

# Precision 5470

## Re-imaging guide for Windows

## 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 section of the re-imaging guide covers driver installation and driver updates and is designed for system administrators. Do not attempt to install or update drivers on 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 only applicable to computers shipped with Windows 10 or Windows 11 operating system.

**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 only applicable to computers shipped with Windows 10 or Windows 11 operating system.

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) and hard drives:

- 128 GB PCIe SSD
- 256 GB PCIe SSD
- 512 GB PCIe SSD
- 1024 GB PCIe SSD
- 2048 GB PCIe SSD and larger capacity size PCIe SSDs
- 2.5-inch hard drive
- 3.5-inch hard drive

It is always recommended to re-image on a newly installed operating system and not from any previous image-build. Ensure BIOS settings, including SATA configurations and modes, 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 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
    - Intel Manageability and Security Status Application
  4. **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.
    - Onboard Local Area Network (LAN) driver
  5. **Install latest updates and drivers:**
    - For commercial computers, use **Dell Command Updates (DCU)**.
    - For consumer computers, use **SupportAssist**.
- NOTE:** Drivers can be downloaded and installed manually from the [Drivers & Downloads](#).
6. **Critical Microsoft Knowledge Base (KB) updates:** Microsoft updates that fix and optimize the operating system. For more information, see [Windows release information](#).
  7. **Media-card reader driver:** Enables and enhances the media-card reader.
  8. **Intel Rapid Storage Technology (IRST):** Enables and enhances data storage virtualization for the storage drives installed in the computer.
  9. **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
  10. **Audio driver:** Enables and enhances the audio controller.
  11. **Security drivers**, which include:
    - Goodix Fingerprint Sensor
    - Dell ControlVault3 driver and firmware
  12. **Dell applications**, which include:
    - Dell Update application
    - Dell Power Manager (DPM)
    - Dell Optimizer (DO)

# Updating or resetting the BIOS

## Updating the BIOS in Windows

### About this task

It is recommended to update the BIOS in Windows when an update is available or when you replace the system board.

### Steps

1. Go to [www.dell.com/support](http://www.dell.com/support).
2. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

**NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

3. Click **Drivers & downloads > Find drivers**.
4. In the **Operating system** drop-down, select the operating system that is installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.  
For more information, see knowledge base article [000124211](https://www.dell.com/support) at [www.dell.com/support](http://www.dell.com/support).

## Clearing CMOS settings

### About this task

If 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, go to [www.dell.com/support](http://www.dell.com/support) and see your computer's *Service Manual*.

## Trusted Platform Module (TPM) security

### About this task

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:

### Steps

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 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 [000192698](#) at [www.dell.com/support](http://www.dell.com/support).

For installing Windows on Intel 12<sup>th</sup> Generation computers using ISO images, see the knowledge base article [000184834](#) at [www.dell.com/support](http://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 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 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

### Steps

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

**NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

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 [000132394](https://www.dell.com/support) at [www.dell.com/support](https://www.dell.com/support).

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

**NOTE:** The Windows 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](https://www.dell.com/support).

## Downloading and installing the chipset driver

### Steps

1. Turn on the computer.
2. Go to [www.dell.com/support](https://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

**NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Chipset**.
6. Click **Download** to download the chipset driver for your computer.
7. After the download is complete, go 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 Knowledge Base (KB) updates

Dell recommends installing all the latest available KB 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. For more information, see [Windows release information](https://www.microsoft.com/windows/windows-10/whats-new/windows-10-service-packs).


# Media-card reader driver

The Windows operating system does not include the media-card reader driver. Install the Realtek driver that is available for download from [www.dell.com/support](http://www.dell.com/support).

## Downloading and installing the media-card reader driver

### Steps

1. Turn on the computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.


4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Chipset**.
6. Click **Download** to download the media-card reader driver for your computer.
7. After the download is complete, go to the folder where you saved the card reader driver file.
8. Double-click the card reader driver file icon and follow the instructions on the screen.

## Intel Rapid Storage Technology (IRST)

The IRST software package enables and enhances high-performance Serial ATA (SATA) and SATA RAID capabilities for supported operating systems. The IRST software package provides an added protection against data loss in the event of a hard-drive failure.

