

Latitude 5421

Re-imaging guide for Windows 10



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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Installation overview

CAUTION: This re-imaging guide is designed for system administrators. Do not attempt to re-image the system if you are not an administrator or if you are unsure of the procedures. Failure to follow instructions may result in permanent data loss.

NOTE: Information provided in this guide is applicable to computers with Windows 10 only.

NOTE: With the introduction of Windows 10, Microsoft has prioritized driver installations via Universal Windows Platform (UWP) from the Microsoft Store. UWP applications replace Windows executable drivers and are a more secure method of driver installation. Some domain administrators may place limits of Microsoft Store accessibility. If you have questions about accessing the Microsoft Store for driver updates, contact your administrator.

NOTE: Dell recommends that you download and install the device drivers from the Dell [Drivers & Downloads](#) website. Installing device drivers from a non-Dell website can cause system performance issues, corrupt operating system files, blue screen errors, unexpected shutdowns, or infect your computer with malicious software.

Device drivers must be updated when you reinstall the operating system using either a CD, DVD, USB key, or when you are facing networking, graphics, sound or other hardware-related problems. Dell recommends that you install or update device drivers if you have performed a factory reset of your Dell computer using the [Dell Backup and Recovery](#) application or other factory-reset methods. This ensures that you have the latest device drivers installed on your computer and that the devices function optimally.

Installing or updating device drivers may lead to the following improvements:

- Increases in system performance
- Patched security risks
- Expanded compatibility
- Fixed device issues
- Support for new features

However, if your computer is operating normally and there are no driver issues or updates being prompted by Windows, driver updates may be unnecessary. Updating drivers unnecessarily may create new problems.

Review the importance of each driver update on the Dell [Drivers & Downloads](#) page before assessing the need to continue with an update.

Introduction

CAUTION: This re-imaging guide is designed for system administrators. Do not attempt to re-image the system if you are not an administrator or are unsure of the procedures. Failure to follow instructions may result in permanent data loss.

NOTE: Information that is provided in this guide is applicable to computers with Windows 10 only.

Re-imaging is the process of removing all software on the computer and reinstalling the removed software. Re-imaging is required when software in the computer is corrupted or damaged and it can also be used as a means of removing harmful and malicious software in your computer. This re-imaging guide provides the steps that are required for re-imaging your computer.

This guide assists you in installing Dell-recommended software stack and settings, drivers, and applications, which are tested and validated on your computer. The installation of the listed drivers and applications as described in the guide enhances the optimal performance of your computer.

Dell also provides drivers and applications that are not included with the Windows operating system. These drivers are required to enable the following solid-state drives (SSDs):

- 128 GB SSD
- 256 GB PCIe SSD
- 512 GB PCIe SSD
- 1024 GB PCIe SSD
- 2048 GB PCIe SSD and larger capacity size PCIe SSDs

It is always recommended to re-image on a newly-installed operating system and not from any previous image-build. Ensure BIOS settings are appropriately set and the latest drivers and applications are used when re-imaging the computer.

Order of reinstallation

NOTE: Some drivers and application installation steps may not be applicable, depending on the configuration of the computer you have ordered.

To achieve optimal performance, install the drivers and applications in the following sequence:


