Dell Thunderbolt Dock

Administrator's Guide

Regulatory Model: K20A
Regulatory Type: K20A001
November 2023
Rev. A01

DELL Technologies

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Contents

Chapter 1: Introduction....4

Chapter 2: Dell docking station firmware update....5
Updating the firmware....5
Update on Disconnect (UoD)....8
Command-Line options....10
Approximate firmware update duration....10
Smart update....11
Logging....11
Error handling....11
Error handling conditions....11
Setting Package Version....12
Commands for Automation....13

Chapter 3: Using Dell Command Update....14

Chapter 4: Dock Asset Management....15
How to inventory Dell Thunderbolt Dock using Dell Command Monitor locally....15
How to inventory Dell Dock, Dell Performance Dock, and Dell Thunderbolt Dock using Dell Command | Monitor remotely....16
Dell Dock Firmware Update Service Agent....16
Create application wizard in Configuration Manager Console....18
SCCM Integration....22
SCCM setup for remote deployment....23

Chapter 5: Getting help and contacting Dell....24

1

Introduction

This guide is for IT professionals and engineers, to get more information about the following technical topics:

- Step-by-step stand-alone DFU (Dock Firmware Update) and driver update utilities.
- Using DCU (Dell Command | Update) for driver download.
- Dock asset management locally and remotely through DCM (Dell Command | Monitor) and SCCM (System Center Configuration Manager).

2

Dell docking station firmware update

About this task

NOTE: Dell Docking stations are supported with select Dell systems. See the Dell Commercial Docking Compatibility Guide for the list of supported systems and recommended docking.

Topics:

- Updating the firmware
- Update on Disconnect (UoD)
- Command-Line options
- Approximate firmware update duration
- Logging
- Error handling
- Setting Package Version
- Commands for Automation

Updating the firmware

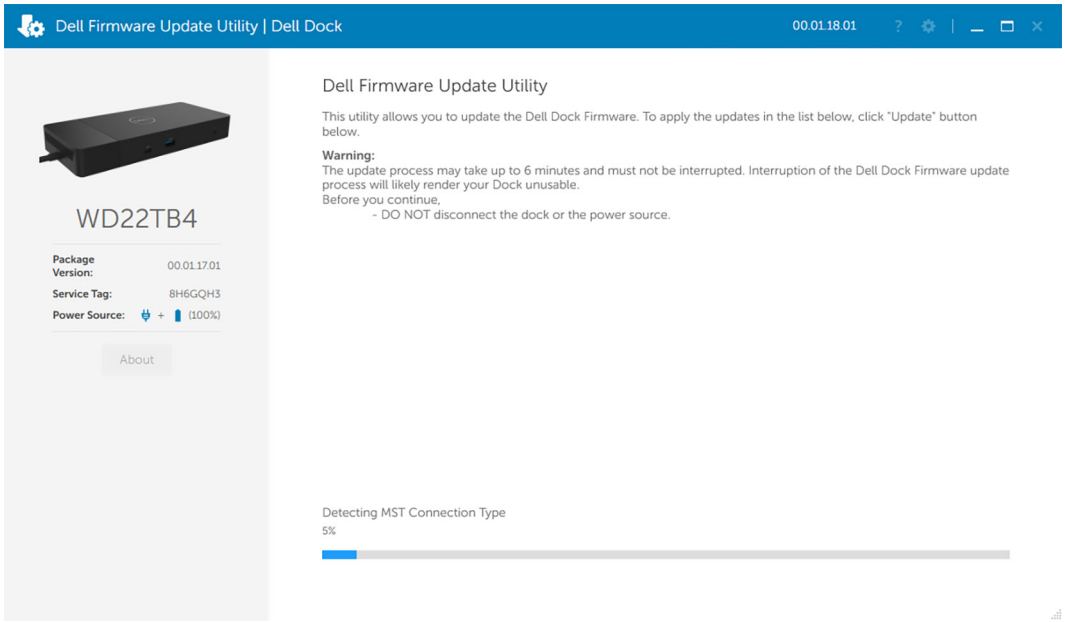
Dell Thunderbolt Dock - WD22TB4 supports multi operating system firmware update for Windows/Linux/Chrome.

Prerequisites

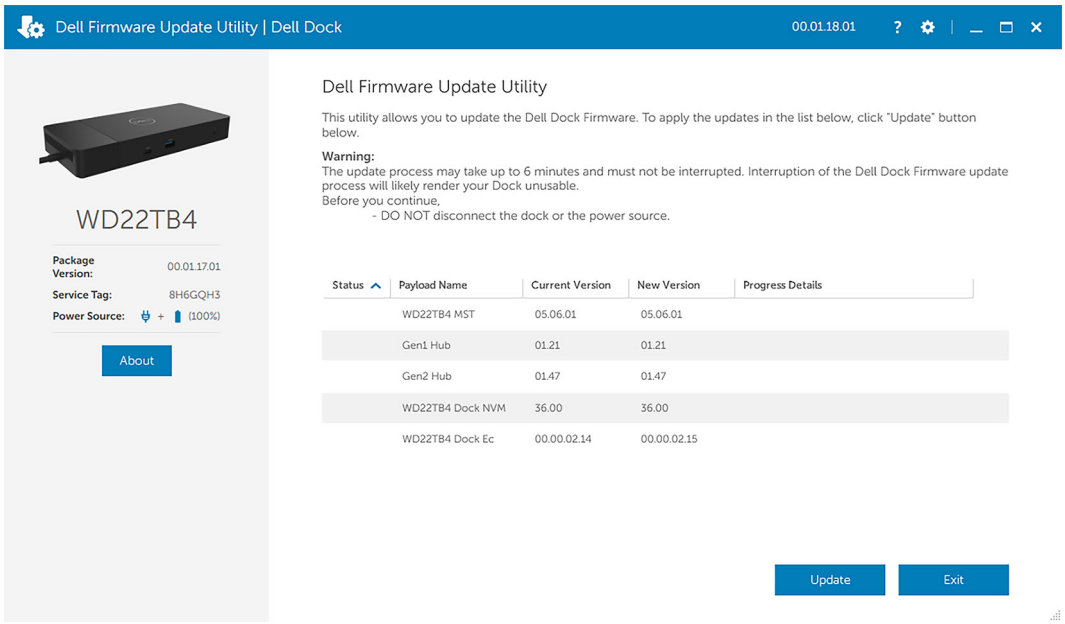
1. The following conditions must be met to update firmware:
   - Thunderbolt driver required (applicable to Thunderbolt supported systems only).
   - Minimum Thunderbolt driver version is required (Thunderbolt supported system only).
   - System must have > 10% charge capacity or connected to AC power.
2. To download the WD22TB4 update tool, go to www.dell.com/support.

