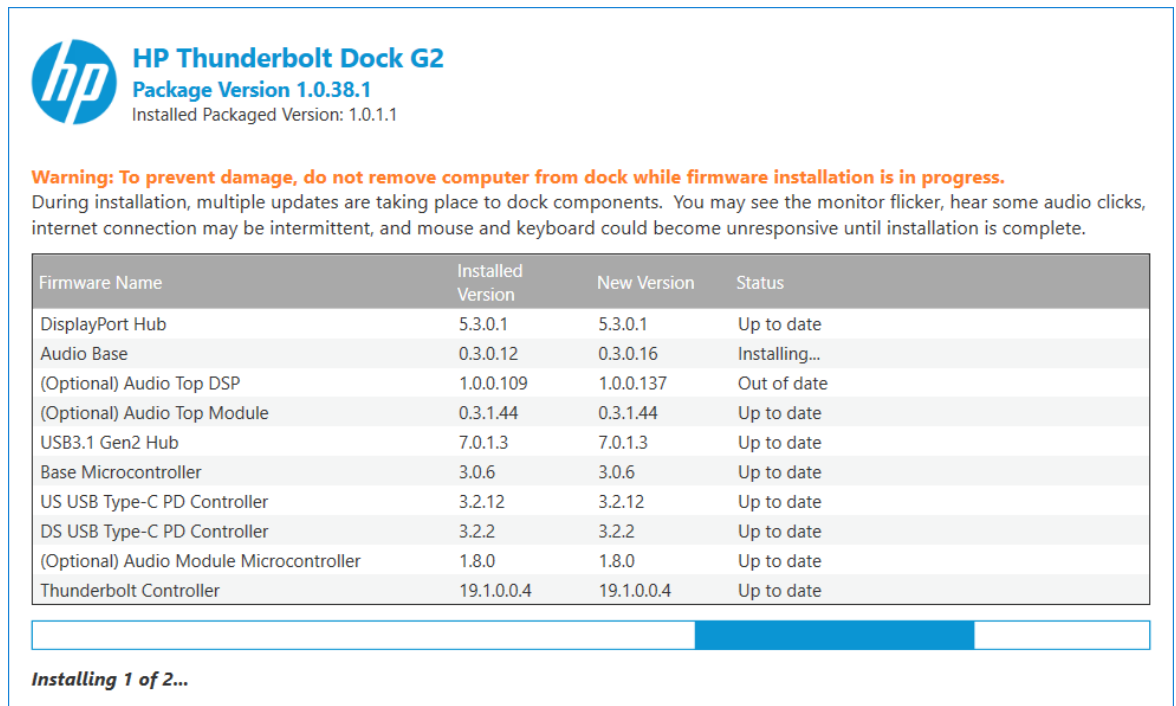
Figure 2. End-user update notification



If **Postpone** is selected, the same dialog box opens again after the displayed time elapses.

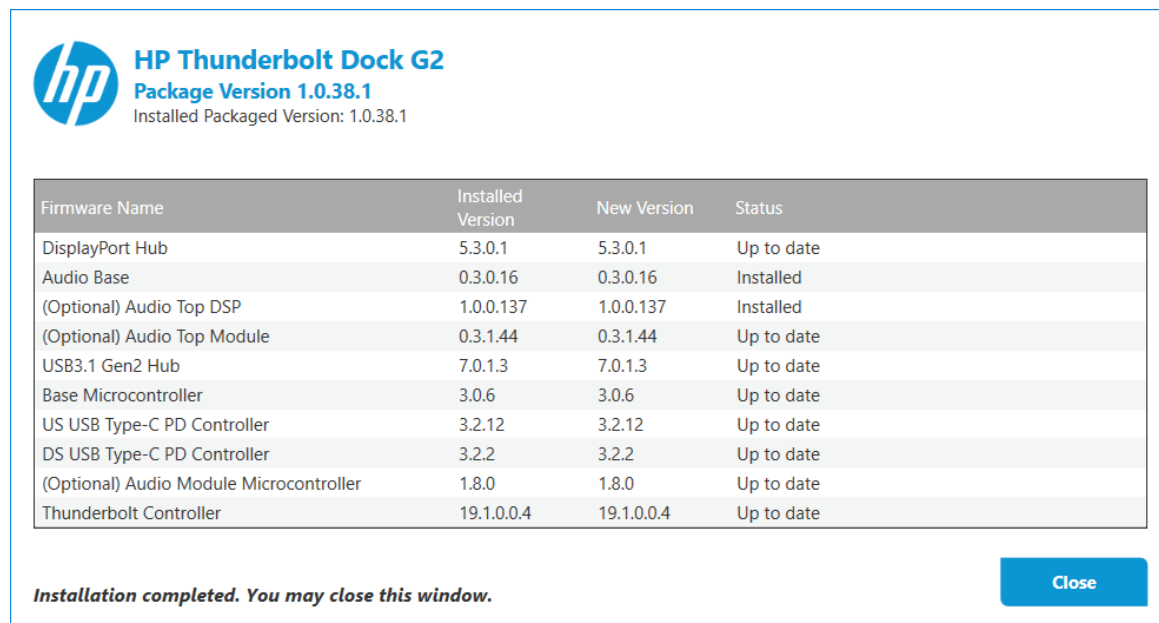
If **OK** is selected, an update-in-progress dialog box is displayed.