1. **BIOS:** Enables the operating system to be loaded into the memory and enables the initial setup process on your computer.
2. **Windows 10 operating system:** The operating system controls the system's hardware to be a base on which other software can operate on.
3. **Intel chipset driver:** Allows Windows to communicate and adjust settings on components on the system board which includes:
 - Intel Chipset Device Software Driver
 - Intel Management Engine Components Installer
 - Intel Serial IO Driver
 - Intel HID Event Filter Driver
 - Intel Thunderbolt Controller Driver
 - Intel Dynamic Tuning Driver
 - Intel Integrated Sensor Solution Driver
4. **Critical Microsoft Quick Fix Engineering (QFE) updates:** Microsoft updates that fix and optimize the operating system.
5. **Intel Rapid Storage Technology (IRST):** Enables and enhances data storage virtualization for the storage drives installed in the computer.
6. **Graphics driver:**
 - Enhances and optimizes video performance.
 - Enables and provides additional functionality not included in the native Microsoft VGA driver, including:
 - User-customizable power management features
 - Portability and behavioral profiles
 - Multiple-monitor support
7. **Audio driver:** Enables and enhances the audio controller.
8. **Security drivers,** which include:
 - Dell ControlVault3 driver and firmware
 - IR camera
9. **Dell applications,** which include:
 - Dell Update application
 - Dell Power Manager (DPM)
10. **Networking and communication drivers,** which include:
 - Wireless Local Area Network (WLAN) adapter driver: Enables and enhances the wireless adapter.
 - Bluetooth driver: Enables and enhances the Bluetooth adapter.
11. **Dell Client Command Suite**

NOTE: Dell Client Command Suite is the new name of our industry leading Client Systems Management tools. These tools make Dell commercial client systems the world's most manageable client devices. Click [Dell Client Command Suite](#) for more details

Updating or resetting the BIOS

Flashing the BIOS

It is recommended to flash the BIOS when an update is available or when you replace the system board. To flash the BIOS:

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.
 **NOTE:** If you do not have the Service Tag, use the product ID or manually browse for your computer model.
4. Click **Drivers & downloads > Find drivers**.
5. Select the operating system installed on your computer.
6. Scroll down the page and expand **BIOS**.
7. Click **Download** to download the latest version of the BIOS for your computer.
8. After the download is complete, navigate to the folder where you saved the BIOS update file.
9. Double-click the BIOS update file icon and follow the instructions on the screen.

Clearing CMOS settings

In the event that flashing your computer with the latest BIOS update results in your computer being unable to boot, a BIOS reset is necessary. Clearing the CMOS settings will reset the BIOS to factory settings. For more information about clearing the CMOS settings, see your computer's *Service Manual*.

Trusted Platform Module (TPM) security

TPM must be enabled in the BIOS setup program for it to be deployed on the computer. Follow these steps to enable and configure the TPM:

1. Turn on or restart your computer.
2. Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.
The BIOS setup program is displayed.
3. On the left pane, select **Security**.
4. Select or clear any of the following options to enable or disable it, respectively:
 - **TPM state (Enabled or Disabled):**
 - Enabled: The BIOS will enable the TPM during POST and it can be accessed by the operating system.
 - Disabled: The BIOS will not enable the TPM during POST and it cannot be accessed by the operating system.
 - **TPM 2.0 security On:** The TPM is enabled and activated.
 - **Clear:** The BIOS clears the information stored in the TPM.
5. Save the settings and exit.

Reinstalling the operating system

The Windows 10 (64-bit) operating system is validated for use on this computer. You can reset or reinstall the operating system under different scenarios. For more information about reinstalling the operating system, see the knowledge base article [SLN297920](https://www.dell.com/support/article/SLN297920) at www.dell.com/support.

Before attempting a reinstall of your operating system, Dell recommends that you backup all data as described in the [Microsoft knowledge base article](#).


Reinstalling drivers and applications

Drivers and applications are software that enables Windows 10 to communicate with the hardware devices and software in your computer. Devices such as video and sound cards require drivers to function correctly within Windows, and enable users to adjust hardware settings.

Windows 10 includes drivers for most devices, but device-specific drivers may have to be downloaded and installed separately. Dell recommends that you download the device drivers for your Dell computer from [Drivers & Downloads](#).

Applications must be downloaded and installed separately. Dell recommends that you download the required applications for your Dell computer from the [Dell Download Center](#).

Displaying drivers and applications on your computer

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.
 **NOTE:** If you do not have the Service Tag, use the product ID or manually browse for your computer model.
4. Click **Drivers & downloads > Find drivers**.
5. Select the Windows operating system installed on your computer to get a list of the drivers and applications available on your computer.