Steps

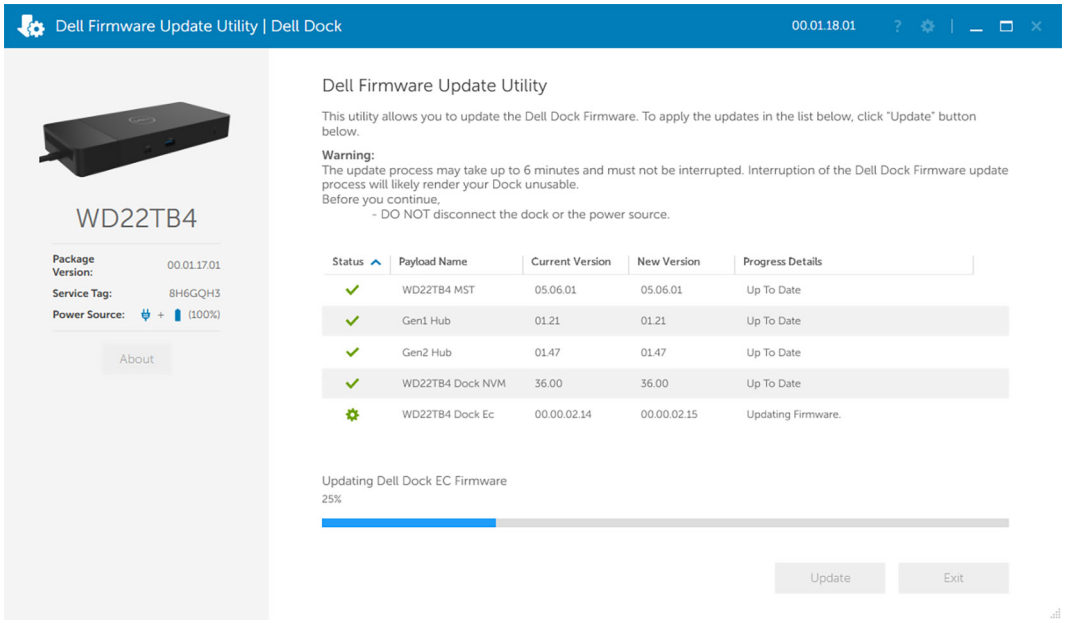
1. **Windows operating system:**
   a. Connect the WD22TB4 docking station to the system.
   b. Start the WD22TB4 update tool in administrative mode.
   c. Wait for all the information to be entered the various GUI panes.



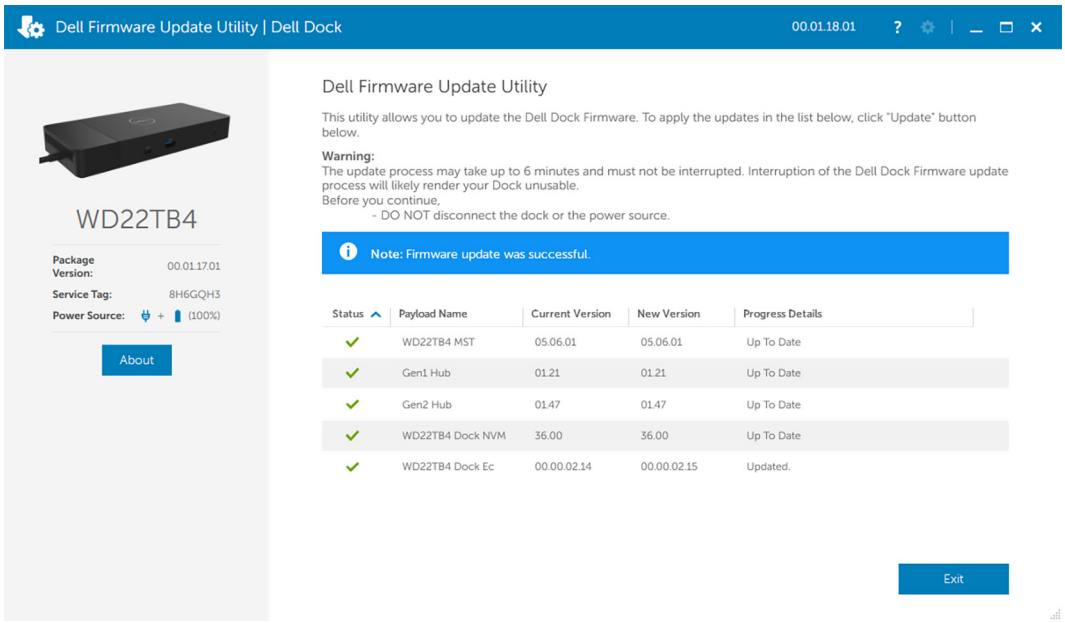
d. **Update** and **Exit** buttons appear in the bottom-right corner. Click the **Update** button.



e. Wait for all the component firmware update to complete. A progress bar is displayed in the bottom.



f. Update status is displayed above the payload information.



2. **Linux operating system:** This firmware update has both the update tool and binary assembled in a single package.

   If you already have fwupd 1.2.5 or later installed on your system, you can fetch update directly from the Linux Vendor Firmware Service (LVFS) by plugging in your dock and using fwupdmgr or Gnome Software to check for updates.

   a. Download the WD22TB4 Linux update tool (DellDockFirmwarePackage_WD19_WD22_Series_XX.YY.ZZ.bin).
   b. Open a terminal application.
   c. Modify the permissions on the binary to make it executable.

      # sudo chmod +x DellDockFirmwarePackage_WD19_WD22_Series_XX.YY.ZZ.bin

   d. Run the binary with the install argument to install updated firmware.

      # sudo ./DellDockFirmwarePackage_WD19_WD22_Series_XX.YY.ZZ.bin install.

      *Resolve any kernel dependency packages as needed.

   e. Unplug the type-C cable and plug it back to the system after one minute.
   f. Check that the WD22TB4 firmware has been upgraded properly.

      # sudo ./DellDockFirmwarePackage_WD19_WD22_Series_XX.YY.ZZ.bin get-devices

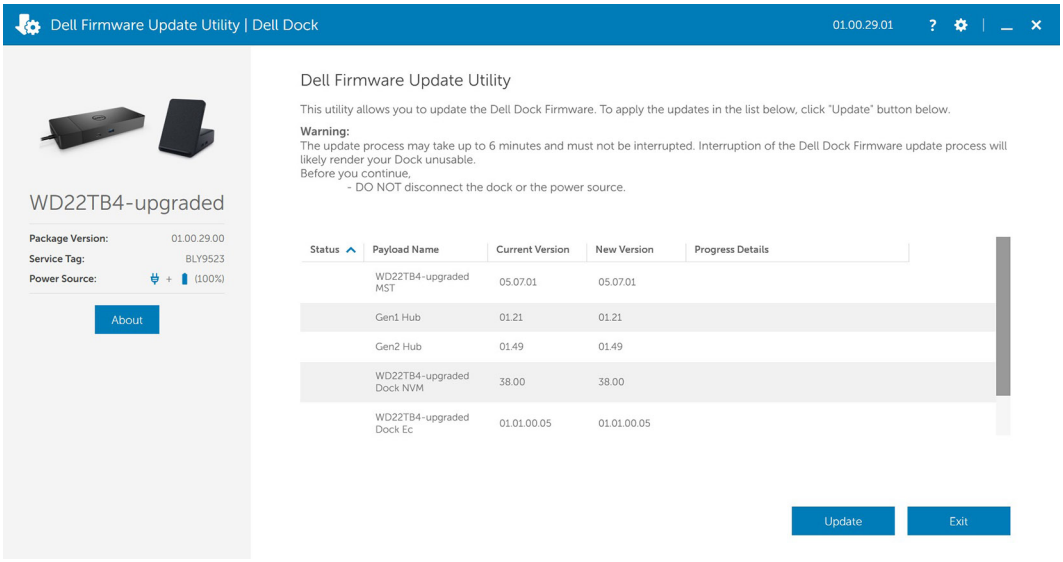
3. **Chrome operating system:**

a. WD22TB4 firmware update will be distributed with the latest Enterprise Chrome book operating system release.
b. Check the firmware version with chrome://system in the browser.