Figure 3. Update in progress dialog box



After the update is completed, the installation status is displayed.

Figure 4. Firmware update status dialog box



Installing the firmware immediately

The docking station must be connected to the host when the installer is started and must stay connected throughout the installation. HP Firmware installer determines which firmware on the docking station is out of date and updates to the latest version. This method can be run silently, loud, or non-interactively, which displays the UI but does not require interaction.

Command line parameters

The following table provides the parameters for `HPFirmwareInstaller.exe`.

Table 2. Command line parameters

| Parameter | Description |
|--|---|
| <code>-noninteractive</code> or <code>-ni</code> | Runs the installer without any user interaction, but still displays the UI. |
| <code>-silent</code> or <code>-s</code> | Runs the installer in silent mode. |
| <code>-force</code> or <code>-f</code> | Forces the installer to flash each firmware piece to the version included in the package, whether that is an upgrade, downgrade, or a re-flash of the same version. |
| <code>-installLogPath:<file path></code> | Specifies the path of the log file generated during installation. |

Interactive installation

- Double-click **HPFirmwareInstaller.exe** to run it interactively.

Note

If the program is run with the noninteractive or silent command-line parameter with the immediate firmware installation method, it returns an error code. For more details, see [Return codes](#).

Each individual device (on the docking station) and the corresponding device firmware version is shown to the user. The status of each device is updated during the installation process.

Figure 5. List of devices and their corresponding firmware version

hp HP Thunderbolt Dock G2
Package Version 1.0.38.1
Installed Packaged Version: 1.0.1.1

Warning: To prevent damage, do not remove computer from dock while firmware installation is in progress.
During installation, multiple updates are taking place to dock components. You may see the monitor flicker, hear some audio clicks, internet connection may be intermittent, and mouse and keyboard could become unresponsive until installation is complete.

| Firmware Name | Installed Version | New Version | Status |
|---|-------------------|-------------|-------------|
| DisplayPort Hub | 5.3.0.1 | 5.3.0.1 | Up to date |
| Audio Base | 0.3.0.12 | 0.3.0.16 | Out of date |
| (Optional) Audio Top DSP | 1.0.0.109 | 1.0.0.137 | Out of date |
| (Optional) Audio Top Module | 0.3.1.44 | 0.3.1.44 | Up to date |
| USB3.1 Gen2 Hub | 7.0.1.3 | 7.0.1.3 | Up to date |
| Base Microcontroller | 3.0.6 | 3.0.6 | Up to date |
| US USB Type-C PD Controller | 3.2.12 | 3.2.12 | Up to date |
| DS USB Type-C PD Controller | 3.2.2 | 3.2.2 | Up to date |
| (Optional) Audio Module Microcontroller | 1.8.0 | 1.8.0 | Up to date |
| Thunderbolt Controller | 19.1.0.0.4 | 19.1.0.0.4 | Up to date |

Force All

Installation Time: Up to 10 minutes.

Install **Close**

Figure 6. Installing the firmware in progress

hp HP Thunderbolt Dock G2
Package Version 1.0.38.1
Installed Packaged Version: 1.0.1.1

Warning: To prevent damage, do not remove computer from dock while firmware installation is in progress.
During installation, multiple updates are taking place to dock components. You may see the monitor flicker, hear some audio clicks, internet connection may be intermittent, and mouse and keyboard could become unresponsive until installation is complete.