Reinstallation sequence for drivers and applications

Driver installation is critical after reinstalling the Windows operating system on your Dell computer. Install the drivers in the correct sequence for your computer to function correctly. In some scenarios, you may have to reinstall or update the device driver if you are encountering issues with a specific device.

For more information, see the Dell knowledge-base article [SLN148687](https://www.dell.com/support) at www.dell.com/support.

NOTE: The Windows 10 operating system includes touchpad drivers; no other touchpad-driver installation is required.

NOTE: The Windows 10 operating system includes the webcam drivers; no additional webcam-driver installation is required. For video capture or streaming, users can install webcam software available from third-party providers.

Dell recommends installing drivers or applications in the following sequence.

Intel chipset device software

The Windows operating system may not include the updated Intel chipset device software for Dell computers. The Intel chipset device software is available on Dell's support site www.dell.com/support.

Downloading and installing the chipset driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.

NOTE: If you do not have the Service Tag, use the product ID or manually browse for your computer model.

4. Click **Drivers & downloads > Find drivers**.
5. Scroll down the page and expand **Chipset**.
6. Click **Download** to download the chipset driver for your computer.
7. After the download is complete, navigate to the folder where you saved the chipset driver file.
8. Double-click the chipset driver file icon and follow the instructions on the screen.

Critical Microsoft Quick Fix Engineering (QFE) updates

Dell recommends installing all the latest available QFE updates from the latest Windows Service Pack. Service packs are automatically downloaded and installed when Windows Updates are enabled and can also be manually-downloaded and installed from the Microsoft support site.

Graphics

The Windows operating system includes the VGA-graphics driver only. For optimal-graphics performance, install the Dell-graphics driver applicable to your computer from www.dell.com/support.

Downloading and installing the Dell graphics driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag, use the product ID or manually browse for your computer model.


4. Click **Drivers & downloads > Find drivers**.
5. Scroll down the page and expand **Video**.
6. Click **Download** to download the graphics driver for your computer.
7. After the download is complete, navigate to the folder where you saved the graphics driver file.
8. Double-click the graphics driver file icon and follow the instructions on the screen.

Audio

The Windows operating system does not include the audio driver recommended by Dell. Install the HD audio driver available for download from www.dell.com/support.

Downloading and installing the Dell audio driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag, use the product ID or manually browse for your computer model.


4. Click **Drivers & downloads > Find drivers**.
5. Scroll down the page and expand **Audio**.
6. Click **Download** to download the audio driver for your computer.
7. After the download is complete, navigate to the folder where you saved the audio driver file.
8. Double-click the audio driver file icon and follow the instructions on the screen.

Dell ControlVault3 Driver Firmware

Dell ControlVault3 contains software that protects data in your computer from disclosure or modification. The software package is available on Dell's support site www.dell.com/support.

Downloading and installing the Dell ControlVault3 driver and firmware

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.


 **NOTE:** If you do not have the Service Tag, use the product ID or manually browse for your computer model.

4. Click **Drivers & downloads > Find drivers**.
5. Scroll down the page and select **Security** in the category.
6. Click **Download** to download the software package for your computer.
7. After the download is complete, navigate to the folder where you saved the Dell ControlVault3 driver and firmware.
8. Double-click the Dell ControlVault3 driver file icon and follow the instructions on the screen.

IR Camera Driver

IR Camera driver enables all the advanced camera features in your computer. The software package is available on the www.dell.com/support.

Downloading and installing the IR camera driver


1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Submit**.
 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click **Drivers & downloads > Find it myself**.
5. Scroll down the page and expand **Mouse, keyboard & Input Devices**.
6. Click **Download** to download the audio driver for your computer.
7. After the download is complete, navigate to the folder where you saved the IR camera driver file.
8. Double-click the audio driver file icon and follow the instructions on the screen.