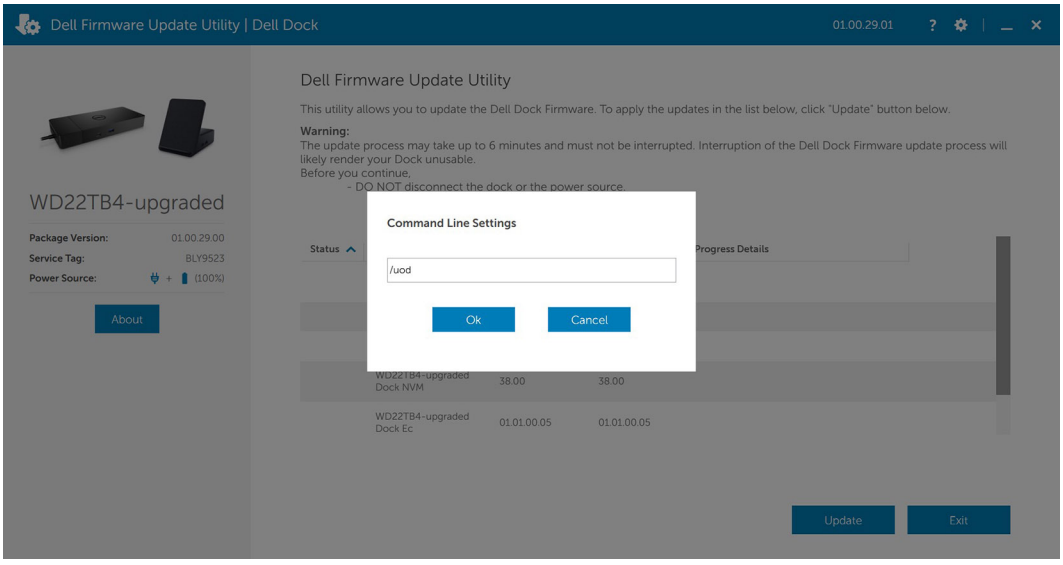
Update on Disconnect (UoD)

Download the Dell WD22TB4 dock driver and firmware update from www.dell.com/support. Connect the dock to the system and start the tool in administrative mode.

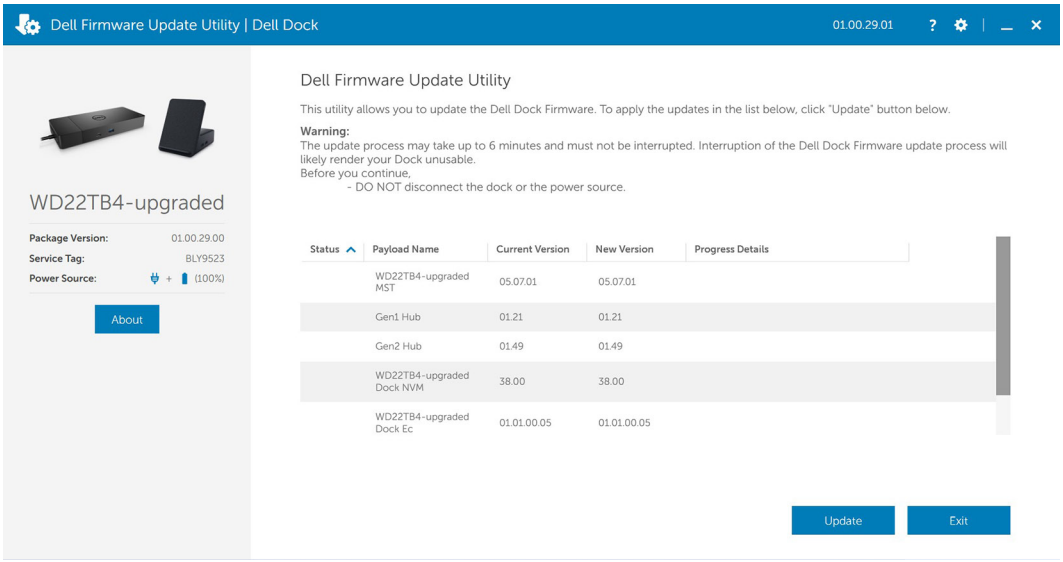
1. Wait for all the information to be entered in the various Graphical User Interface (GUI) panes.



2. The **setting** symbol is displayed on the top-right corner. Click the **Settings** button. Enter **/uod** command and click **Ok**.