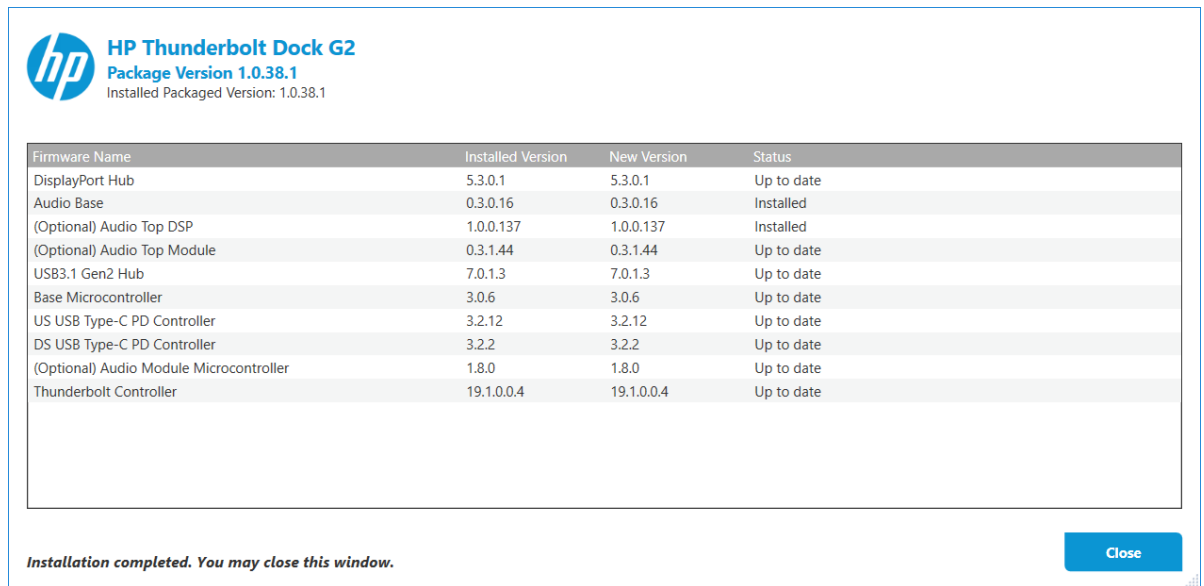
| Firmware Name | Installed Version | New Version | Status |
|---|-------------------|-------------|---------------|
| DisplayPort Hub | 5.3.0.1 | 5.3.0.1 | Up to date |
| Audio Base | 0.3.0.12 | 0.3.0.16 | Installing... |
| (Optional) Audio Top DSP | 1.0.0.109 | 1.0.0.137 | Out of date |
| (Optional) Audio Top Module | 0.3.1.44 | 0.3.1.44 | Up to date |
| USB3.1 Gen2 Hub | 7.0.1.3 | 7.0.1.3 | Up to date |
| Base Microcontroller | 3.0.6 | 3.0.6 | Up to date |
| US USB Type-C PD Controller | 3.2.12 | 3.2.12 | Up to date |
| DS USB Type-C PD Controller | 3.2.2 | 3.2.2 | Up to date |
| (Optional) Audio Module Microcontroller | 1.8.0 | 1.8.0 | Up to date |
| Thunderbolt Controller | 19.1.0.0.4 | 19.1.0.0.4 | Up to date |

Force All

Installing 1 of 2...

Install **Close**

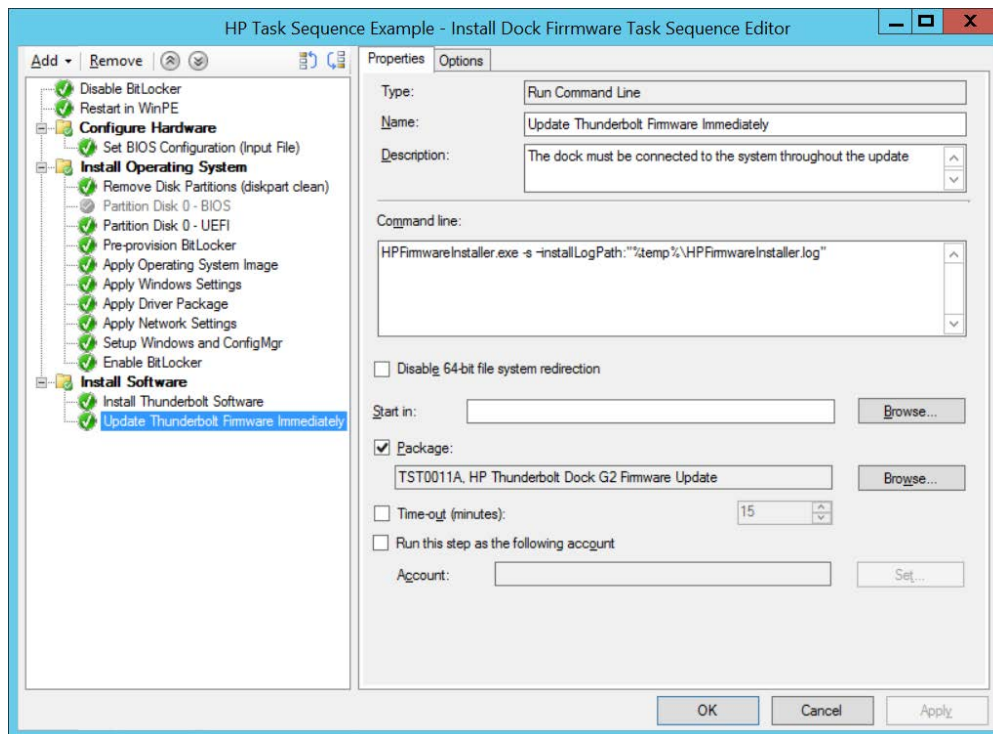
Figure 7. Installing the firmware completed



Example

The following screenshot shows an example deployment task sequence. The operating system deployment task sequence contains the necessary steps to install the appropriate Thunderbolt software first, then start HP Firmware Installer to update the docking station firmware immediately as the docking station is connected when the task sequence is running.