 **NOTE:** The following conditions must be met before you can install IRST on your computer.


- Your computer has a RAID I/O controller hub (ICH). If your computer does not have a RAID ICH, you cannot install IRST unless a third-party RAID controller card is installed.
- Your RAID controller is enabled by default.

 **CAUTION:** If a SATA hard drive is already installed, enabling the RAID controller might cause your computer to display a blue screen and an error code followed by a system reboot. To enable RAID, reinstall the operating system.

## Downloading and installing the IRST driver

### Steps

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Serial ATA**.
6. Click **Download** to download the IRST driver for your computer.
7. After the download is complete, go to the folder where you saved the IRST driver file.

8. Double-click theIRST driver file icon and follow the instructions on the screen.


## 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](http://www.dell.com/support).

### Downloading and installing the Dell graphics driver

#### Steps

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Video**.
6. Click **Download** to download the preferred graphics driver for your computer.
7. After the download is complete, go 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](http://www.dell.com/support).

### Downloading and installing the Dell audio driver

#### Steps

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Audio**.
6. Click **Download** to download the preferred audio driver for your computer.
7. After the download is complete, go 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.

# Fingerprint-reader driver

## Downloading and installing the fingerprint-reader driver

### Steps

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

**NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Security**.
6. Click **Download** to download the Goodix Fingerprint Sensor Driver for your computer.
7. After the download is complete, go to the folder where you saved the Goodix Fingerprint Sensor driver file.
8. Double-click the Goodix Fingerprint Sensor 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](http://www.dell.com/support).

## Downloading and installing the Dell ControlVault3 driver and firmware

### Steps

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

**NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Security**.
6. Click **Download** to download the software package for your computer.
7. After the download is complete, go 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.

## Dell Optimizer


Dell Optimizer is a software application that intelligently and dynamically optimizes the performance of your computer by using artificial intelligence and machine learning. It improves the productivity, performance, and user experience through computer usage analysis and learning.

For more information on Dell Optimizer, see [000184590](https://www.dell.com/support/000184590).

## Downloading and installing the Dell Optimizer

### Steps

1. Turn on your computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Application**.
6. Click **Download** to download the application for your computer.
7. After the download is complete, go to the folder where you saved the Dell Optimizer application file.
8. Double-click the application file icon and follow the instructions on the screen.


## Wireless Local Network (WLAN) drivers and applications

The Windows 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

### Steps


1. Turn on the computer.
2. Go to [www.dell.com/support](http://www.dell.com/support).
3. In the **Search support** field, enter the Service Tag/Serial Number/Service Request/Model/Keyword of your computer, and then click **Search**.

 **NOTE:** If you do not have the Service Tag/Serial Number/Service Request/Model/Keyword, use the SupportAssist feature to automatically identify your computer. You can also click **Browse all products** to manually browse for your computer.

4. Click **Drivers & downloads > Find drivers**.
5. In the **Category** drop-down, select **Network**.
6. Click **Download** to download the preferred Wi-Fi driver for your computer.
7. After the download is complete, go 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


The Dell Docking Station WD19 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, see [www.dell.com/support](http://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](http://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 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  | <a href="http://www.dell.com">www.dell.com</a>   |
| My Dell app   |   |
| Tips  |   |
| Contact Support   | In Windows search, type <code>Contact Support</code> , and press Enter.  |
| Online help for operating system  | <a href="http://www.dell.com/support/windows">www.dell.com/support/windows</a>   |
| 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 <a href="http://www.dell.com/support">www.dell.com/support</a> .<br><br>For more information on how to find the Service Tag for your computer, see <a href="#">Locate the Service Tag on your computer</a> . |
| Dell knowledge base articles for a variety of computer concerns   | <ol style="list-style-type: none"> <li>1. Go to <a href="http://www.dell.com/support">www.dell.com/support</a>.</li> <li>2. On the menu bar at the top of the Support page, select <b>Support &gt; Knowledge Base</b>.</li> <li>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.</li> </ol>  |

## Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see [www.dell.com/contactdell](http://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.