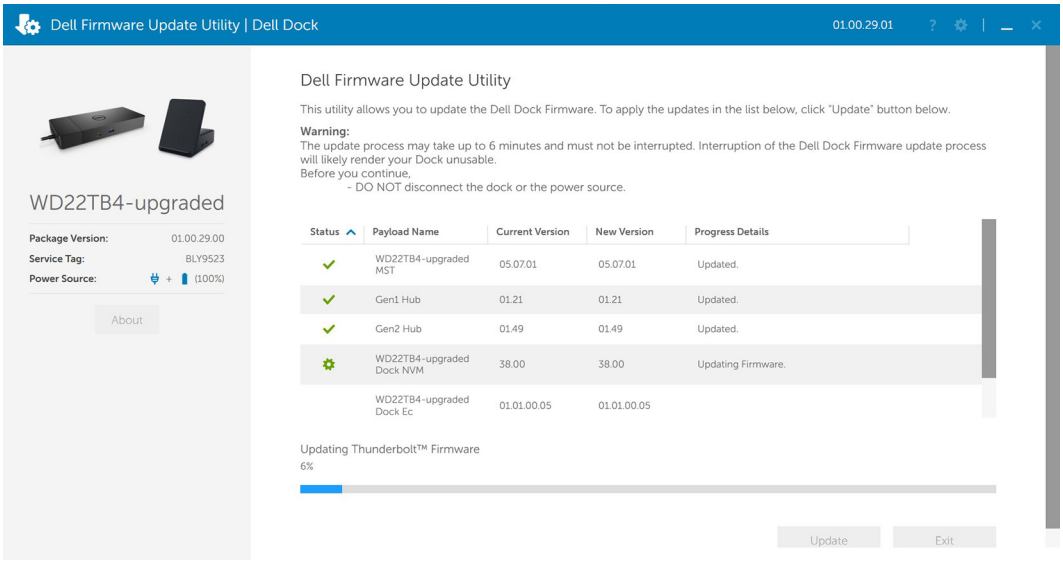


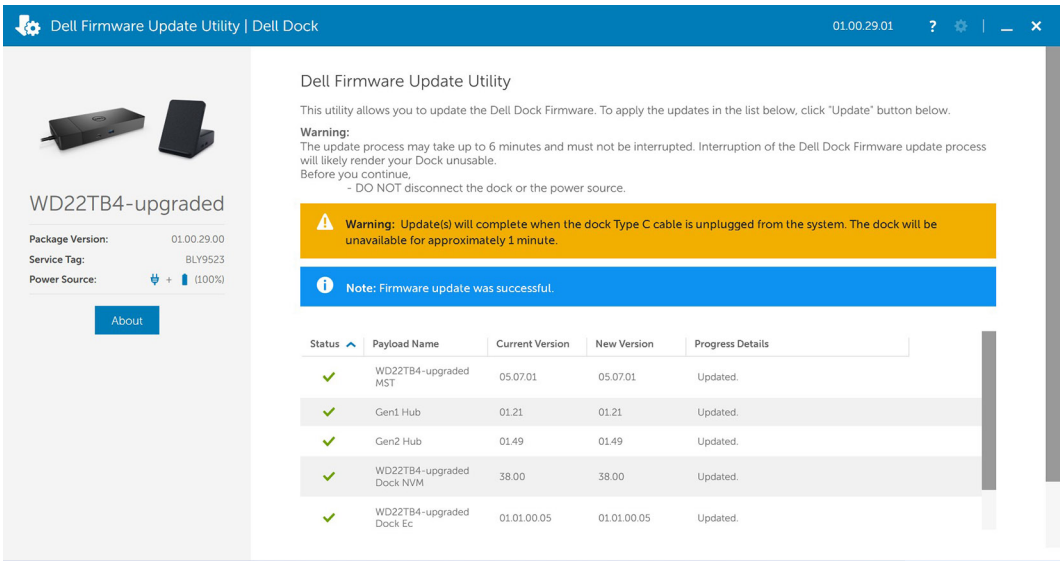
3. **Update** and **Exit** buttons are displayed in the bottom-right corner. Click the **Update** button.



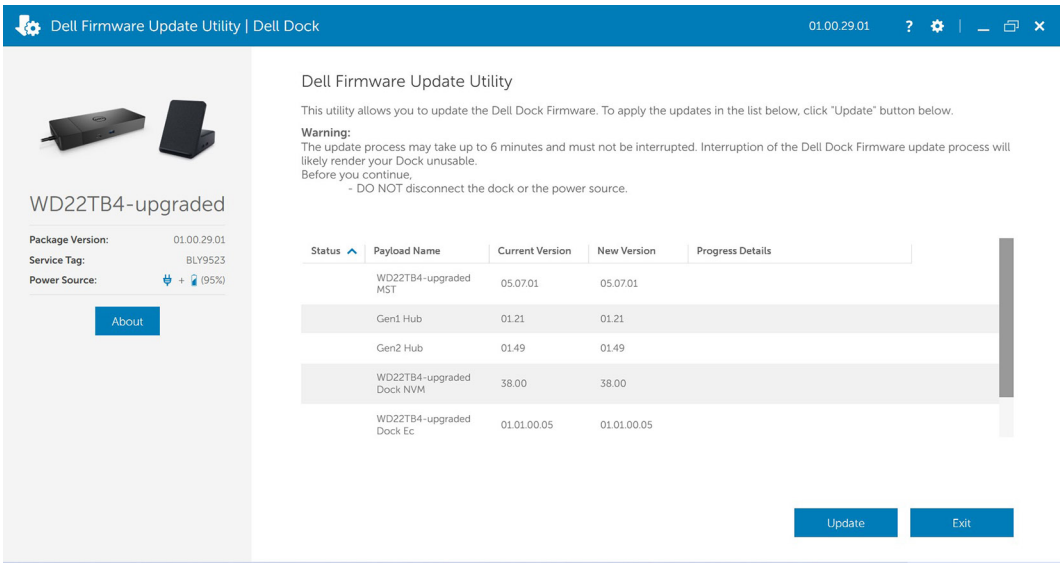
4. Wait for all the component firmware update to complete. A progress bar is displayed in the bottom. The MST/USB Gen1/USB Gen2 firmware is updated.

NOTE: Only EC/NVM (thunderbolt) supports the disconnect mode.





5. Disconnect the dock from the system. The EC starts the updating process, and the process is completed in a minute's time. Power button LED flashes three times to indicate the update is completed.
6. Connect the dock to the system, and start the tool in administrative mode. The Dell Firmware Update Utility is completed.



Command-Line options

About this task

Table 1. Command line options

Command line	Notes
(none)	A guided Dell Dock Firmware Update with messages.
/? or /h	Display the help screen
/s	Silent
/s /r	System restart
/l=<filename>	Log file
/verflashexe	Display utility version
/componentsvers	Display current version of all dock firmware components
/l=<path>	Messages are logged in specific path
/p=<password>	Provides the BIOS password if needed during the update process
/uod	Updates Thunderbolt and EC Firmware on Disconnected mode

Approximate firmware update duration

About this task

The firmware update time duration in the following table is from a measurement running Dock Firmware Utility A07 on a Latitude 5400 with Windows Operating System. These numbers are for reference only and can vary depending on multiple factors including existing firmware and/or devices attached.

Table 2. Approximate firmware update duration

Firmware	Update duration (in seconds)
EC	72
USB Gen1 Hub	15
USB Gen2 Hub	5
MST Hub	48
Intel GR NVM	36

Smart update

About this task

EC, USB Gen1/2 Hub, MST, and Intel GR NVM are updated only if incoming version is new.

Logging

About this task

- Dock utility logs to the default file (/s command-line option).
  - Default log file is at CurrentDrive: \Dell\UpdatePackage\Log\exename.txt
- Optional logging can be done in any mode using /l=logfilename.txt
- Log message is useful for
  - Debugging
  - Service
  - Component version information

Error handling

Error handling conditions

About this task

Table 3. Error handling conditions

Error Condition	Symptom/Scenario	Message	CLI options
Power Check	If there is no AC adapter or battery that is connected on portable platform.	The AC adapter and battery must be plugged in before the dock Firmware can be updated. Press OK when they are both plugged in or CANCEL to quit.	forceit, power check is skipped. /s, error message is not displayed and log will have proper error messages.
	If the battery level is less than 10% on portable platform.	The battery must be charged above 10% before the Dock Firmware can be updated. Press OK when the battery is charged or CANCEL to quit.	
Dock Detection	Dock is not connected or detected to system.	No dock attached. This firmware update utility only works with a single dock attached.	/s, error message is not displayed, and log has proper error messages.