Dell Power Manager Service

Dell Power Manager (DPM) service is a Dell-developed application that provides simplified and efficient power management capabilities for Dell computers. Following are the key features of DPM:

- **Battery information**—Provides battery health information, adjust battery settings or create a custom-battery setting.
- **Advanced charge mode**—Allows you to control battery charging to prolong battery life.
- **Peak shift**—Allows you to reduce power consumption by automatically switching the computer to battery power during certain times of the day, even when the computer is plugged into a direct power source.
- **Thermal management**—Allows you to control processor and cooling fan settings to manage performance, system surface temperature, and fan noise.
- **Battery extender**—Conserves battery charge by affecting CPU power level, screen brightness and keyboard illumination levels, and by muting audio.
- **Alerts management**—Enable or disable adapter, battery, docking station, thermal, and other types of alerts.
- **Group policies**—You can easily apply default settings and/or prevent users from changing power alerts system events, power management, thermal management, battery extender, and battery settings.
- **Product feedback**—You can provide feedback about the software.

Downloading and installing the DPM


1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.
 **NOTE:** If you do not have the Service Tag, use the product ID or manually browse for your computer model.
4. Click **Drivers & downloads > Find drivers**.
5. Scroll down the page and select **System Management** in the category.
6. Click **Download** to download the DPM application for your computer.
7. After the download is complete, navigate the folder where you saved the DPM file.
8. Double-click the DPM file icon and follow the instructions on the screen.

Wireless Local Network (WLAN) drivers and applications

The Windows 10 operating system does not provide native-device driver support for WLAN controllers on Dell computers. To obtain wireless network functionality, install the relevant WLAN drivers from the Dell support site. WLAN applications, which provide additional features including enterprise authentication enhancements, can also be installed from the Dell support site.

Downloading and installing the Wi-Fi driver


1. Turn on the computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

4. Click **Drivers & downloads > Find drivers**.
5. Scroll down the page and expand **Network**.
6. Click **Download** to download the Wi-Fi driver for your computer.
7. After the download is complete, navigate to the folder where you saved the Wi-Fi driver file.
8. Double-click the Wi-Fi driver file icon and follow the instructions on the screen.

Dell Docking Station WD19/WD19DC


The Dell Docking Station WD19/WD19DC is a device that links all your electronic devices to your computer using a Thunderbolt 3 (Type-C) cable interface. Connecting the computer to the docking station enables you to access to all peripherals such as mouse, keyboard, stereo speakers, external hard drive, and large-screen displays, without having to plug each device directly to the computer.

 **CAUTION:** You must update your computer's BIOS and the Dell Docking Station drivers to the latest versions available on Dell support site before using the docking station. Older BIOS versions and drivers could result in the docking station not being recognized by your computer or not functioning optimally.

For more information about the drivers required for the Dell Docking Station WD19/WD19DC , see www.dell.com/support.

Dell Thunderbolt Dock WD19TB

The Dell Thunderbolt Dock WD19TB is a device that links all your electronic devices to your computer using a Thunderbolt 3 (Type-C) cable interface. Connecting the computer to the docking station enables you to access to all peripherals such (mouse, keyboard, stereo speakers, external hard drive, and large-screen displays) without having to plug each device into the computer.

 **CAUTION:** You must update your computer's BIOS and the Dell Docking Station drivers to the latest versions available on Dell support site before using the docking station. Older BIOS versions and drivers could result in the docking station not being recognized by your computer or not functioning optimally.

For more information about the drivers required for the Dell Thunderbolt Dock WD19TB, see www.dell.com/support.

.NET Framework



The .NET Framework is a software framework from Microsoft, which is bundled with Windows operating systems. The .NET Framework is intended to be used by applications created for the Windows 10 platform.

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 1. 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 <code>Contact Support</code> , 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	<ol style="list-style-type: none"> 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.