Figure 8. Installing the firmware immediately deployment task sequence



Return codes

Table 3. Return codes

| Code | Description |
|------|---|
| 0 | Success |
| 101 | Install failed. One or more firmware failed to install. |
| 102 | Configuration file failed to load. This occurs when the file cannot be found, or if it is not properly formatted. |
| 103 | One or more firmware packages specified in the configuration file could not be loaded. |
| 104 | No devices could be communicated with. This could be because the device was not connected, or necessary drivers are missing to detect the device. |
| 105 | Out-of-date firmware detected when running with 'check' flag. |
| 106 | An instance of HP Firmware Installer is already running. |
| 107 | Device not connected |
| 108 | Force option disabled. Firmware downgrade or re-flash not possible on this device. |

Installing the firmware upon disconnection

Beginning with the introduction of the HP USB-C Dock G5 and the HP USB-C/A Universal Dock G2, the docking station firmware can be updated when the docking station is disconnected from the host computer. The firmware package is staged to the docking station, and the individual components in the docking station are updated using the package the next time that the host computer is disconnected from the docking station. Thus, you can disconnect your host computer while the firmware update process is running. When the disconnected update is occurring, the power light blinks, and the docking station cannot be connected to a computer. The full update finishes in less than 4 minutes.

Command line parameters

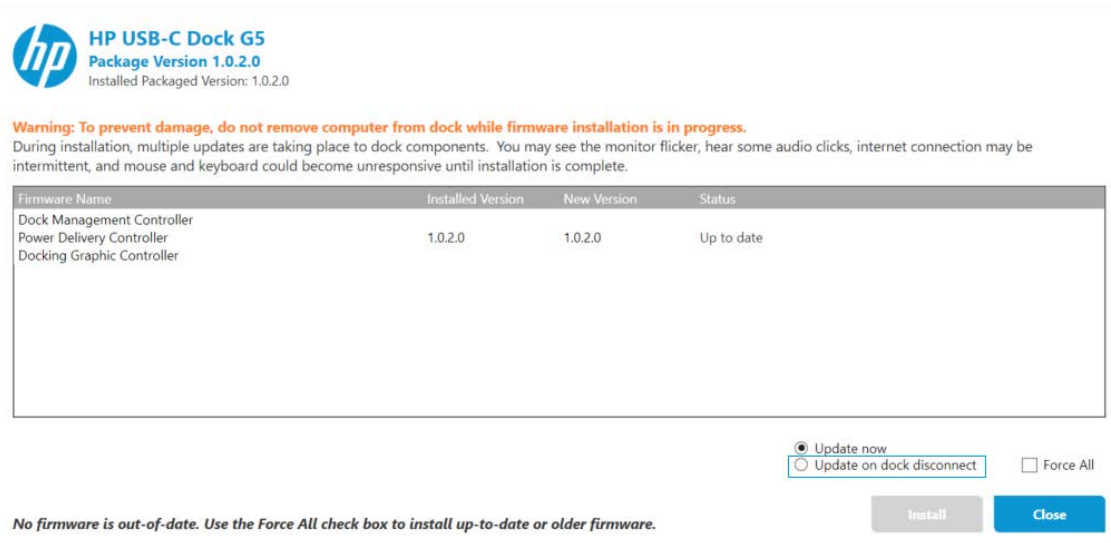
Table 4. Command-line parameters for disconnected updates

| Parameter | Description |
|---|--|
| <code>-stage</code> or <code>-st</code> | Stages the firmware package to the docking station, and then updates the firmware when the host computer is disconnected from the docking station. |
| <code>-check</code> or <code>-c</code> | Verifies whether the firmware is up to date. Only returns success if all firmware is up to date. |

Enabling disconnected updates

4. Double-click HPFirmwareInstaller.exe.
5. Select **Update on dock disconnect**.

Figure 9. Selecting disconnected updates



6. Select **Install**.

HP Firmware Installer stages the firmware to the docking station, and the docking station installs the update the next time the host is disconnected.

While the docking station updates, the power light blinks once per second. The docking station cannot connect to a host until the update process has finished.

Note

If the power light continues to blink after the update is completed successfully, contact HP Support.

Every time the docking station is connected to a host, HP Firmware Installer verifies the status of the disconnected update and finishes the process.

Inventory/Report (HP Thunderbolt Dock G2 only)

Docking station firmware update information location

The result of firmware updates, including error codes and versions, are stored on the host platform for querying. Several values are stored in the registry.

Registry key: HKLM\SOFTWARE\HP\HP Firmware Installer\DEVICE_NAME

- Available Package Version
Description: This is the version of the firmware package that has been staged to the host. It is the same as the version that shows up for the installer in Add/Remove Programs.
Registry value: AvailablePackageVersion
- Installed Package Version
Description: This is the version that was installed or verified to be on the last connected device. This value is not updated if the software has stopped checking firmware due to configuration options that might be set to disable the software after successful or failed updates.
Registry value: InstalledPackageVersion
- Error Code
Description: The error code produced from the last firmware update attempt. This comes from one of the error codes listed in [Installing the firmware immediately](#).
Registry value: ErrorCode

- Last Time Firmware Installed
Description: The date and time a firmware update was last performed.
Registry value: LastInstalled
- Last Time Firmware Checked
Description: the date and time of the last firmware version check of a device.
Registry value: LastChecked

Extending hardware inventory to include Thunderbolt docking station firmware information in Microsoft System Center Configuration Manager

The docking station firmware upgrade information saved in the client registry can be collected by management systems. The following is an example procedure for extending Microsoft® System Center Configuration Manager to retrieve HP Thunderbolt G2 docking station firmware information.

1. Download the configuration.mof file. Go to <https://ftp.hp.com/pub/caps-softpaq/cmit/whitepapers/HPThunderboltG2.RegKeyToMOF.txt>.
2. On the site server, append the following to configuration.mof. The mof file can be found at C:\Program Files\Microsoft Configuration Manager\inbox\clfiles.src\hin\ This updates the Configuration Manager client policy to retrieve the HP Thunderbolt Dock G2 firmware information from the registry of HP clients.

```
#pragma namespace ("\\\\.\\.\\root\\cimv2")

#pragma deleteclass ("HP_ThunderboltDockG2Firmware", NOFAIL)

[DYNPROPS]

Class HP_ThunderboltDockG2Firmware
{
    [key] string KeyName;

    String AvailablePackageVersion;

    String InstalledPackageVersion;

    UInt32 ErrorCode;

    String LastInstalled;

    String LastChecked;
};

[DYNPROPS]

Instance of HP_ThunderboltDockG2Firmware
{
    KeyName="RegKeyToMOF";

    [PropertyContext("Local|HKEY_LOCAL_MACHINE\\SOFTWARE\\HP\\HP Firmware
Installer\\HP Thunderbolt Dock
G2|AvailablePackageVersion"),Dynamic,Provider("RegPropProv")]
    AvailablePackageVersion;

    [PropertyContext("Local|HKEY_LOCAL_MACHINE\\SOFTWARE\\HP\\HP Firmware
Installer\\HP Thunderbolt Dock
G2|InstalledPackageVersion"),Dynamic,Provider("RegPropProv")]
    InstalledPackageVersion;

    [PropertyContext("Local|HKEY_LOCAL_MACHINE\\SOFTWARE\\HP\\HP Firmware
Installer\\HP Thunderbolt Dock
G2|ErrorCode"),Dynamic,Provider("RegPropProv")] ErrorCode;
};
```

```

        [PropertyContext("Local|HKEY_LOCAL_MACHINE\\SOFTWARE\\HP\\HP
        Firmware Installer\\HP Thunderbolt Dock
        G2|LastInstalled"),Dynamic,Provider("RegPropProv")] LastInstalled;

        [PropertyContext("Local|HKEY_LOCAL_MACHINE\\SOFTWARE\\HP\\HP Firmware
        Installer\\HP Thunderbolt Dock
        G2|LastChecked"),Dynamic,Provider("RegPropProv")] LastChecked;

};

```

Adding the docking station firmware information to the reported hardware inventory classes

1. Save the following to a text file named ThunderboltG2.HWInvExt.mof.

```

#pragma namespace ("\\.\root\cimv2\SMS")

#pragma deleteclass("HP_ThunderboltDockG2Firmware", NOFAIL)

[SMS_Report(TRUE),SMS_Group_Name("HP_ThunderboltDockG2Firmware
"),SMS_Class_ID("HP_ThunderboltDockG2Firmware")]

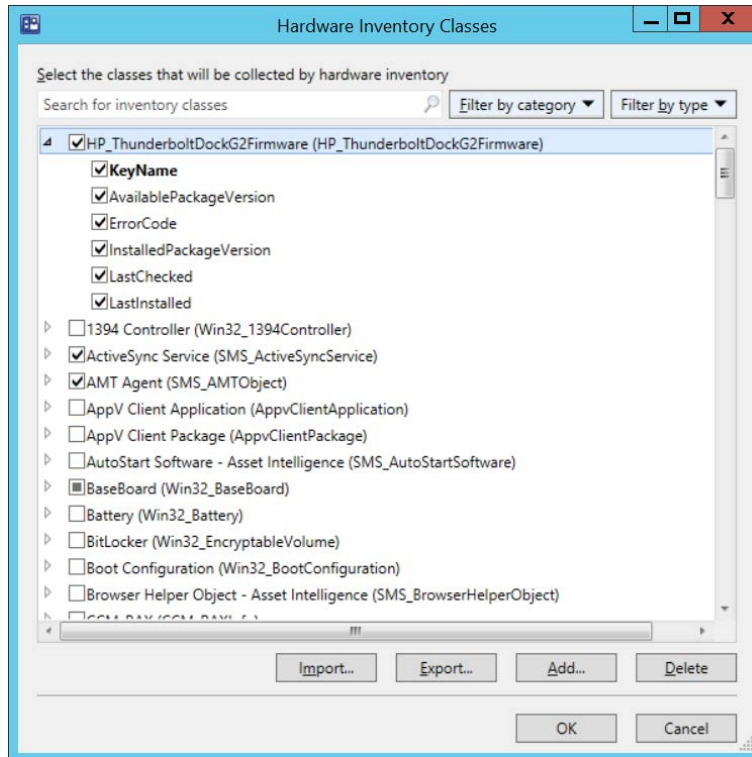
Class HP_ThunderboltDockG2Firmware: SMS_Class_Template
{
    [SMS_Report(TRUE),key] string KeyName;
    [SMS_Report(TRUE)] String AvailablePackageVersion;
    [SMS_Report(TRUE)] String InstalledPackageVersion;
    [SMS_Report(TRUE)] Uint32 ErrorCode;
    [SMS_Report(TRUE)] String LastInstalled;
    [SMS_Report(TRUE)] String LastChecked;
};

```

2. Download the hardware inventory MOF file. Go to <https://ftp.hp.com/pub/caps-softpag/cmit/whitepapers/HPThunderboltG2.HWInvExt.mof.txt>.
3. In the Configuration Manager console, open the **Administration** workspace, select **Client Settings**, right-click **Default Client Settings**, and select **Properties**. The **Default Settings** dialog box opens.
4. Select **Hardware Inventory**, and then select **Set Classes**. The **Hardware Inventory Classes** dialog box opens.
5. To open the Import dialog box, select **Import**.
6. Browse to **HP_ThunderboltG2.HWInvExt.mof** and select **Open**. HP_ThunderboltDockG2Firmware class is now added to the **Import Summary**.

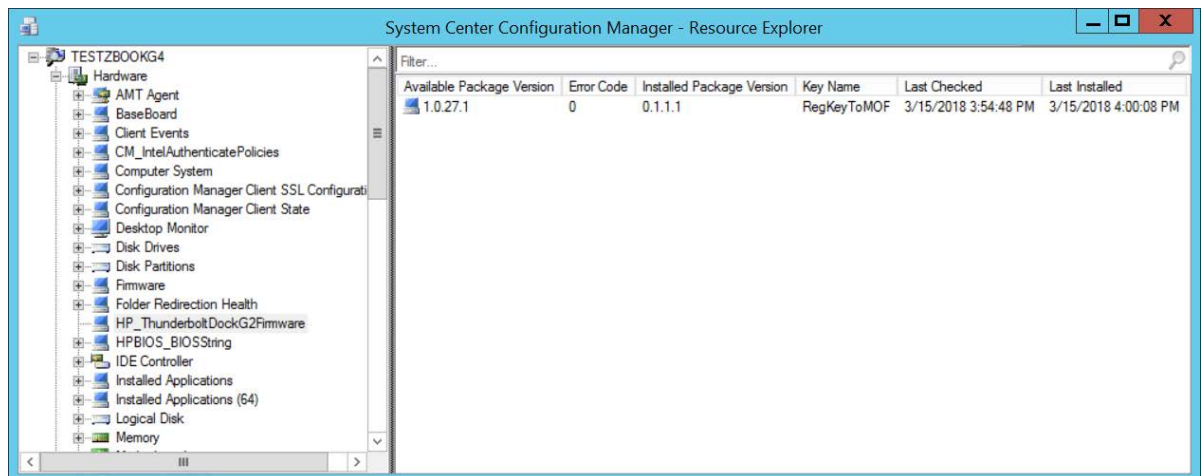
7. Select **OK** to close all the opened dialog boxes.

Figure 10. HP_ThunderboltDockG2Firmware in the Import Summary



After the updated hardware inventory information from client computers has been collected and processed in Configuration Manager, the docking stations that have firmware installation information display the following in Resource Explorer:

Figure 11. Resource explorer



WMI provider (HP USB-C Dock G5 and HP USB-C/A Universal Dock G2 only)

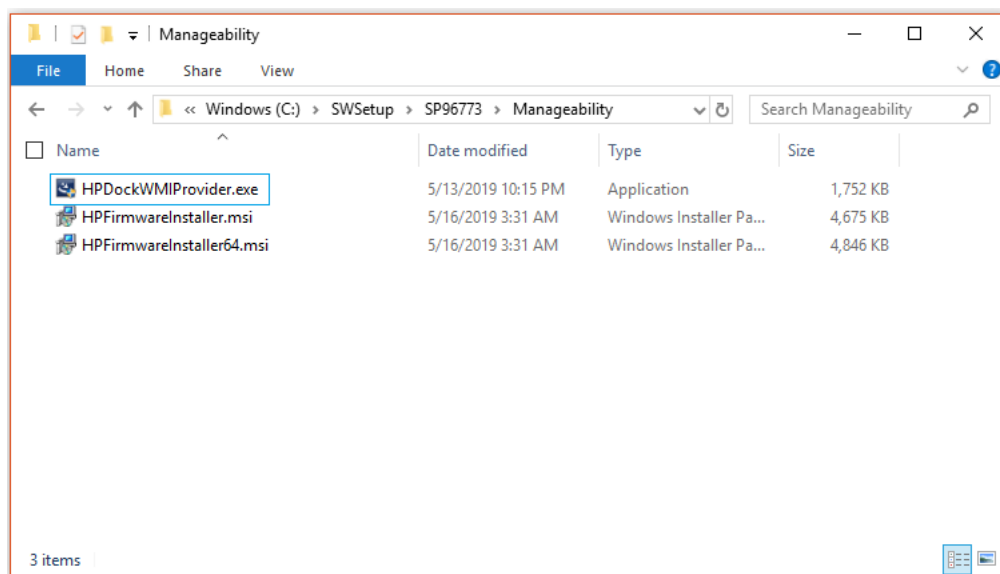
Select docking stations include the ability to access the serial number, the MAC address, the firmware package version, and the product name programmatically via WMI. This is enabled via a Windows® Management Information (WMI) provider that is installed in Windows. If a docking station is connected to a host that supports the WMI interface, then these values can be read via a management console over the network. This capability can enable an enterprise to better inventory and track the status of the docks in their environment.

Installation

The WMI provider must be installed on each host before the host can be connected to a docking station and read the docking station properties.

1. Double-click the **One-Click Installer installation** folder, and then select **Manageability**.
2. Open the WMI provider installer.

Figure 12. WMI provider installer package



Or, to install the WMI provider silently on a supported HP system, use the following procedure;

1. From the command line, run the following command:
`Manageability\HPDockWMIProvider.exe /S /v/qn`

After WMI is installed, WMI call can be used to query the information of a supported docking station when it is connected to a host.

Sample WMI call with output

```
PS> Get-WmiObject -Class HP_DockAccessory -Namespace  
root/HP/InstrumentedServices/v1
```

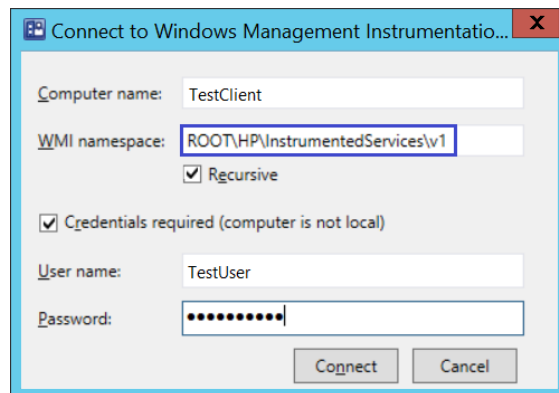
```
__GENUS           : 2  
__CLASS           : HP_DockAccessory  
__SUPERCLASS     : SW_ManagedInstanceService  
__DYNASTY        : SW_BaseObject  
__RELPATH        : HP_DockAccessory.SerialNumber="00091100C5"  
__PROPERTY_COUNT : 10  
__DERIVATION     : {SW_ManagedInstanceService, SW_ManagedServiceBase,  
SW_BaseObject}  
__SERVER         : MYCOMPUTER  
__NAMESPACE     : root\HP\InstrumentedServices\v1  
__PATH          : \\MYCOMPUTER\root\HP\InstrumentedServices\v1:  
                  HP_DockAccessory.SerialNumber="00091100C5"  
CorrelationID    : a58fbf4e-0fb2-4e89-8cff-994a5bd0fc43  
Description      : HP_DockAccessory WMI Provider  
FirmwarePackageVersion : 1.0.2.0
```

ID : HP_DockAccessory
MACAddress : C8:D9:D2:FF:A5:22
MinorSchemaVersion :
ProductName : HP USB-C Dock G5
Publisher : HP Inc.
SerialNumber : 00091100C5
State : 0
PSComputerName : MYCOMPUTER

Extending hardware inventory to include the HP USB-C Dock G5 and the HP USB-C/A Universal Dock G2 docking station firmware information in Configuration Manager

1. After you have installed the WMI provider the host and connected the host to either HP USB-C Dock G5 or HP USB-C/A Universal Dock G2, note the computer name of the client system and then use the name to connect to WMI.
2. In the Configuration Manager console, open the **Administration** workspace, select **Client Settings**, right-click **Default Client Settings**, and then select **Properties**. The **Default Settings** dialog box opens.
3. Select **Hardware Inventory**, and then select **Set Classes**. The **Hardware Inventory Classes** dialog box opens.
4. Select **Add**. The **Add Hardware Inventory Class** dialog box opens.
5. Select **Connect**. The **Connect to Windows Management Instrumentation** dialog box opens.
6. Enter the information for the host where WMI provider is installed.
 - A. In the **WMI namespace** box, type Be sure to put `ROOT\HP\InstrumentedServices\v1`.
 - B. Under **WMI namespace**, select the **Recursive** check box.

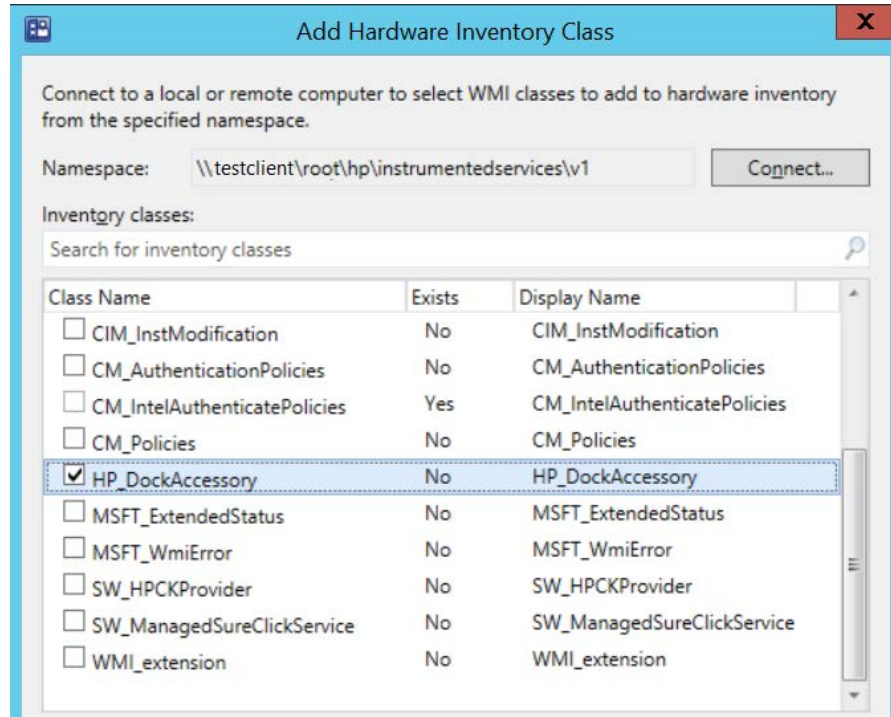
Figure 13. Connect to Windows Management Instrumentation



7. Select **Connect**. The **Add Hardware Inventory Class** dialog box opens.

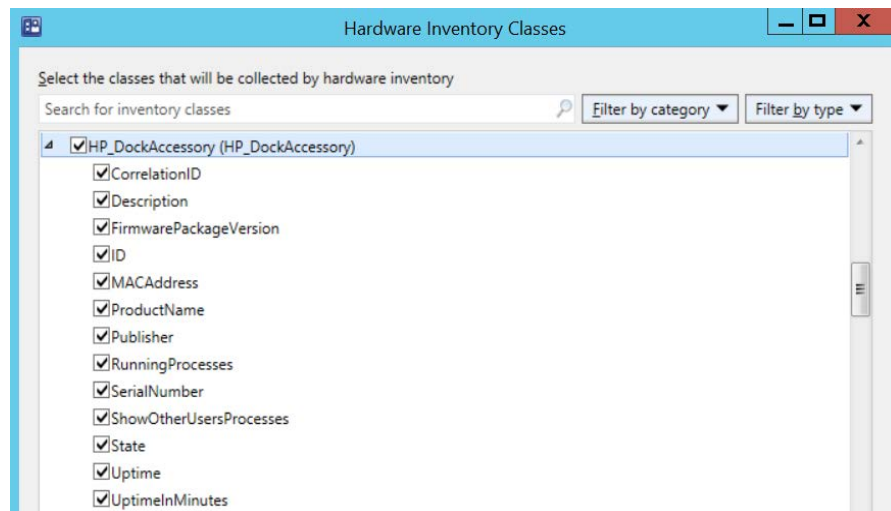
- Browse to the **HP_DockAccessory** class. Select **HP_DockAccessory**, and then select **OK** to add this class to the list of hardware inventory classes.

Figure 14. Add Hardware Inventory Class



- In the **Hardware Inventory Classes** dialog box, select attributes from the **HP_DockAccessory** class to add those attributes to the hardware inventory report. HP recommends selecting the following: **ProductName**, **FirmwarePackageVersion**, **Publisher**, and **SerialNumber**.

Figure 15. Hardware Inventory Classes



- To close the **Hardware Inventory Classes** dialog box, select **OK**.
- To close the **Default Settings** dialog box, select **OK**.

After the updated hardware inventory information from hosts has been collected and processed in Configuration Manager, the devices that have firmware installation information are displayed in **Resource Explorer**.

Figure 16. Resource Explorer



For more information

HP USB-C/A Universal Dock G2 specification

<https://support.hp.com/us-en/product/hp-usb-c-a-universal-dock-g2/27767208/document/c06386384>

HP USB-C Dock G5 specification

<https://support.hp.com/us-en/product/hp-usb-c-dock-g5/27767205/document/c06386359>

HP Thunderbolt Dock G2 specification

<https://support.hp.com/us-en/document/c05913756>

HP Client Management Solutions

<https://www.hp.com/go/clientmanagement>

Sign up for updates

hp.com/go/getupdated

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