Table 3. Error handling conditions (continued)

Error Condition	Symptom/Scenario	Message	CLI options
	Multiple docks that are connected to the system	Too many docks are attached. This update utility only works when a single dock is attached. Only connect a single dock and restart the update utility to download the latest version and update the driver. Then rerun this utility	
TBT driver not detected (applicable for Thunderbolt supported system only)	The utility returns fail. It also displays the following error message in nonsilent mode.	The Dock Driver must be installed or updated before the dock firmware can be updated. Please go to Dell website.	/s, error message is not displayed, and log has proper error messages.
Firmware update fails	• When one firmware component update fails, the error message shows in the "Progress Details" field for this component. • The utility continues to update other firmware. • After complete firmware update for all components, show the error mess.	Firmware update failed	/s, error message is not displayed, and log has proper error messages.

Automatic dock reboot after firmware update

About this task

Dock automatically reboots when one or more of the components are updated.

NOTE: Dock reboots as part of the EC update or the tool sends a reboot command when EC is not updated and at least one of the components is updated.

Setting Package Version

About this task

Package version is 32 bit BCD format (device saves them in reverse byte order). They tool reverses the bytes for the display purpose. The display format is WW.XX.YY.ZZ. Major, minor, and maintenance versions are represented as WW.XX.YY. The LSB in ZZ (or the MSB in 32 bit raw data) represents the status of the dock update.

- 01 - All components are updated and have valid version.
- 00 - Some of the components are not updated.

The Package version is set before any of the components are updated. If the update is failed on any of the components device reports 0 for LSB (invalid package version).

Table 4. Dell Flash Update Utility Exit code and meaning

Exit code	DUP spec description
0	Success
1	General failure
2	Reboot required
3	Soft dependency Error

Table 4. Dell Flash Update Utility Exit code and meaning (continued)

Exit code	DUP spec description
4	Hard dependency error
5	Hard qualification error
6	Rebooting system
7	Password validation error
8	Downgrade is not allowed
9	Update pending
10	Un specified error

Commands for Automation

About this task

- Run the tool with administrative privileges with the command-line options /s (silent) /l=filename.txt. The update is run in silent mode without GUI or use command-line options: /uod /l=filename.txt. The update runs and only completes when the dock Type-C cable is unplugged from the system. Automation environment can capture the return code (DUP compliant) from the tool for verifying pass or fail status. The logfile (filename.txt) can be used for parsing the dock data and individual component update information.
- After the update, tool can run with /componentsvers /s /l=verfilename.txt. The command is run in the silent mode. Return code can be captured for pass or fail status (DUP compliant). Verfilename.txt contains the current component information.

3

Using Dell Command Update

Dell Docking Station drivers (Realtek USB GBE Ethernet Controller Driver) are required to be installed before using the docking station for full functionality. Dell recommends updating the system BIOS, graphics driver, Thunderbolt driver, and Thunderbolt firmware to the latest version before using the docking station. Older BIOS versions and drivers could result in the docking station not being recognized by your system or not functioning optimally.

Dell highly recommends the Dell Command Update to automate the installation of BIOS, firmware, driver, and critical updates specific to your system and docking station.

For more information about Dell command update user guide. See Dell Command Update.

4

Dock Asset Management

Topics:

- How to inventory Dell Thunderbolt Dock using Dell Command Monitor locally
- How to inventory Dell Dock, Dell Performance Dock, and Dell Thunderbolt Dock using Dell Command | Monitor remotely
- Dell Dock Firmware Update Service Agent
- SCCM Integration

How to inventory Dell Thunderbolt Dock using Dell Command Monitor locally

Prerequisites

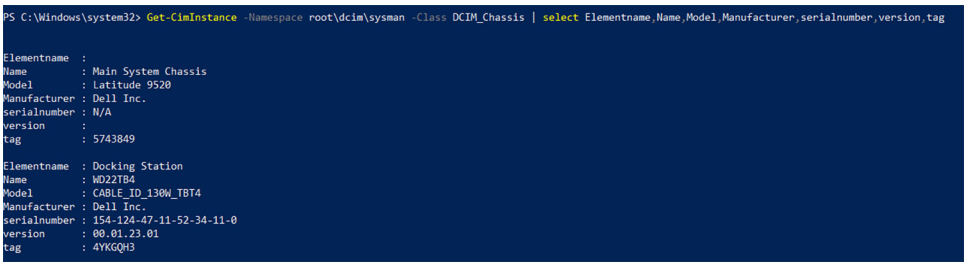
1. Follow the steps in the WD22TB4 firmware update and retrieve dock information by using Dell command monitor locally.

Steps

1. Install Dell Command Monitor 10.2 or later. For detailed install instructions follow Dell command monitor Installation Guide
2. Run the commands given below:
   a. For systems running Windows, Using PowerShell: **Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_Chassis**
   b. For systems running Linux, Using OMICLI: **./ omicli ei root\dcim\sysman DCIM_Chassis**

   NOTE: DCIM_Chassis can have multiple instances. For Dock Details, see instance where CreationClassName = DCIM_DockingStation

3. Screenshot of output:



```
root@u-Precision-7670:/opt/omi/bin# ./omicli ei root/dcim/sysman dcim_chassis
instance of DCIM_Chassis
{
    ElementName=
    Name=Main System Chassis
    [Key] Tag=4958293
    [Key] CreationClassName=DCIM_Chassis
    Manufacturer=Dell Inc.
    Model=Precision 7670
    SKU=N/A
    SerialNumber=N/A
    PartNumber=N/A
    CanBeFRUed=false
    RemovalConditions=2
    PackageType=3
    LockPresent=false
    SecurityBreach=2
    BreachDescription=Unknown
    ChassisPackageType=10
    PropertyOwnershipTag=
}
instance of DCIM_Chassis
{
    ElementName=Docking Station
    Name=WD22TB4
    [Key] Tag=4YKGQH3
    [Key] CreationClassName=DCIM_DockingStation
    Manufacturer=Dell Inc.
    Model=CABLE_ID_130W_TBT4
    SerialNumber=154-124-47-11-52-34-11-0
    Version=00.01.23.01
    PackageType=1
    ChassisPackageType=12
}
```

4. Key dock properties mapping with cim properties:

Table 5. Key dock

Dock data	Dell command | Monitor mapping
Dock service tag	DCIM_Chassis::Tag
Dock FW package version	DCIM_Chassis::Version
Dock module type	DCIM_Chassis::Model
Dock marketing name	DCIM_Chassis::Name
Dock module serial	DCIM_Chassis::SerialNumber

How to inventory Dell Dock, Dell Performance Dock, and Dell Thunderbolt Dock using Dell Command | Monitor remotely

About this task

For more information, see Dell Command Monitor User guide

Dell Dock Firmware Update Service Agent

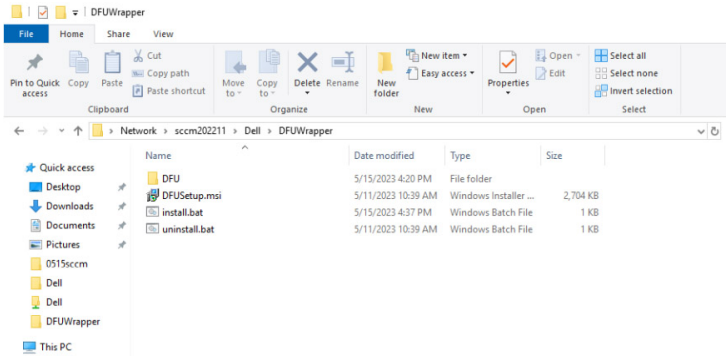
The Dell Dock Firmware Update Service Agent automatically updates the dock to the target firmware once the dock is connected to the system. This agent is intended for Enterprise customers who use Microsoft SCCM (V5.2207.1048.1000).

Prerequisites

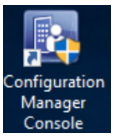
1. Before installing Dell Dock Firmware Update Service Agent, download the Dell dock firmware update from www.dell.com/support.
2. Download Dell Dock Firmware Update Service Agent from www.dell.com/support. For a detailed standard operating procedure, see Dell Dock Firmware Update Service Agent SOP.pdf.

Steps

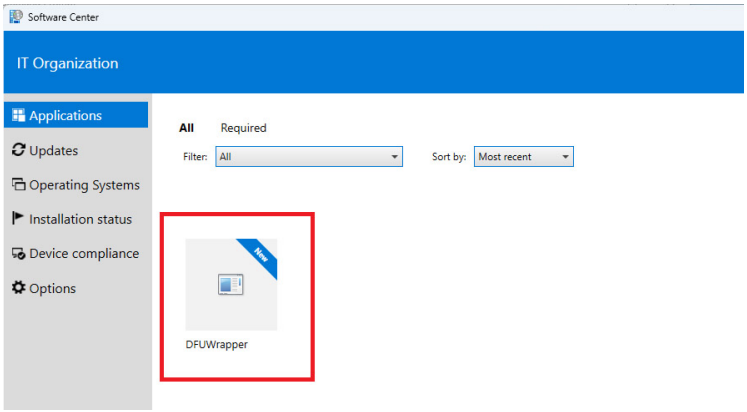
1. Copy the tool DFUWrapper.zip to the SCCM server and extract it. The location is specified in the form \ \Server\Share\DFUWrapper.



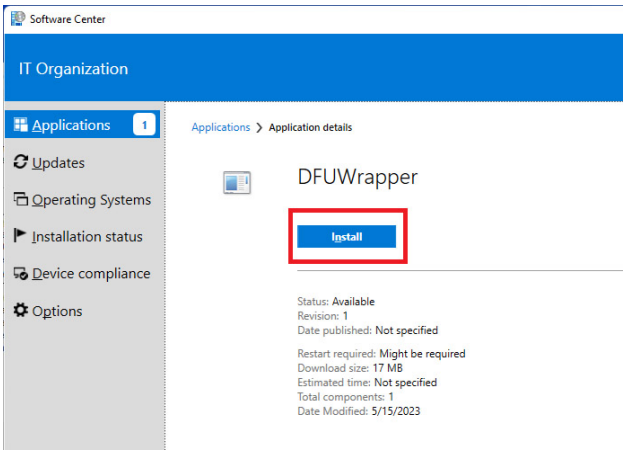
2. Open the **Configuration Manager Console** application on the server.



3. Create the application wizard. For detailed process on how to create the application wizard, see Create application wizard in Configuration Manager Console.
4. Set up the client environment. (For example: Add a server domain, install Configuration Manager, and so on).
5. Deploy the application to the server.
6. The DFUWrapper tool becomes available on **Software Center** after a few minutes.



7. Click **Install**.



8. To ensure the application is installed successfully, check the following:
   - Dell Dock Firmware Update Package shows in Programs and Features.

- Under Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Dell\Dell.DFU.Service, registry DFUToolArgs, and DFUToolPath are created.
- Service Dell Dock Firmware Update Service is running

9. Prepare a dock with older firmware.
10. Connect the dock to the system where the DFUWrapper tool is installed.
11. Wait for up to 6 minutes and reopen the dock firmware utility.
    The new firmware version is displayed confirming the dock firmware update is successful.

NOTE: For manual installation (not through SCCM), follow Steps 8 to 11.

NOTE: To update dock firmware right after installing the wrapper tool, connect the dock to the system before Step 7.

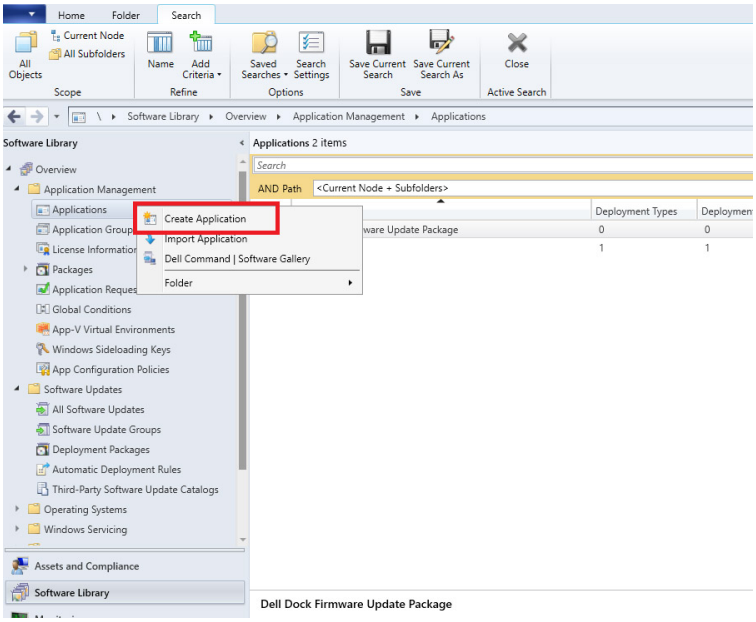
Create application wizard in Configuration Manager Console

About this task

To create an application wizard in **Configuration Manager Console**, do the following:

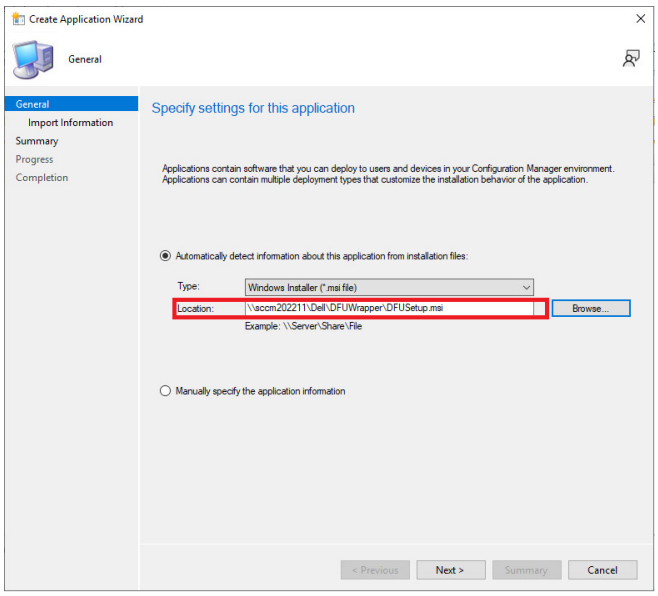
Steps

1. In the **Configuration Manager Console**, choose **Software Library** > **Overview** >**Application Management** > **Applications**.
2. Right-click and select **Create Application**.
   The **Create Application Wizard** window is displayed.

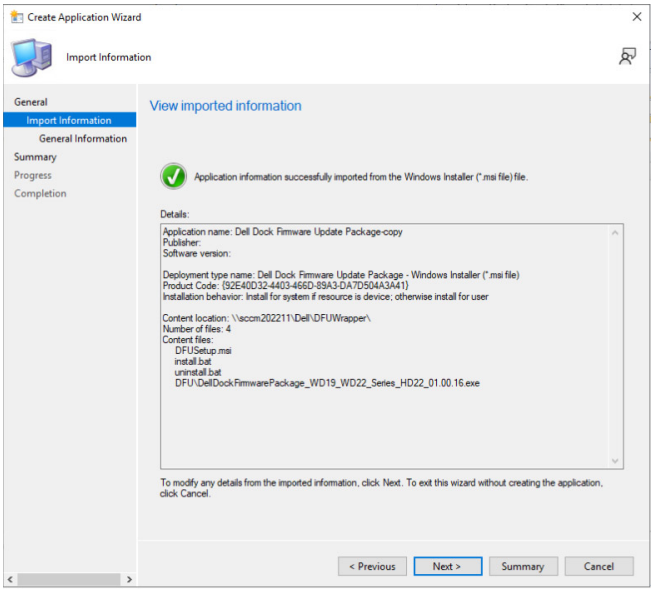


3. On the **General** page of **Create Application Wizard**, do the following:
   a. Select **Automatically detect information about this application from installation files**.
   b. For **Type**: Click drop-down and choose **Windows Installer (*.msi file)** from list.

c. For **Location**: Click **Browse** and choose the location of the installation file **DFUSetup.msi**.

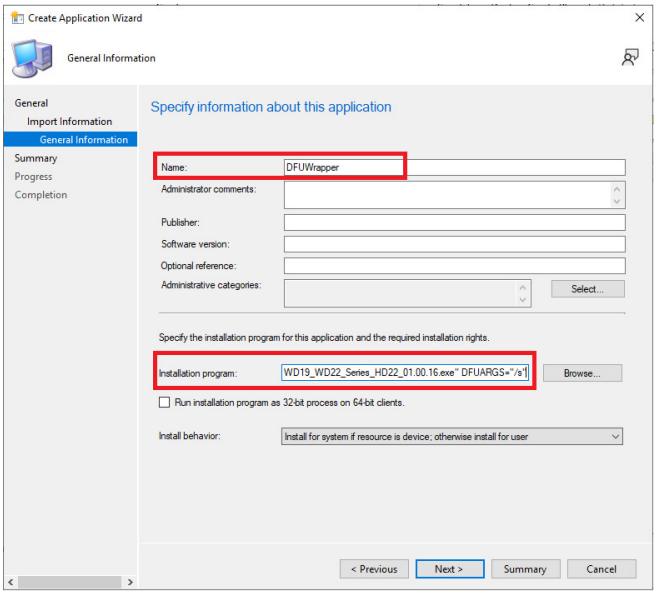


4. Click **Next**.
   The **Import Information** page is displayed.

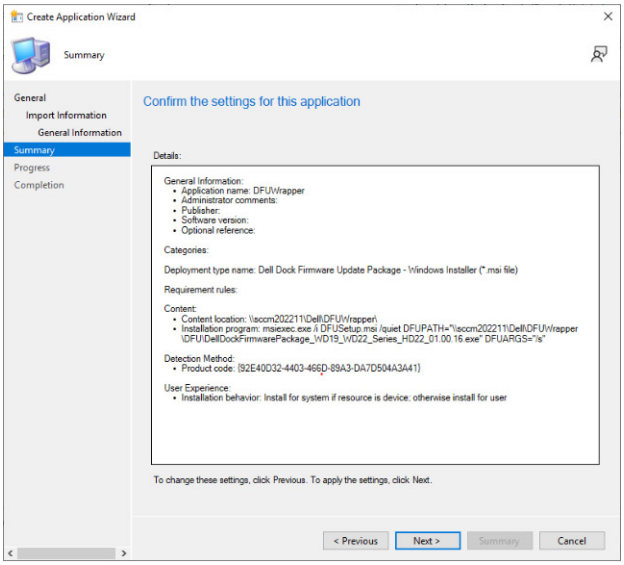


5. Check the details and click **Next**.
   The **General Information** page is displayed.
6. On the **General Information** page, do the following:
   a. In the **Name** field, enter the name DFUWrapper.
   b. In the **Installation program** field, enter the command msiexec.exe /i DFUSetup.msi /quiet DFUPATH= \\SCCM2022\Dell\DFUWrapper\DFU\DellDockFirmwarePackage_WD19_WD22_Series_HD22_01.00.16.exe DFUARGS="/s"

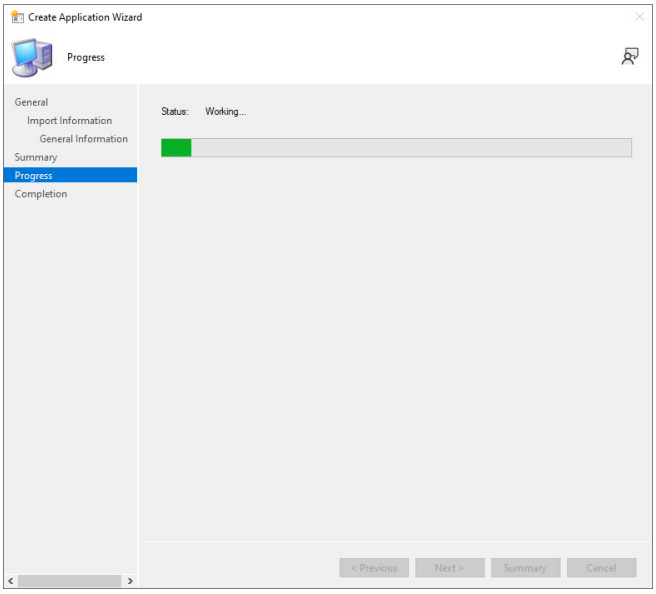
   NOTE: DFUPATH is the path of the DFU package on the server.



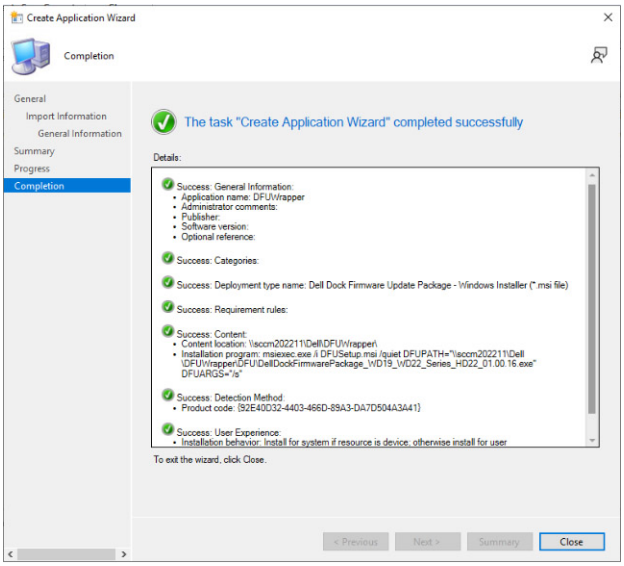
7. Click **Next**.
   The **Summary** page is displayed.
8. On the **Summary** page, check the application settings detail.



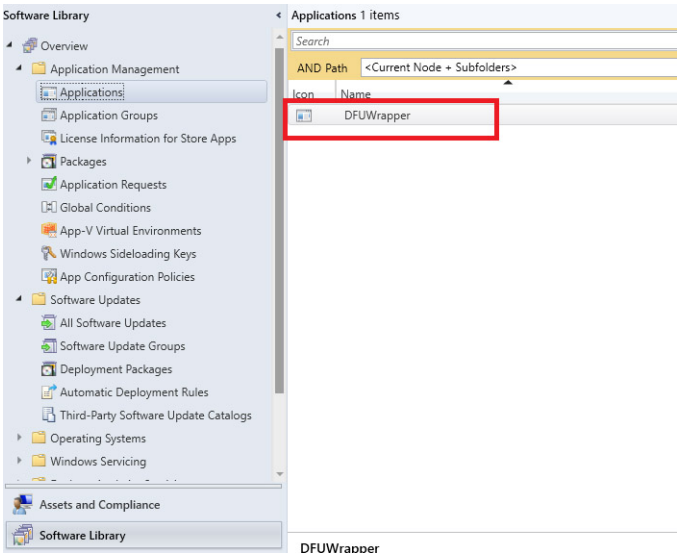
9. Click **Next**.
   The **Progress** page is displayed.



10. Wait for the application creation wizard process to complete.
11. Click **Next**.
    The **Completion** page is displayed.



12. Click **Close** to complete the wizard.
13. Reconfirm the newly created application. To reconfirm the new created application, do the following:
    a. In the **Software Library** workspace, expand **Application Management**.
    b. Choose **Applications** to see the application.



SCCM Integration

About this task

Using the MOF file within Dell Command | Monitor install package, which contains all the Dell Command | Monitor classes and importing to ConfigMgr.

Post Dell Command | Monitor installation, the integration MOF is placed at: C:\Program Files\Dell\Command_Monitor\ssa\omacim\OMCI_SMS_DEF.mof. For more information about integration watch, SCCM intergration.

Issue: SCCM-Client hardware inventory does not display version information for WD22TB4.

Description: OMCI_SMS_DEF.mof file is missing Version property for DCIM_Chassis Class. SCCM-Client hardware inventory does not display version information for WD22TB4.

Resolution: To resolve this, the user must update the OMCI_SMS_DEF.mof file as suggested in steps below:

Steps

1. Edit OMCI_SMS_DEF.mof file using text editor.
2. Search for "DCIM Chassis and Docking."
3. At the end, make an entry for [SMS_Report (TRUE)] string Version. As shown in below screenshot.
4. Once edited, reimport the updated OMCI_SMS_DEF.mof file in SCCM to fetch updated Client Hardware Inventory.

```
[ SMS_Report(TRUE), SMS_Group_Name("DCIM Chassis and Docking"), SMS_Class_ID
("DELL|DCIM_Chassis|1.0"), SMS_Namespace(FALSE), Namespace("\\\\.\\root\\dcim\\sysman") ]
class DCIM_Chassis : SMS_Class_Template
{
[SMS_Report (TRUE)]     string  BreachDescription;
[SMS_Report (TRUE)]     boolean CanBeFRUed;
[SMS_Report (TRUE)]     uint16  ChassisPackageType;
[SMS_Report (TRUE), Key]        string  CreationClassName;
[SMS_Report (TRUE)]     string  ElementName;
[SMS_Report (TRUE)]     datetime FirstPowerOnDate;
[SMS_Report (TRUE)]     boolean LockPresent;
[SMS_Report (TRUE)]     string  Manufacturer;
[SMS_Report (TRUE)]     datetime ManufactureDate;
[SMS_Report (TRUE)]     string  Model;
[SMS_Report (TRUE)]     string  Name;
[SMS_Report (TRUE)]     uint16  PackageType;
[SMS_Report (TRUE)]     string  PartNumber;
[SMS_Report (TRUE)]     string  SerialNumber;
[SMS_Report (TRUE)]     string  SKU;
[SMS_Report (TRUE), Key]        string  Tag;
[SMS_Report (TRUE)]     string  PropertyOwnershipTag;
[SMS_Report (TRUE)]     uint16  SecurityBreach;
};
```

```
[ SMS_Report(TRUE), SMS_Group_Name("DCIM Chassis and Docking"), SMS_Class_ID
("DELL|DCIM_Chassis|1.0"), SMS_Namespace(FALSE), Namespace("\\\\.\\root\\dcim\\sysman") ]
class DCIM_Chassis : SMS_Class_Template
{
[SMS_Report (TRUE)]     string  BreachDescription;
[SMS_Report (TRUE)]     boolean CanBeFRUed;
[SMS_Report (TRUE)]     uint16  ChassisPackageType;
[SMS_Report (TRUE), Key]        string  CreationClassName;
[SMS_Report (TRUE)]     string  ElementName;
[SMS_Report (TRUE)]     datetime FirstPowerOnDate;
[SMS_Report (TRUE)]     boolean LockPresent;
[SMS_Report (TRUE)]     string  Manufacturer;
[SMS_Report (TRUE)]     datetime ManufactureDate;
[SMS_Report (TRUE)]     string  Model;
[SMS_Report (TRUE)]     string  Name;
[SMS_Report (TRUE)]     uint16  PackageType;
[SMS_Report (TRUE)]     string  PartNumber;
[SMS_Report (TRUE)]     string  SerialNumber;
[SMS_Report (TRUE)]     string  SKU;
[SMS_Report (TRUE), Key]        string  Tag;
[SMS_Report (TRUE)]     string  PropertyOwnershipTag;
[SMS_Report (TRUE)]     uint16  SecurityBreach;
[SMS_Report (TRUE)]     string  Version;
};
```

SCCM setup for remote deployment

About this task

Information provided in the document available here Dell Catalog to Support Microsoft System Center Configuration Manager for Dell Hardware Updates.

For more information about Dell command update Users Guide. See Dell Command | Monitor version user's guide.

For more information about Dell command update Installation Guide. See Dell Command | Monitor version installation guide.

5

Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Table 6. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell app	
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support. For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles for a variety of computer concerns	1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

NOTE: Availability varies by country/region and product, and some services may not be available in your country/region.

NOTE: If you do not have an active Internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog.