# Latitude 3120

## Service Manual

Regulatory Model: P32T/P33T
Regulatory Type: P32T001/P33T001
January 2021
Rev. A00

## 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.**

# Contents

# 1

# Working on your computer

**Topics:**



## Safety instructions

### Prerequisites

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or, if purchased separately, installed by performing the removal procedure in reverse order.

### About this task

**NOTE:** Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.

**WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage**

**CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

**CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.**

**CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.**

**CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.**

**NOTE:** The color of your computer and certain components may appear differently than shown in this document.

**CAUTION: System will shut down if side covers are removed while the system is running. The system will not power on if the side cover is removed.**

## Before working inside your computer

### About this task

**NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

**Steps**

1. Save and close all open files and exit all open applications.
2. Shut down your computer. Click **Start** > **Power** > **Shut down**.

   **NOTE:** If you are using a different operating system, see the documentation of your operating system for shut-down instructions.

3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

   **CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.**

5. Remove any media card and optical disc from your computer, if applicable.

# Safety precautions

The safety precautions chapter details the primary steps to be taken before performing any disassembly instructions.

Observe the following safety precautions before you perform any installation or break/fix procedures involving disassembly or reassembly:

- Turn off the system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any tabletnotebookdesktop to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

## Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 15 seconds should discharge residual power in the system board. Remove the battery from tablets.notebooks.

## Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done through the use of a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding yourself and the equipment.

# Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory DIMMs, and system boards. Very slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code emitted for missing or nonfunctional memory.

- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, etc.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

# ESD field service kit

The unmonitored Field Service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

## Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of system that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the system, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

## ESD protection summary

It is recommended that all field service technicians use the traditional wired ESD grounding wrist strap and protective anti-static mat at all times when servicing Dell products. In addition, it is critical that technicians keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

# After working inside your computer

**About this task**

**CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.**

**Steps**

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, discs, or any other parts that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

2

# Removing and installing components

**NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

**Topics:**



## Recommended tools

The procedures in this document require the following tools:

- Phillips #0 screwdriver
- Phillips #1 screwdriver
- Plastic scribe: Recommended for field technicians.

**NOTE:** The #0 screw driver is for screws 0-1 and the #1 screw driver is for screws 2-4.

## Screw List

The following table shows the screw list and the image of the screws.

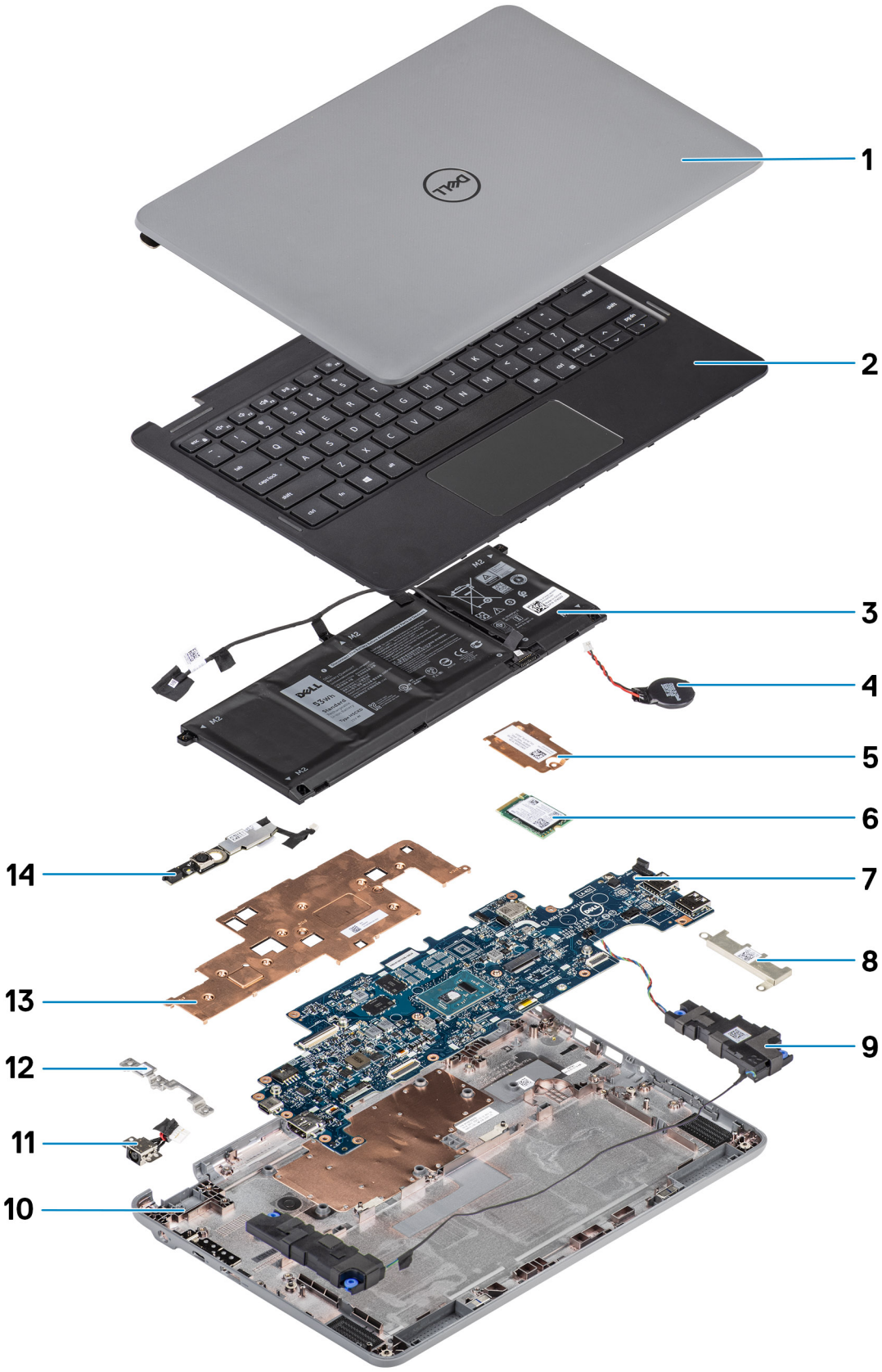
### Table 1. Screw list

| Component | Screw type | Quantity | Image |
|---|---|---|---|
| 3-cell battery | M2x3 | 4 |  |
| Dummy battery cell | M2x3 | 2 |  |
| 4-cell battery | M2x3 | 5 |  |
| Audio board cable | M2x3 | 2 |  |
| Heatsink assembly | M2x3 | 4 |  |
| World-facing camera | M2.5x2.5 | 1 |  |
| Power-adapter port | M2x4 | 2 |  |
| WLAN bracket | M2x3 | 1 |  |
| Display bracket | M2x3 | 1 |  |
| Solid-state drive bracket | M2x3 | 1 |  |
| Display hinge bracket (Latitude 3120 2-in-1) | M2.5x2.5<br>M2x2 | 6<br>4 |  |
| Display hinge bracket | M2.5x5 | 6 |  |
| N-lock | M2x4 | 1 |  |
| display hinge bracket (Latitude 3120) | M2.5x2.5<br>M2x2.5 | 4<br>2 |  |
| Display panel (Latitude 3120) | M2x2.5 | 4 |  |
| Display bezel (Latitude 3120) | M2.5x3.8 | 4 |  |
| System board with USB Type-C port<br>System board without USB Type-C port | M2x5<br>M2x5 | 4<br>6 |  |
| USB Type-C bracket | M2x4 | 3 |  |

**Table 1. Screw list (continued)**

| Component | Screw type | Quantity | Image |
|---|---|---|---|
| USB Type-A bracket | M2x3.5 | 2 |  |
| Base cover | Captive screws | 9 |  |

# Major components of your system




1. Display assembly

2. Palmrest and keyboard assembly
3. Battery
4. Coin-cell battery
5. Solid-state drive thermal plate
6. Solid-state drive
7. System board
8. USB Type-A bracket
9. Speakers
10. Computer chassis
11. Power-adapter port
12. USB Type-C bracket
13. Heatsink
14. World-facing camera

**NOTE:** Dell provides a list of components and their part numbers for the original system configuration purchased. These parts are available according to warranty coverages purchased by the customer. Contact your Dell sales representative for purchase options.

# Palmrest and Keyboard assembly

## Removing the palmrest and keyboard

### Prerequisites

Follow the procedure in before working inside your computer.

### About this task

The following images indicate the location of the palmrest and keyboard, and provide a visual representation of the removal procedure.

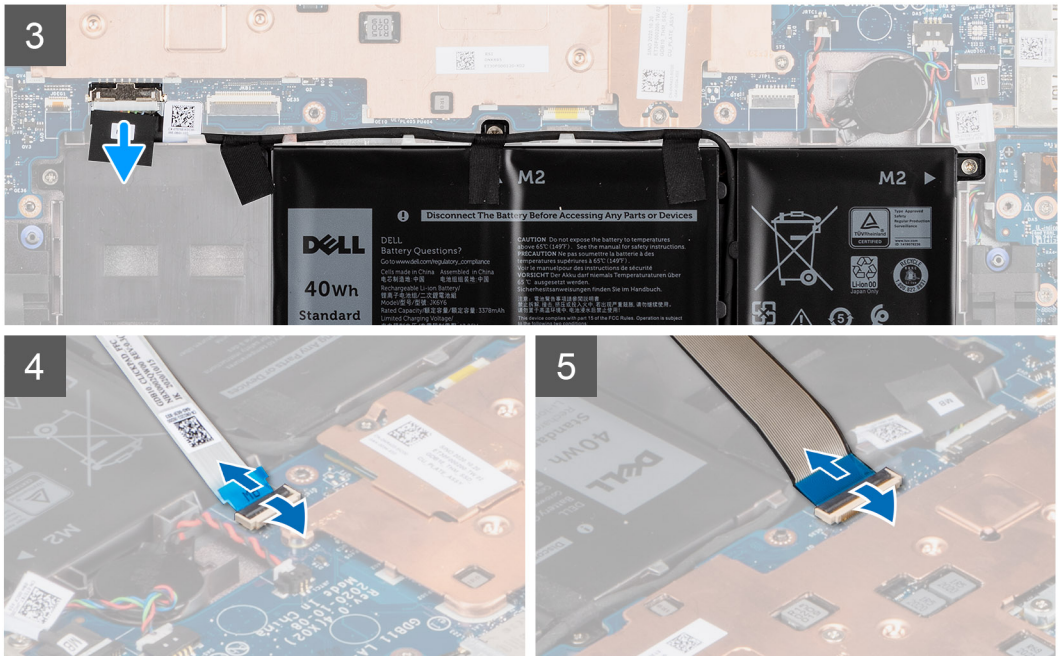
9x

1


Latitude 3120

2


esc
backspace
tab
caps lock
enter
shift
shift
ctrl
fn
alt
alt
ctrl
pg up
pg dn




### Steps

1. Loosen the nine captive screws that secure the palmrest assembly to the computer chassis.
2. Place the system on a flat surface with the keyboard facing up. Open the system to 180 degrees.

   **NOTE:** The system will automatically power on when it is opened past 5-degree angle. Press the power button to turn off the system and then proceed with the disassembly process.

3. Use a plastic scribe to pry open the palmrest assembly, starting from the U-shaped recesses near the hinges at the top edge of the palmrest.
4. Use the scribe to pry open the top, left, and right sides of the palmrest.
5. Hold the left and right sides of the palmrest and open it to 45 degrees to release the palmrest assembly from the computer chassis.

   **CAUTION: Do not open the palmrest assembly more than 60 degrees, as it may damage the keyboard Flexible Printed Circuits (FPC) and touchpad Flexible Flat Cable (FFC).**

6. Gently flip over the palmrest assembly with the keyboard facing downward.

   **CAUTION: Do not apply excess force to the palmrest assembly while flipping it over, as it may damage to the keyboard FPC and touchpad FFC.**

7. Disconnect the battery cable, keyboard FPC, and touchpad FFC from the system board.
8. Lift and remove the palmrest assembly and keyboard from the computer chassis.

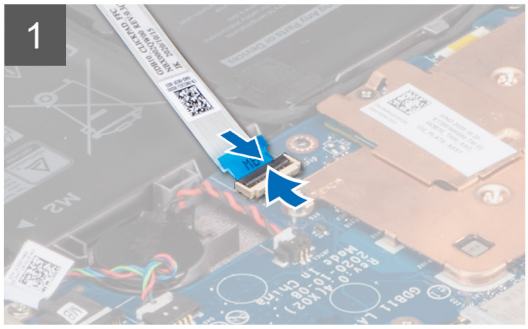
## Installing the palmrest and keyboard

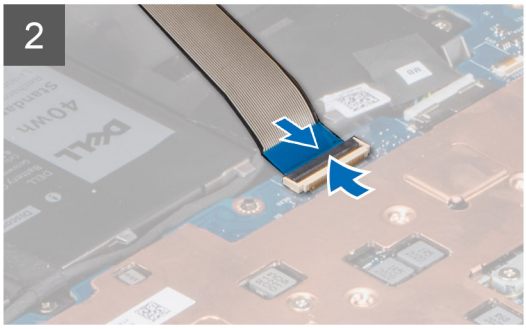
### Prerequisites

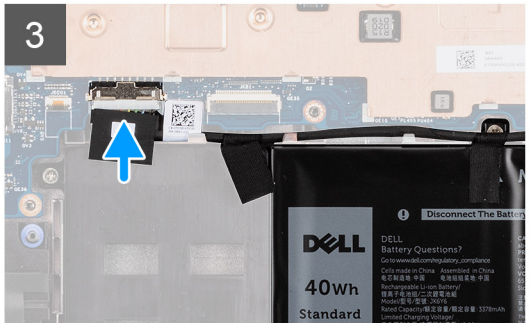
If you are replacing a component, remove the existing component before performing the installation procedure.

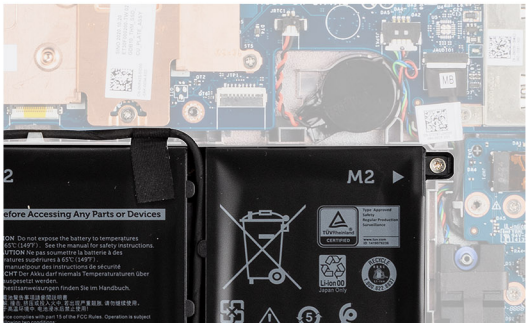
### About this task

The following images indicate the location of the palmrest and keyboard, and provide a visual representation of the installation procedure.


1


2


3
DELL
40Wh
Standard


M2


4
esc
backspace
tab
caps lock
enter
shift
ctrl
fn
alt
pg up
pg dn

9x


### Steps

1. Connect the battery cable, keyboard Flexible Printed Circuits (FPC), and touchpad Flexible Flat Cable (FFC) to the system board.
2. Place the palmrest assembly and the keyboard on the computer chassis.
3. Align and place the base cover on the computer, and snap the base cover latches into place.
4. Replace the nine captive screws that secure the palmrest assembly to the computer chassis.

### Next steps

Follow the procedure in after working inside your computer.

# Solid-state drive

## Removing the solid-state drive

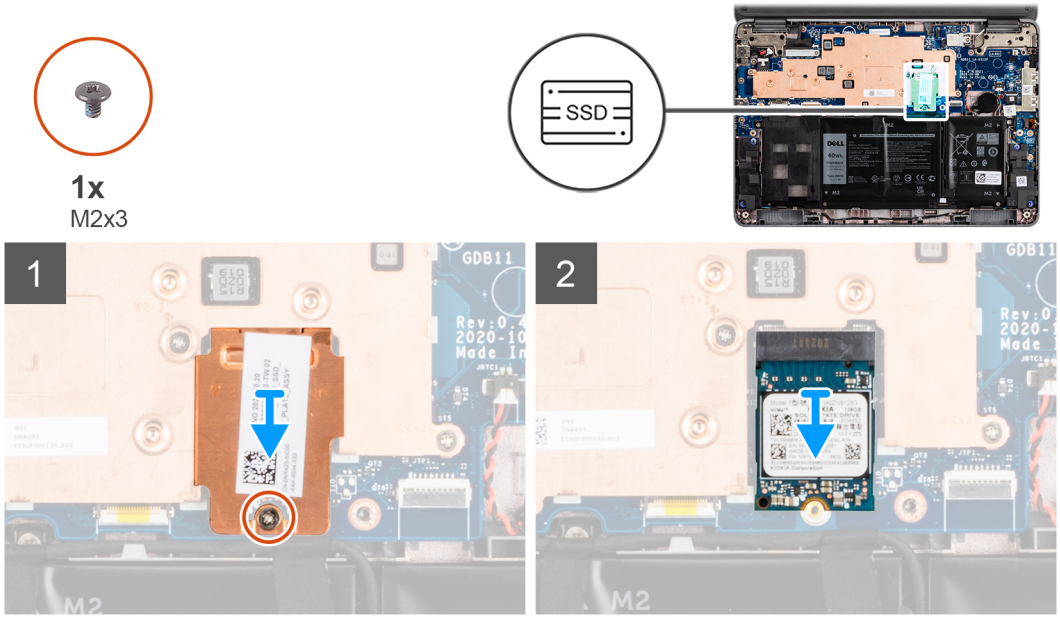
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

**NOTE:** The following steps are for the systems that are shipped with an M.2 solid-state drive (SSD).

The following images indicate the location of the SSD and provide a visual representation of the removal procedure.




### Steps

1. Remove the single screw (M2x3) that secures the SSD thermal plate and remove the thermal plate from the SSD.
2. Slide and remove the SSD from the M.2 card slot on the system board.

## Installing the solid-state drive

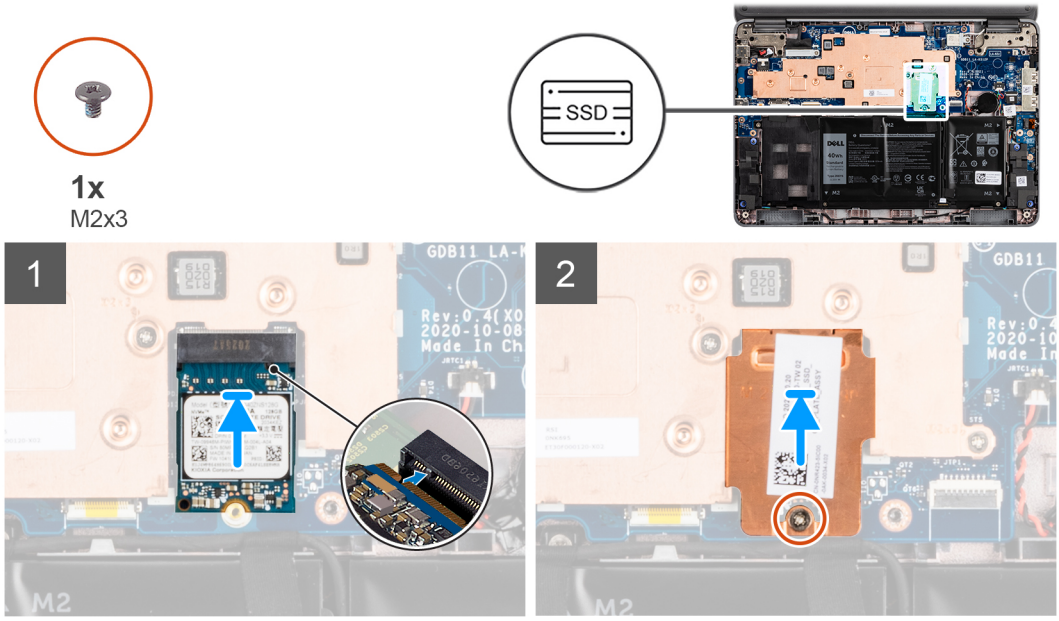
### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

**NOTE:** The following steps are for the systems that are shipped with an M.2 solid-state drive (SSD).

The following image indicates the location of the SSD and provides a visual representation of the installation procedure.




### Steps

1. Align the notch on the SSD with the tab on the M.2 card slot and slide the SSD into the slot on the system board.
2. Replace the SSD thermal plate, press to fit it firmly to cover the SSD.
3. Replace the single screw (M2x3) to secure the SSD to the M.2 card slot on system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# Speakers

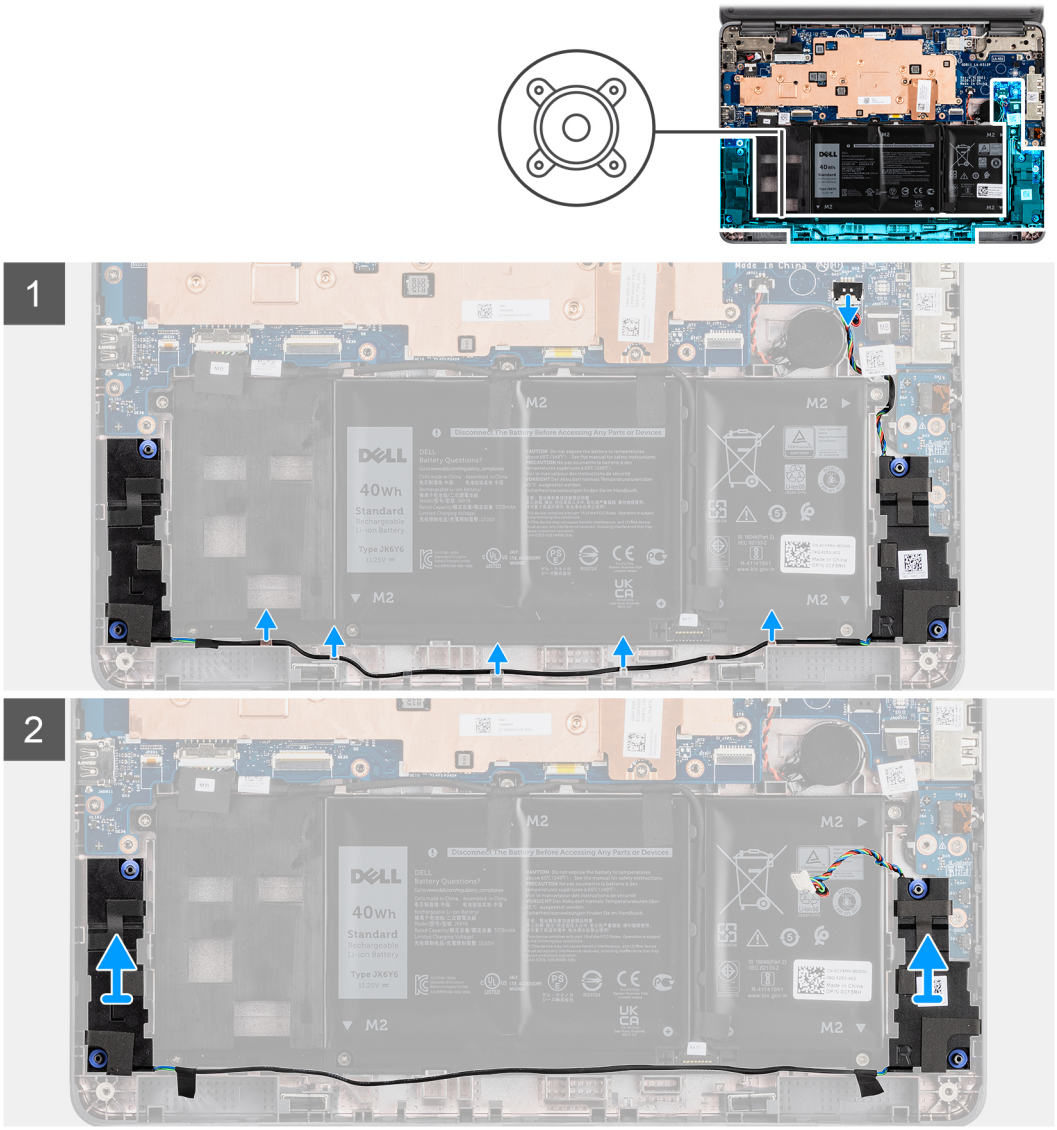
## Removing the speakers

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

The following image indicates the location of the speakers and provides a visual representation of the removal procedure.




### Steps

1. Disconnect the speaker cable from the connector on the system board.
2. Remove the adhesive tapes that secure the speaker cable to the system board.
3. Unroute the speaker cable from the routing channel.
4. Lift and remove the speakers from their slots on the computer chassis.

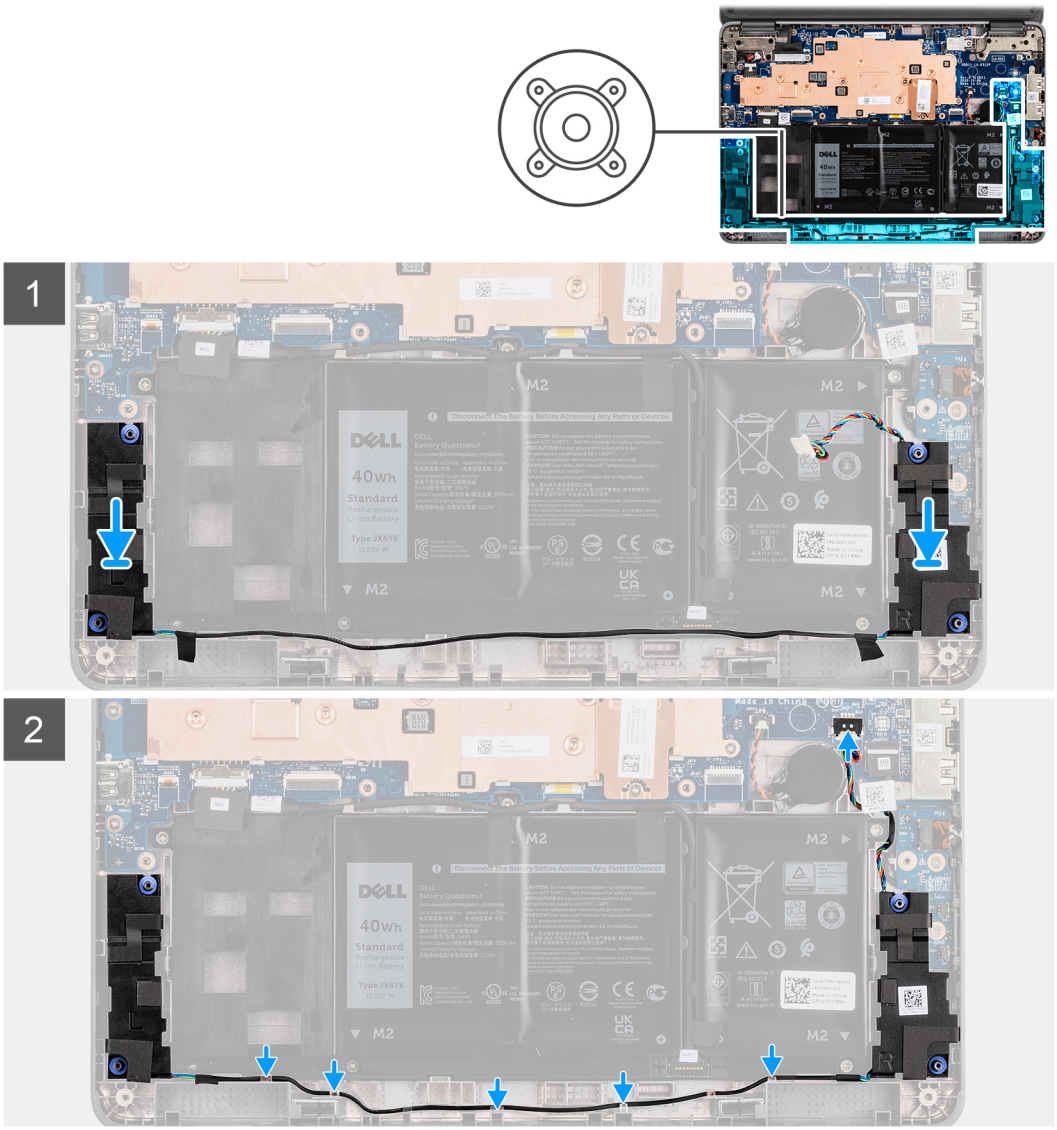
## Installing the speaker

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the speaker and provides a visual representation of the installation procedure.




### Steps

1. Using the alignment posts and rubber grommets, replace the speaker into the slots on the computer chassis.
2. Route the speaker cable through the routing channel.
3. Affix the adhesive tapes to secure the speaker cable on the system board.
4. Connect the speaker cable to the connector on the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# Coin-cell battery

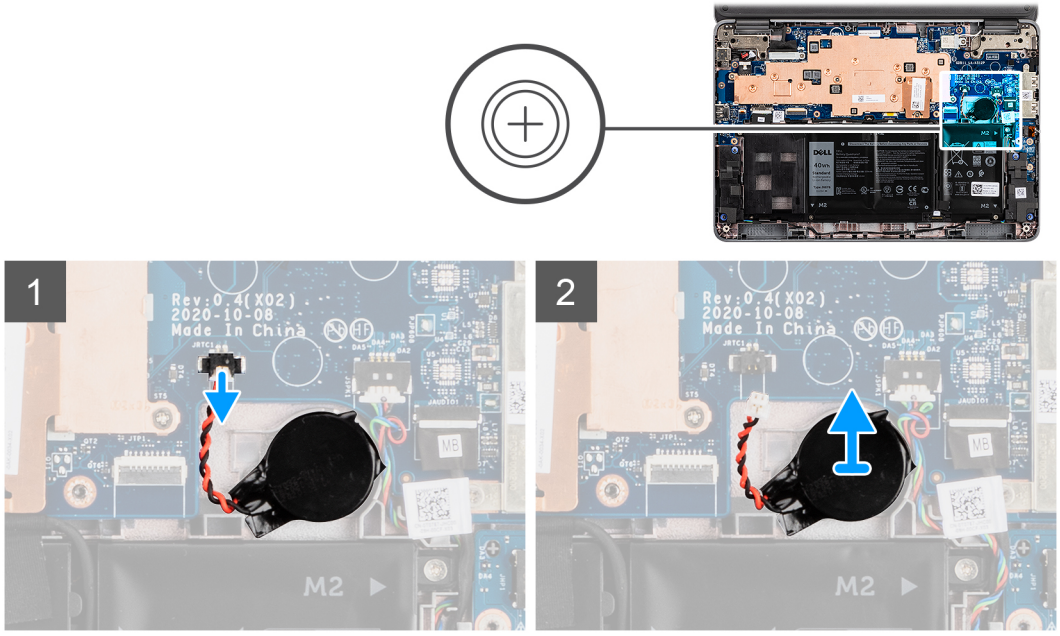
## Removing the coin-cell battery

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

The following image indicates the location of the coin-cell battery and provides a visual representation of the removal procedure.




### Steps

1. Disconnect the coin cell battery cable from the connector on the system board.
2. Pry the coin cell battery to release it from the adhesive. Lift and remove it from the computer chassis.

## Installing the coin-cell battery

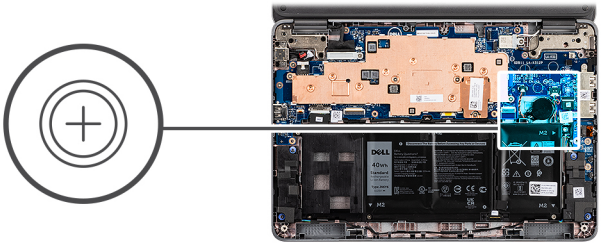
### Prerequisites

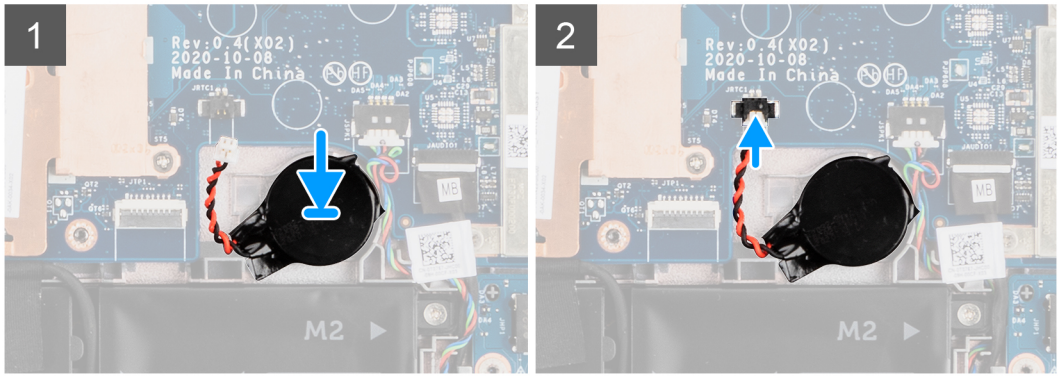
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

If you are replacing a component, remove the existing component before performing the installation procedure.

The following image indicates the location of the coin-cell battery and provides a visual representation of the installation procedure.






### Steps

1. Place the coin cell battery into the slot on the computer chassis.
2. Connect the coin cell battery cable to the connector on the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# Audio board

## Removing the audio board

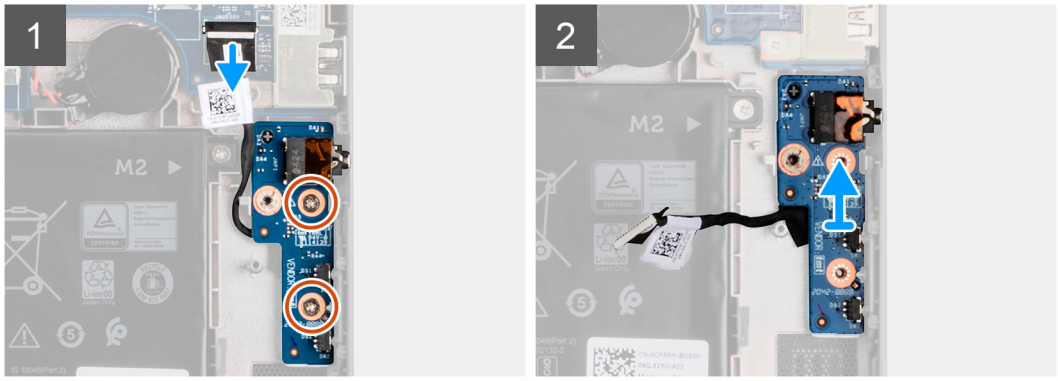
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. Remove the speakers.

### About this task

The following image indicates the location of the audio board and provides a visual representation of the removal procedure.

2x
M2x3




### Steps

1. Disconnect the audio board cable from the connector on the system board.
2. Remove the two screws (M2x3) that secure the audio board to the computer chassis.
3. Lift and remove the audio board from the computer chassis.

## Installing the audio board

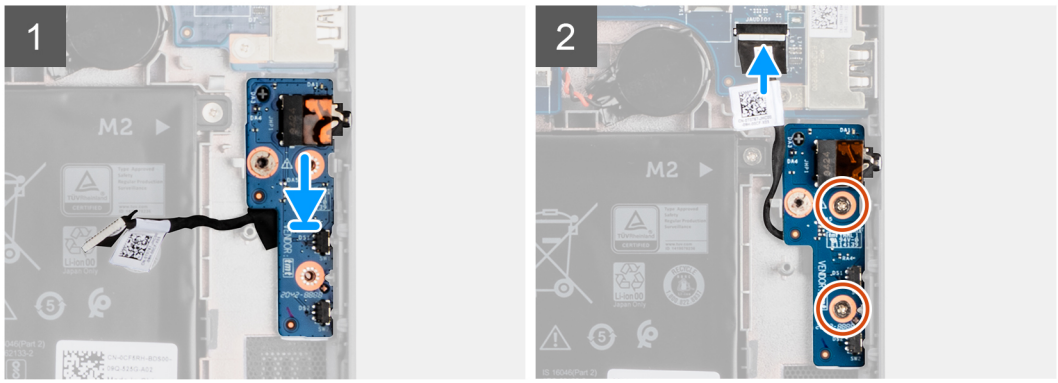
### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the audio board and provides a visual representation of the installation procedure.

2x
M2x3



### Steps

1. Using the alignment posts, replace the audio board into the slots on the computer chassis.
2. Replace the two screws (M2x3) that secure the audio board to the computer chassis.
3. Connect the audio cable to the connector on the system board.

### Next steps

1. Install thespeakers.
2. Install the speakers.
3. Install the palmrest and keyboard assembly.
4. Follow the procedure in after working inside your computer.

# Battery

## Lithium-ion battery precautions

**CAUTION:**

- **Exercise caution when handling Lithium-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the system and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**
- **Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.**

## Removing the 3-cell battery

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

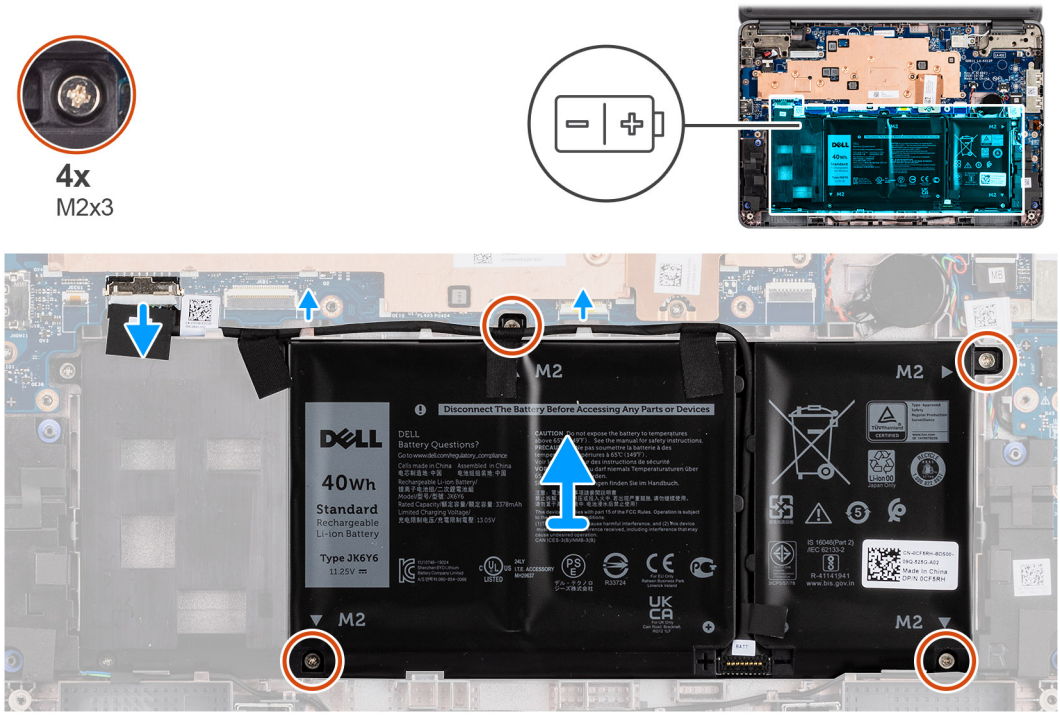
**NOTE:** The following steps are for the systems that are shipped with a 3-cell battery.

**NOTE:** If the battery is disconnected from system board, there is delay during computer boot as the computer undergoes Real Time Clock (RTC) reset.

**NOTE:** The double sided adhesive tapes are reusable.

### About this task

The following images indicate the location of the 3-cell battery and provide a visual representation of the removal procedure.




### Steps

1. Peel off the adhesive tapes that secure the 3-cell battery to the computer chassis.
2. Unroute the battery cable from the routing channels between the system board and 3-cell battery.
3. Remove the four screws (M2x3) that secure the 3-cell battery to the computer chassis.
4. Disconnect the battery cable from the system board.
5. Lift and remove the 3-cell battery from the computer chassis.

## Installing the 3-cell battery

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

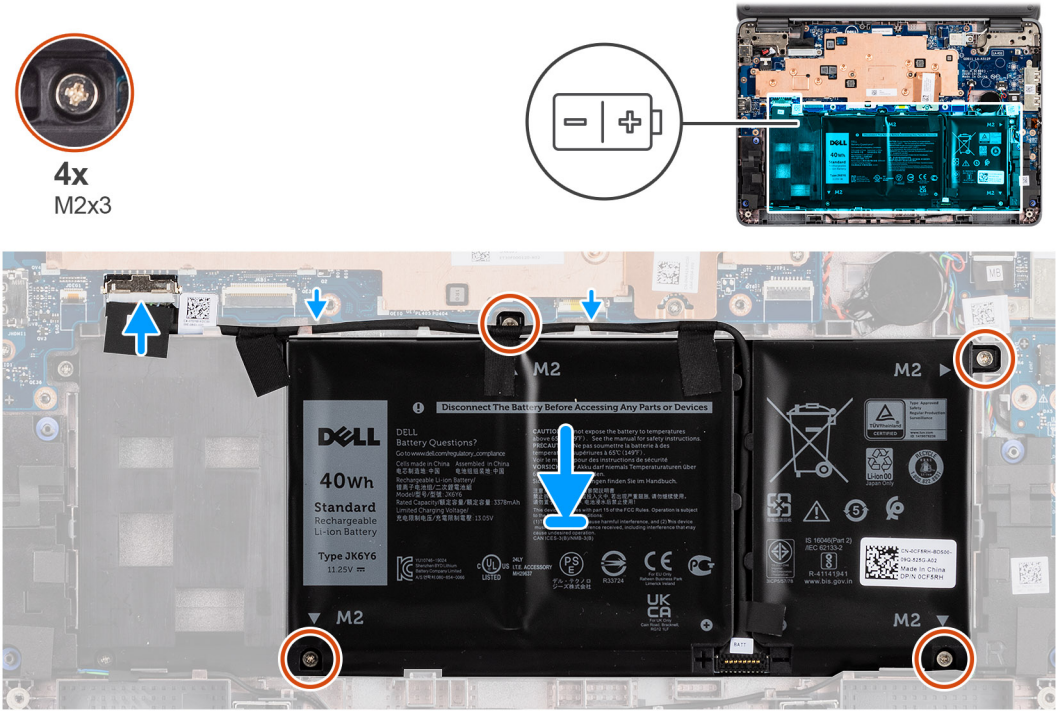
### About this task

**NOTE:** The following steps are for the systems that are shipped with a 3-cell battery.

**NOTE:** If the battery is disconnected from system board, there is delay during computer boot as the computer undergoes Real Time Clock (RTC) reset.

**NOTE:** The double sided adhesive tapes are reusable.

The following image indicates the location of the 3-cell battery and provides a visual representation of the installation procedure.




### Steps

1. Align and replace the 3-cell battery into the computer chassis.
2. Route the battery cable through the routing channels between the system board and 3-cell battery.
3. Affix the adhesive tapes to secure the 3-cell battery to the computer chassis.
4. Replace the four screws (M2x3) to secure the 3-cell battery in place.
5. Connect the battery cable to the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

## Removing the 4-cell battery

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

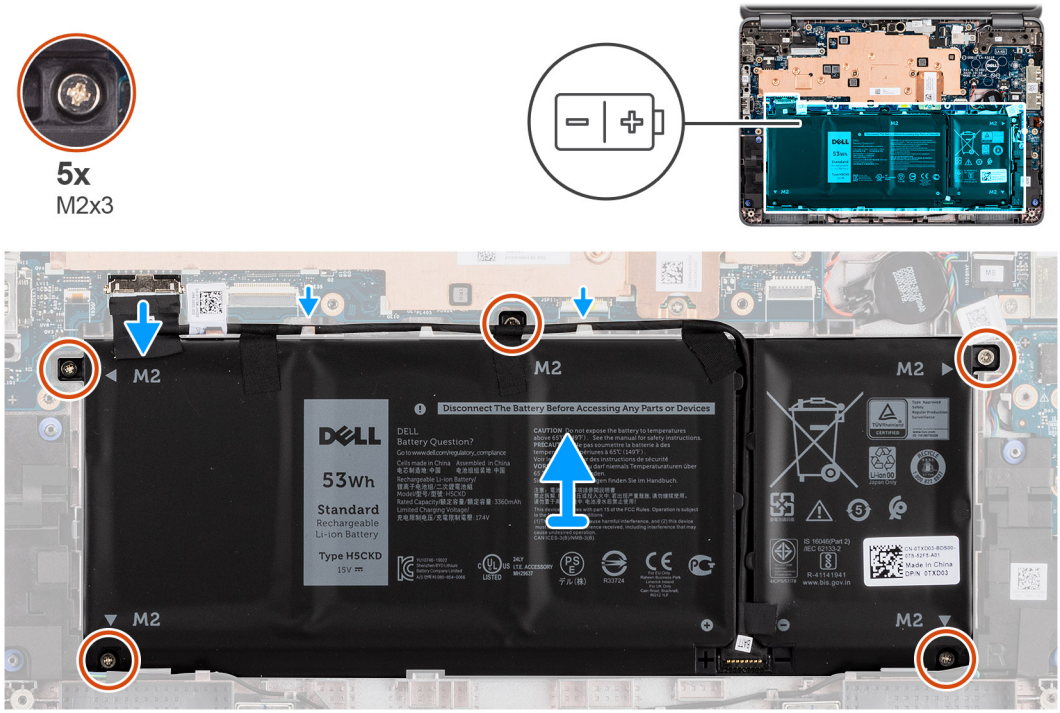
**NOTE:** The following steps are for the systems that are shipped with a 4-cell battery.

**NOTE:** If the battery is disconnected from system board, there is delay during computer boot as the computer undergoes Real Time Clock (RTC) reset.

**NOTE:** The double sided adhesive tapes are reusable.

### About this task

The following image indicates the location of the 4-cell battery and provides a visual representation of the removal procedure.




### Steps

1. Peel off the adhesive tapes that secure the 4-cell battery to the computer chassis.
2. Unroute the battery cable from the routing channels between the system board and 4-cell battery.
3. Remove the five screws (M2x3) that secure the 4-cell battery to the computer chassis.
4. Disconnect the battery cable from the system board.
5. Lift and remove the 4-cell battery from the computer chassis.

## Installing the 4-cell battery

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

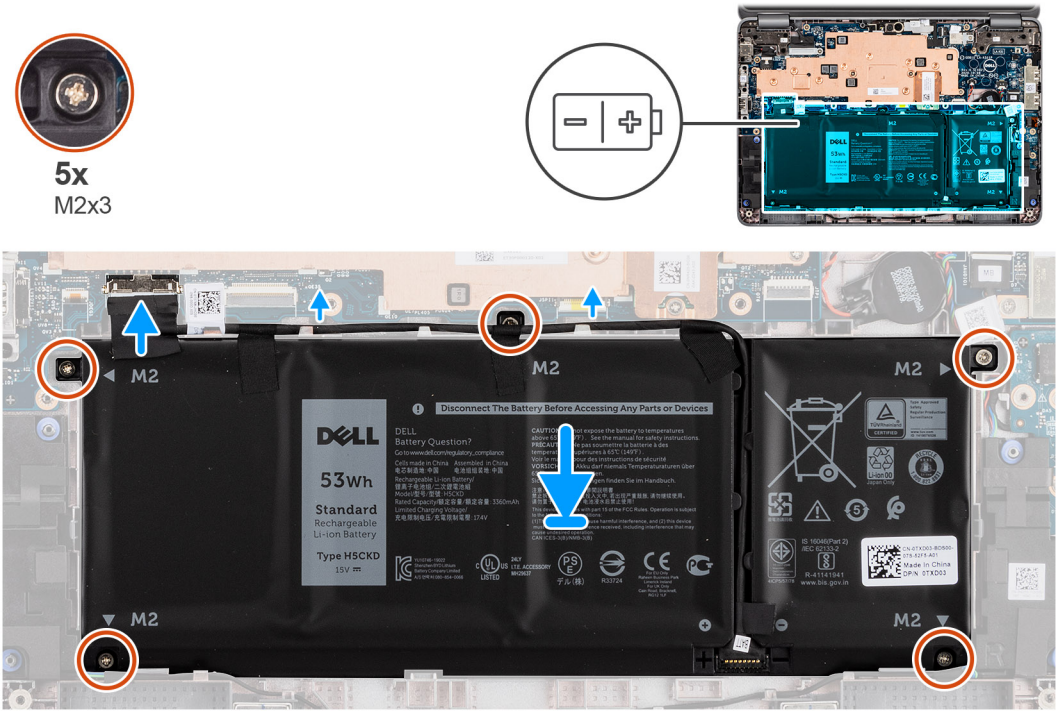
### About this task

**NOTE:** The following steps are for the systems that are shipped with a 4-cell battery.

**NOTE:** If the battery is disconnected from system board, there is delay during computer boot as the computer undergoes Real Time Clock (RTC) reset.

**NOTE:** The double sided adhesive tapes are reusable.

The following image indicates the location of the 4-cell battery and provides a visual representation of the installation procedure.




### Steps

1. Align and replace the 4-cell battery into the computer chassis.
2. Route the battery cable through the routing channels between the system board and 4-cell battery.
3. Affix the adhesive tapes to secure the 4-cell battery to the computer chassis.
4. Replace the five screws (M2x3) to secure the 4-cell battery in place.
5. Connect the battery cable to the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# Display assembly

## Removing the display assembly

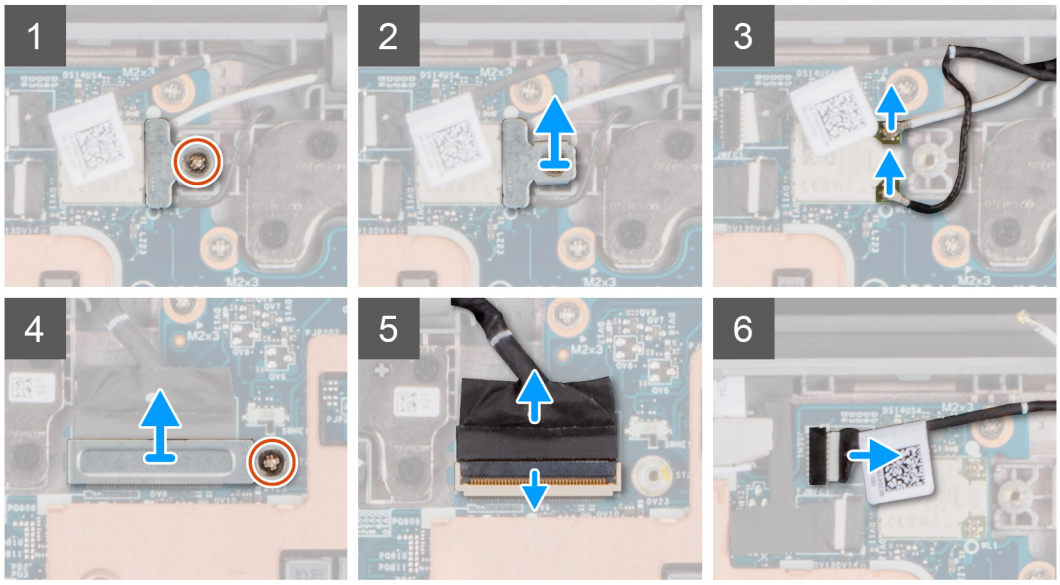
### Prerequisites

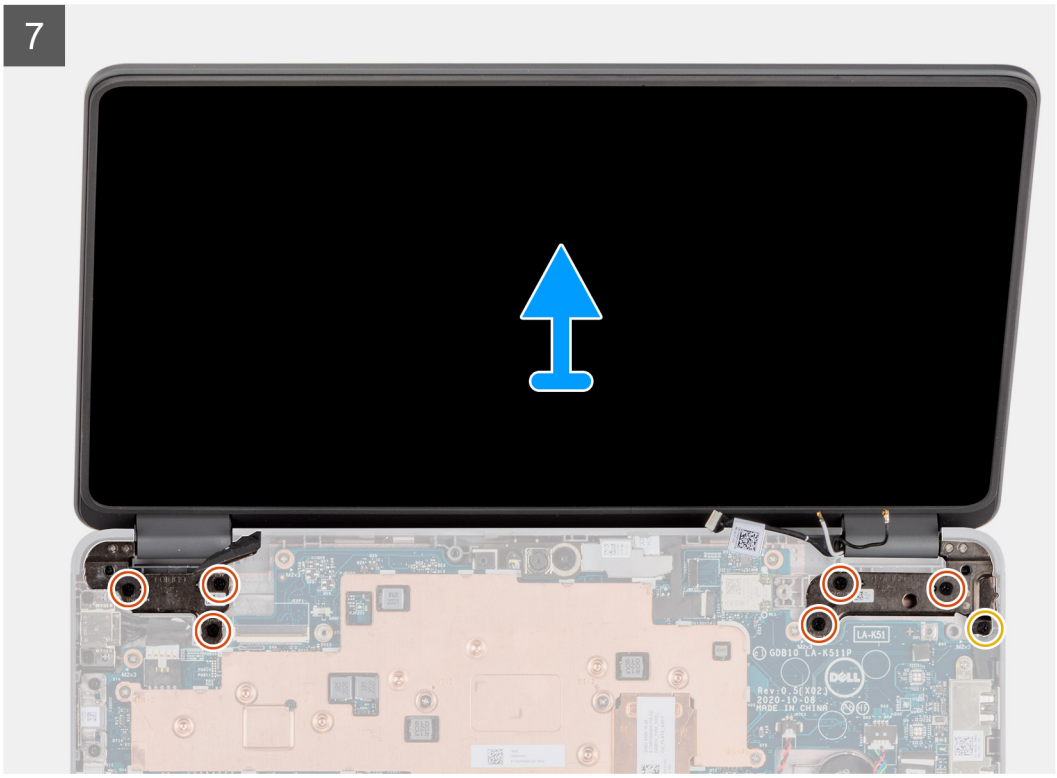
1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

The following images indicate the location of the display assembly and provide a visual representation of the removal procedure.

**2x**
M2x3




### Steps

1. Remove the singe screw (M2x3) that secures the WLAN antenna cable bracket to the system board.
2. Lift and remove the WLAN antenna cable bracket from the system board.
3. Disconnect the two antenna cables that are connected to the WLAN module on the system board.
4. Remove the singe screw (M2x3) that secures the display cable bracket to the system board. Lift and remove the display cable bracket from the system board.
5. Open the latch and disconnect the display cable from the connector on the system board.
6. For 2-in-1 systems, disconnect the touch cable from the connector on the system board.
7. Open the system to 120 degrees.
8. Remove the single (M2x4) screw and six (M2.5x5) screws that secure the display assembly to the computer chassis.
9. Lift and remove the display assembly from the computer chassis.

## Installing the display assembly

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

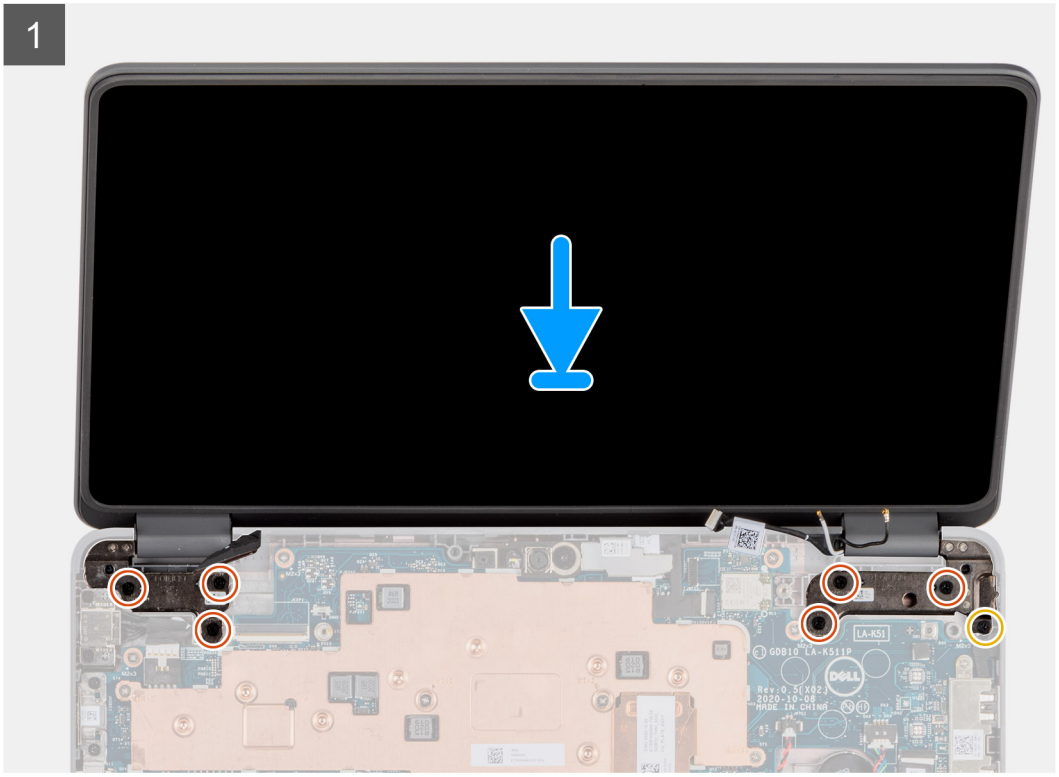
The following image indicates the location of the display assembly and provides a visual representation of the installation procedure.

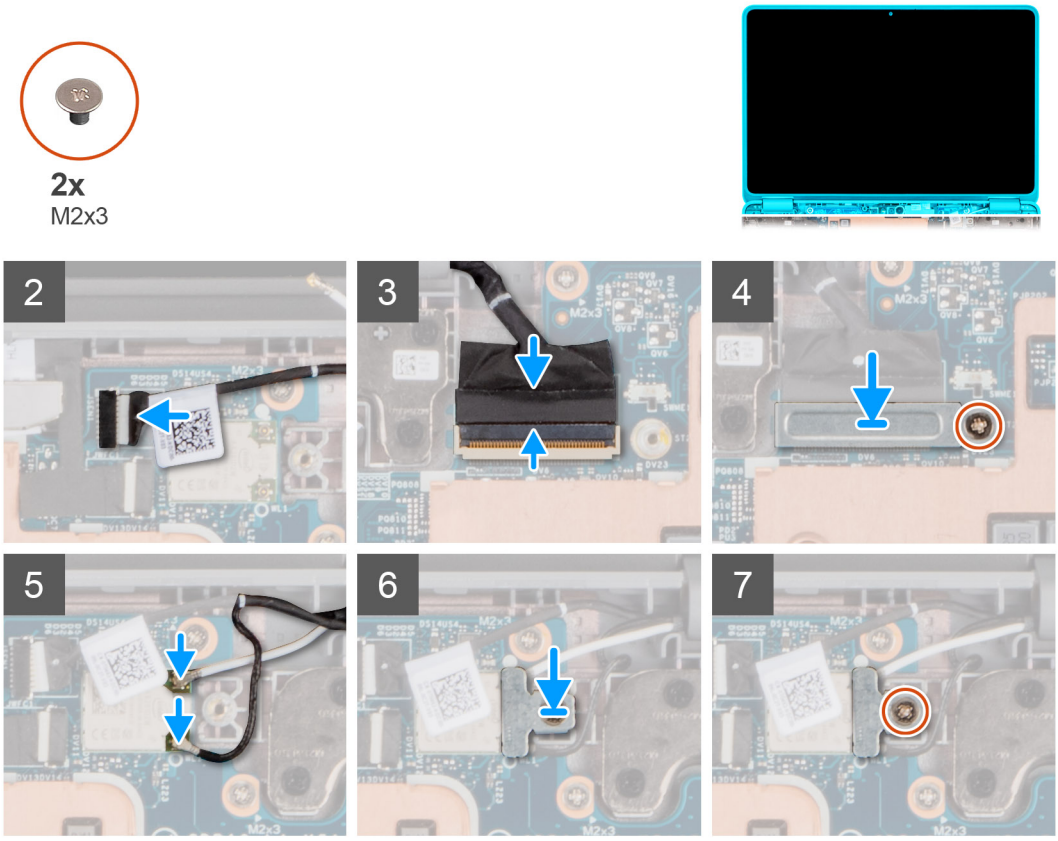
**6x**
M2.5x5



**1x**
M2x4

1






### Steps

1. Align and place the display assembly on the computer chassis.
2. Replace the single (M2x4) screw and six (M2.5x5) screws that secure the display assembly to the computer chassis.
3. For 2-in-1 systems, connect the touch cable to the connector on the system board.
4. Connect the display cable to the connector on the system board. Close the latch to secure the cable.
5. Replace the display cable bracket on the system board. Replace the singe screw (M2x3) to secure the display bracket to the system board.
6. Connect the two antenna cables to the WLAN module on the system board.
7. Replace the WLAN antenna cable bracket on the system board.
8. Replace the singe screw (M2x3) that secures the WLAN antenna cable bracket to the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# Power-adapter port

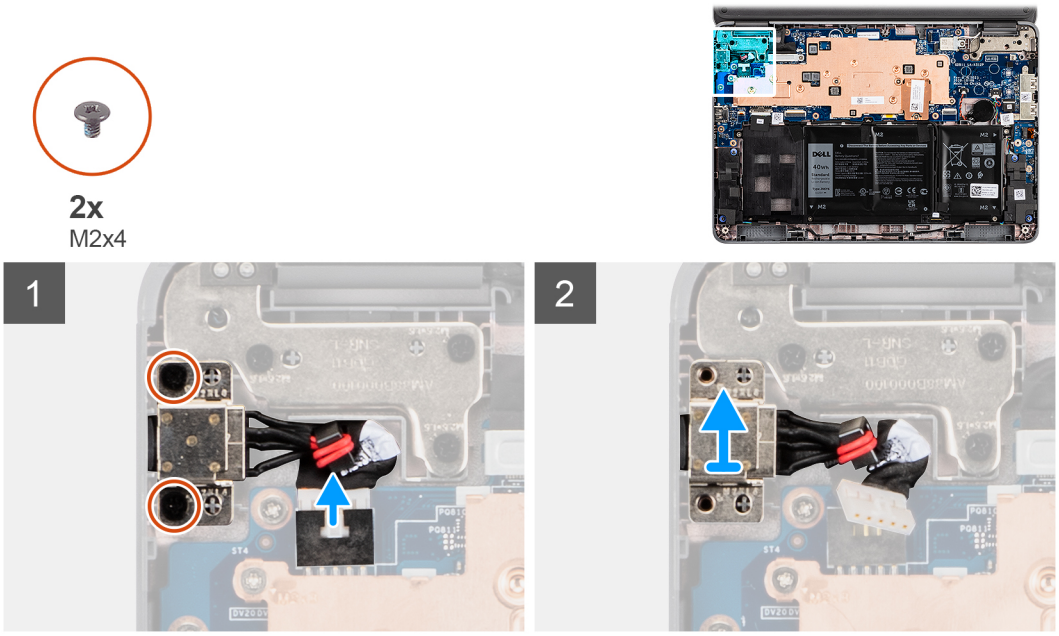
## Removing the power-adapter port

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

The following image indicates the location of the power-adapter port and provides a visual representation of the removal procedure.




### Steps

1. Disconnect the power-adapter port cable from the system board.
2. Remove the two screws (M2x4) that secure the power-adapter port to the computer chassis.
3. Lift and remove the power-adapter port from the computer chassis.

## Installing the power-adapter port

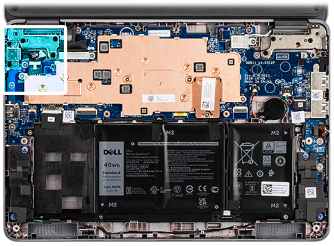
### Prerequisites

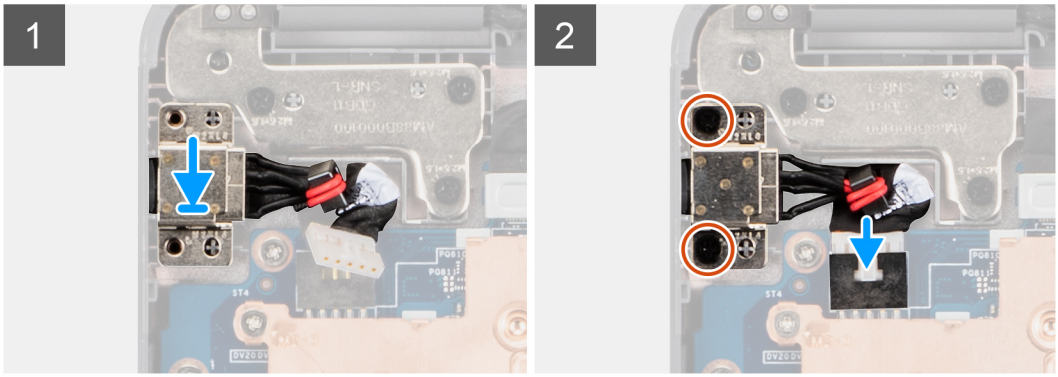
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the power-adapter port and provides a visual representation of the installation procedure.

2x
M2x4






### Steps

1. Place the power-adapter port into the slot on the computer chassis.
2. Replace the two screws (M2x4) that secure the power-adapter port to the computer chassis.
3. Connect the power-adapter port cable to the connector on the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# World-facing camera

## Removing the world-facing camera

### Prerequisites

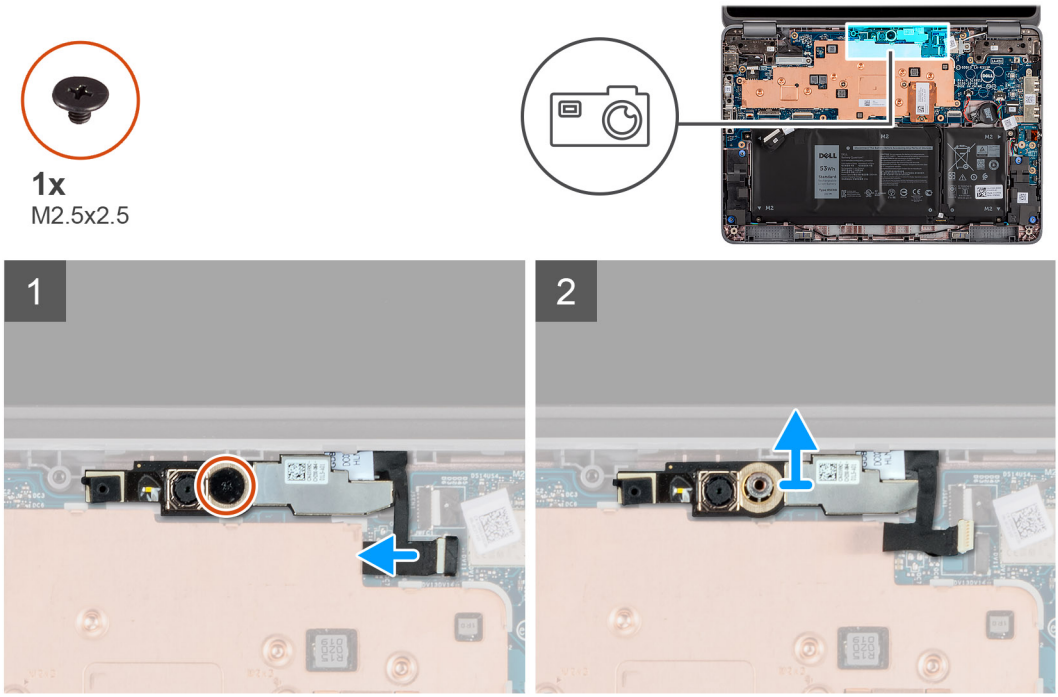
**NOTE:** The following world-facing camera removal procedure is applicable for Latitude 3120 2-in-1 only.

**CAUTION: This is a fragile component. Handle with care.**

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

The following images indicate the location of the world-facing camera and provide a visual representation of the removal procedure.




### Steps

1. Disconnect the world-facing camera cable from the connector on the camera module.
2. Remove the single screw (M2.5x2.5) that secures the front-facing camera module to the computer chassis.
3. Remove the world-facing camera module from the computer chassis.
4. Lift and remove the world-facing camera module from the computer chassis.

## Installing the world-facing camera

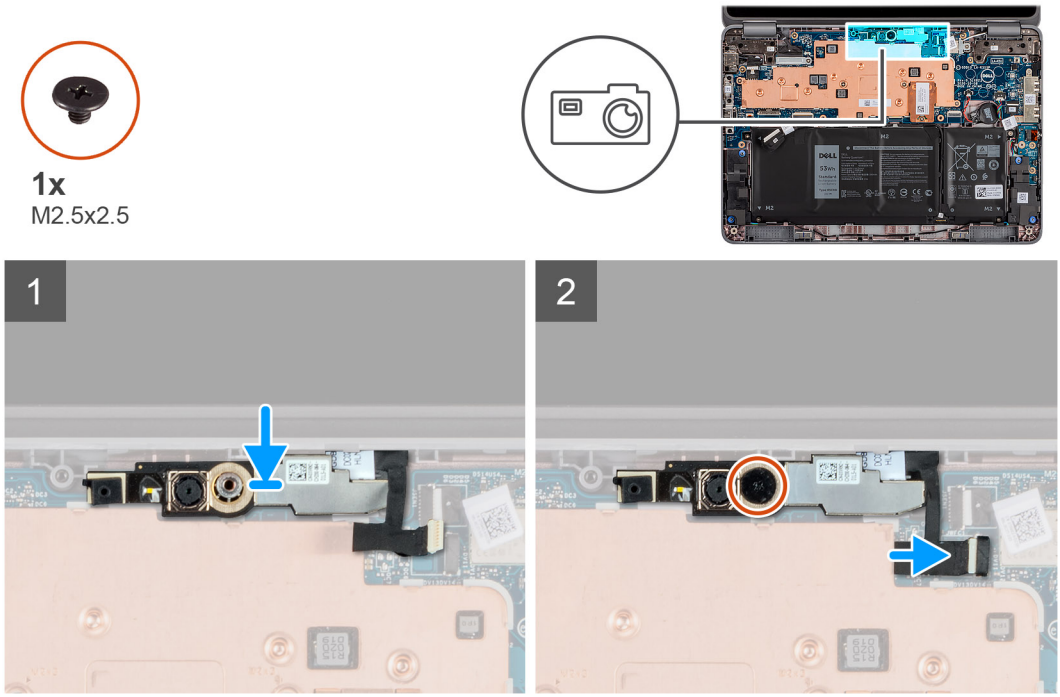
### Prerequisites

**NOTE:** The following world-facing camera installing procedure is applicable for Latitude 3120 2-in-1 only.

**CAUTION: This is a fragile component. Handle with care.**

### About this task

The following image indicates the location of the front-facing camera and provides a visual representation of the installation procedure.




### Steps

1. Insert the world-facing camera module into the slot on the computer chassis.
2. Replace the single screw (M2.5x2.5) to secure the front-facing camera module to the computer chassis.
3. Connect the world-facing camera cable to the connector on the camera module.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# Heatsink assembly

## Removing the heatsink assembly

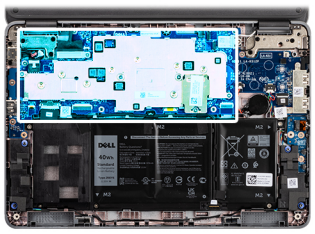
### Prerequisites

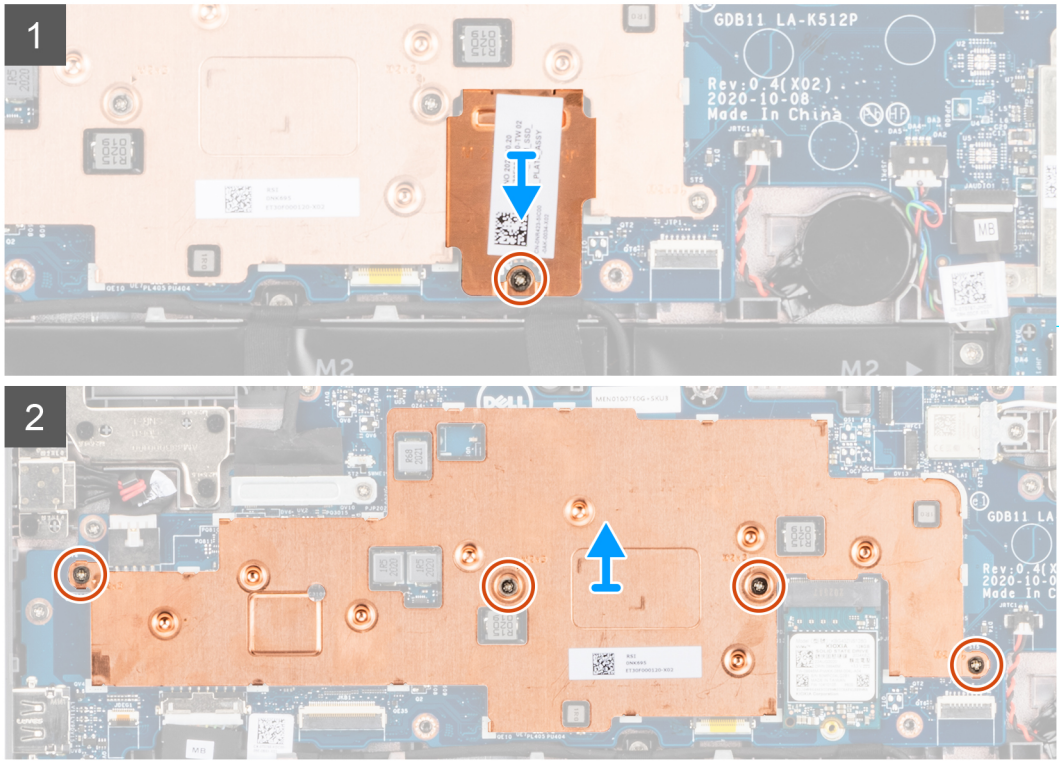
1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

The following images indicate the location of the heatsink assembly and provide a visual representation of the removal procedure.

**5x**
M2x3






### Steps

1. For systems shipped with an SSD: Remove the single screw (M2x3) that secures the SSD thermal plate to the system board. Remove the thermal plate from the system board.
2. Remove the four screws (M2x3) that secure the heatsink assembly to the system board.
3. Lift and remove the heatsink assembly from the system board.

## Installing the heatsink assembly

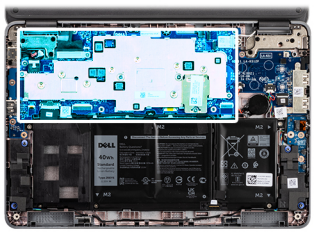
### Prerequisites

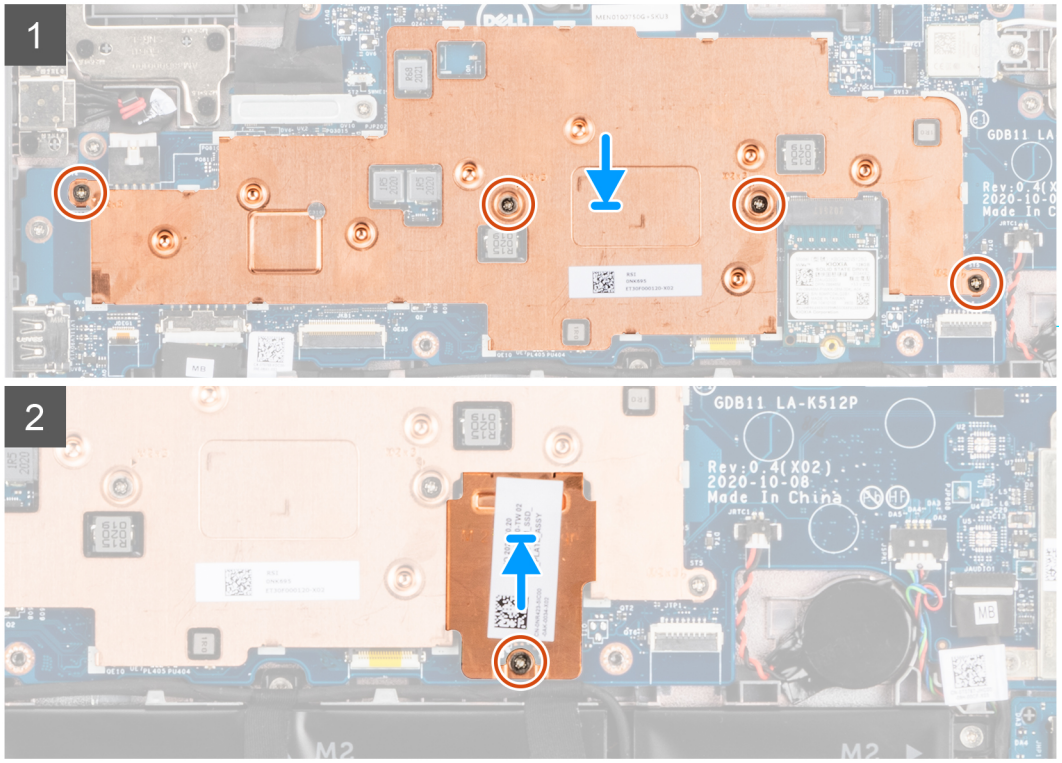
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the heatsink assembly and provides a visual representation of the installation procedure.

**5x**
M2x3






### Steps

1. Align and replace the heatsink assembly into its slot on the system board.
2. Replace the four screws (M2x3) to secure the heatsink assembly to the system board.
3. For systems shipped with an SSD: Align and replace the single screw (M2x3) that secures the SSD thermal plate to the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# Dummy battery cell

## Removing the dummy battery cell

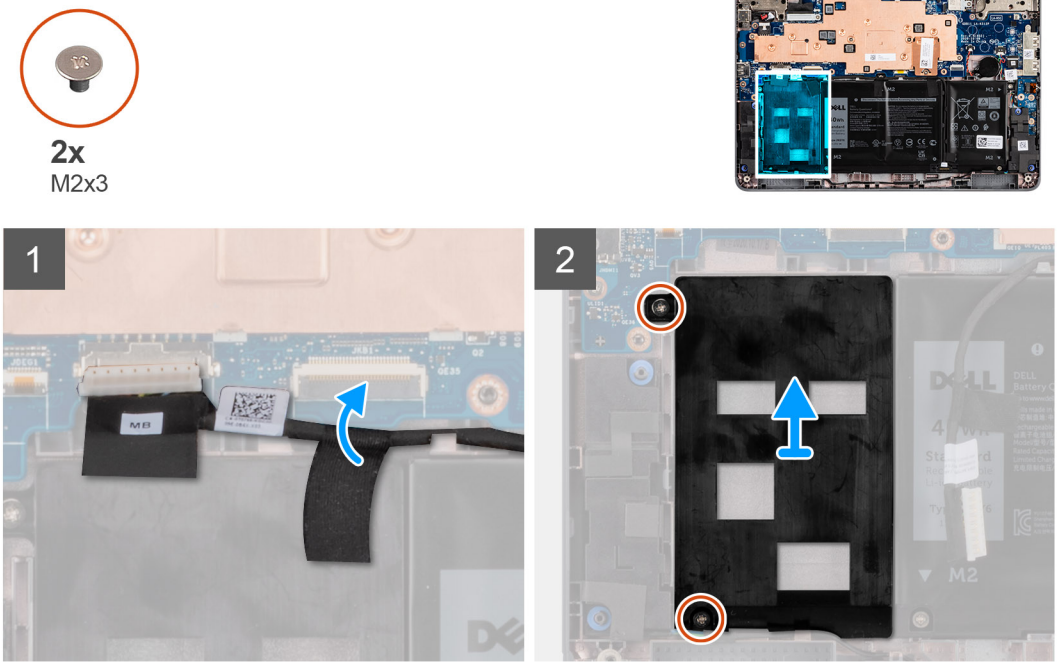
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

### About this task

**NOTE:** The following steps are for the systems that are shipped with a 3-cell battery.

The following image indicates the location of the dummy battery cell and provides a visual representation of the removal procedure.




### Steps

1. Peel off the adhesive tapes that secure the battery cable to the dummy battery cell.
2. Remove the two screws (M2x3) that secure the dummy battery cell to the system board.
3. Disconnect the battery cable from the system board.
4. Lift and remove the dummy battery cell from the computer chassis.

## Installing the dummy battery cell

### Prerequisites

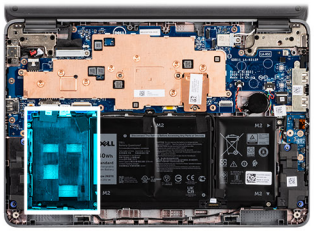
If you are replacing a component, remove the existing component before performing the installation procedure.

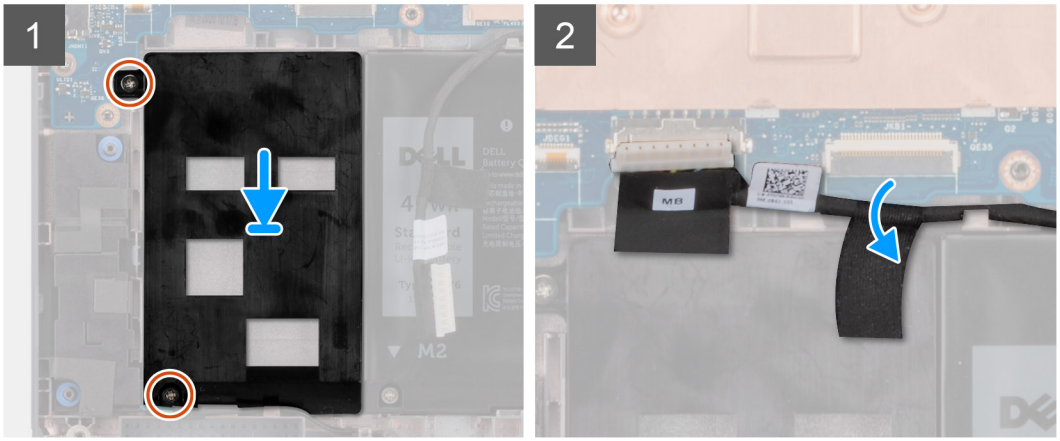
### About this task

**NOTE:** The following steps are for the systems that are shipped with a 3-cell battery.

The following image indicates the location of the dummy battery cell and provides a visual representation of the installation procedure.

2x
M2x3






### Steps

1. Align and place the dummy battery cell into the computer chassis.
2. Affix the adhesive tapes to secure the dummy battery cell to the system board.
3. Replace the two screws (M2x3) to secure the dummy battery cell in place.
4. Connect the battery cable to the connector on the system board.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Follow the procedure in after working inside your computer.

# System board

## Removing the system board

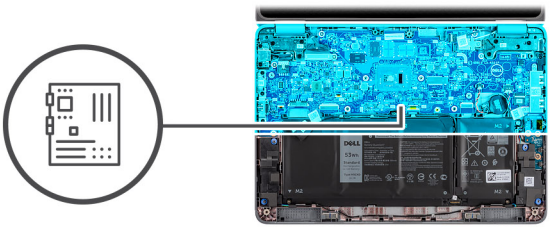
### Prerequisites

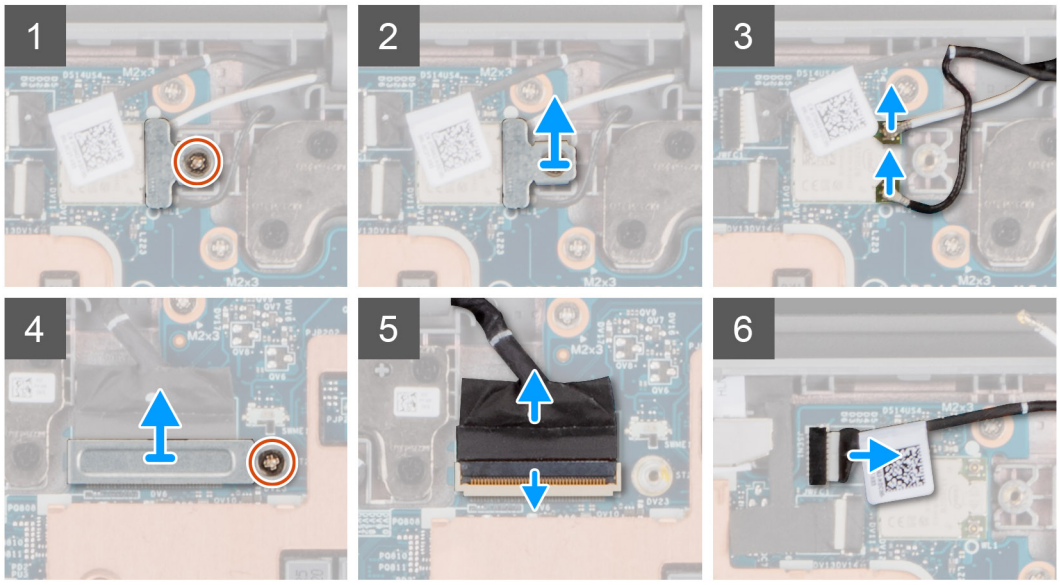
1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. For systems that are shipped with a Solid State Drive (SSD), remove the solid-state drive.
4. Remove the heatsink assembly.
5. For systems shipped with a world-facing camera, remove the world-facing camera.

### About this task

The following images indicate the location of the system board and provide a visual representation of the removal procedure.

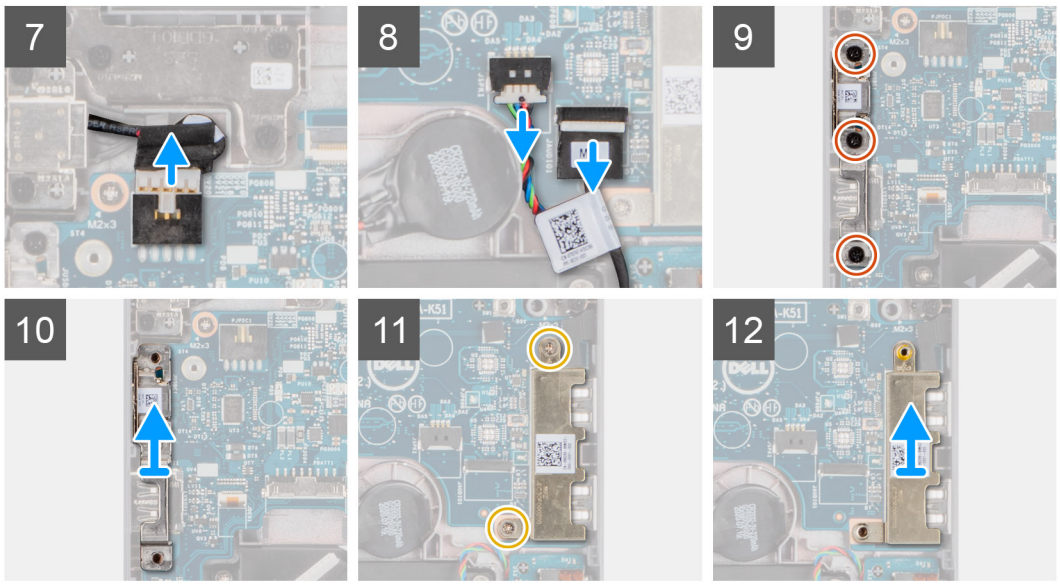
**2x**
M2x3



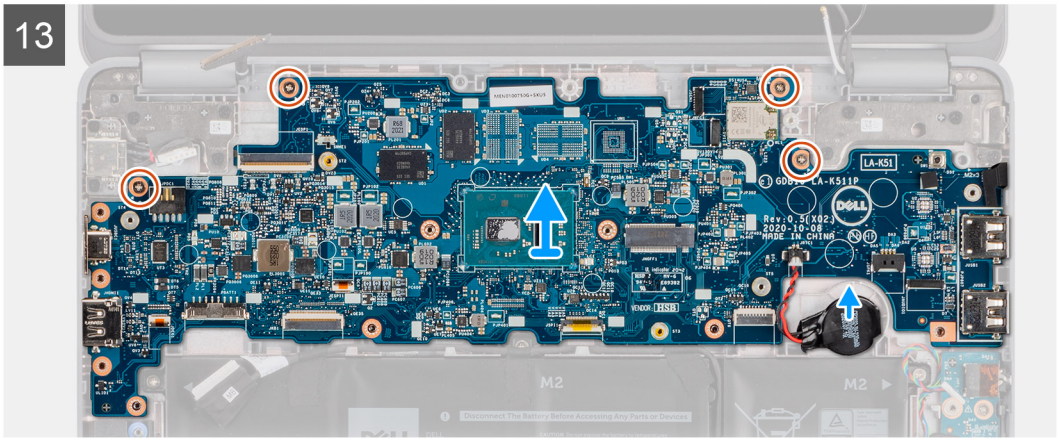



**3x**
M2x4

**2x**
M2x3



**4x**
M2x3




### Steps

1. Remove the singe screw (M2x3) that secures the WLAN antenna cable bracket to the system board.
2. Lift and remove the WLAN antenna cable bracket from the system board.
3. Disconnect the two antenna cables that are connected to the WLAN module on the system board.
4. Remove the singe screw (M2x3) that secures the display cable bracket to the system board. Lift and remove the display cable bracket from the system board.
5. Open the latch and disconnect the display cable from the connector on the system board.
6. For 2-in-1 systems, disconnect the touch cable from the connector on the system board.
7. Disconnect the power adapter port cable from the connector on the system board.
8. Disconnect the speaker cable and the audio board cable from their connectors on the system board.
9. For systems that are shipped with a USB Type-C port, remove the three screws (M2x4) that secure the USB Type-C bracket to the system board.
10. For systems that are shipped with a USB Type-C port, lift and remove the USB Type-C bracket from the system board.
11. Remove the two screws (M2x3) that secure the USB Type-A bracket to the system board.
12. Lift and remove the USB Type-A bracket from the system board.
13. For systems that are shipped with a USB Type-C port, remove the four screws (M2x3) that secure the system board to the computer chassis.
14. For systems that are shipped without a USB Type-C port, remove the six screws (M2x3) that secure the system board to the computer chassis.
15. Disconnect the coin cell battery cable from the connector on the system board.
16. Pry the coin cell battery to release it from the adhesive. Lift and remove it from the system board.
17. Carefully slide the system board out of the computer.

# Installing the system board

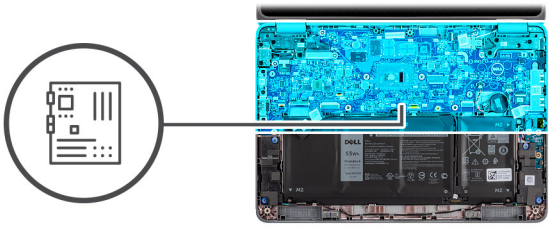
### Prerequisites

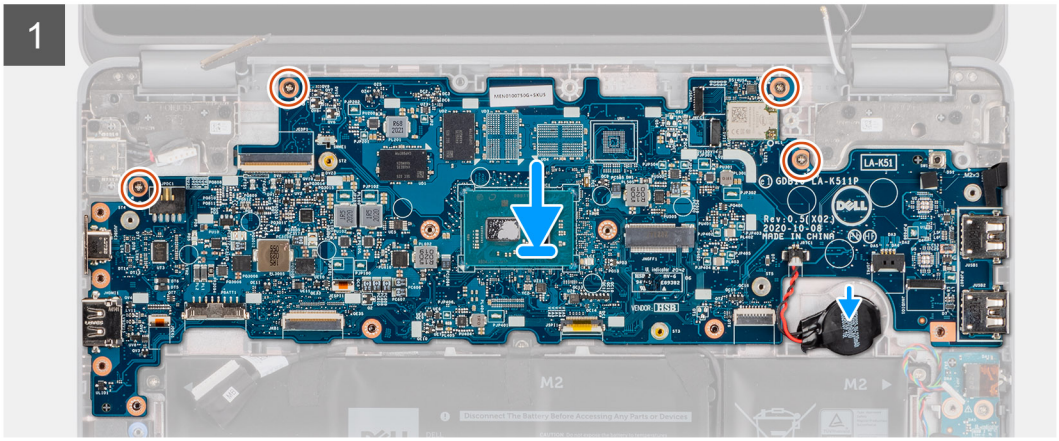
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following images indicate the location of the system board and provide a visual representation of the installation procedure.

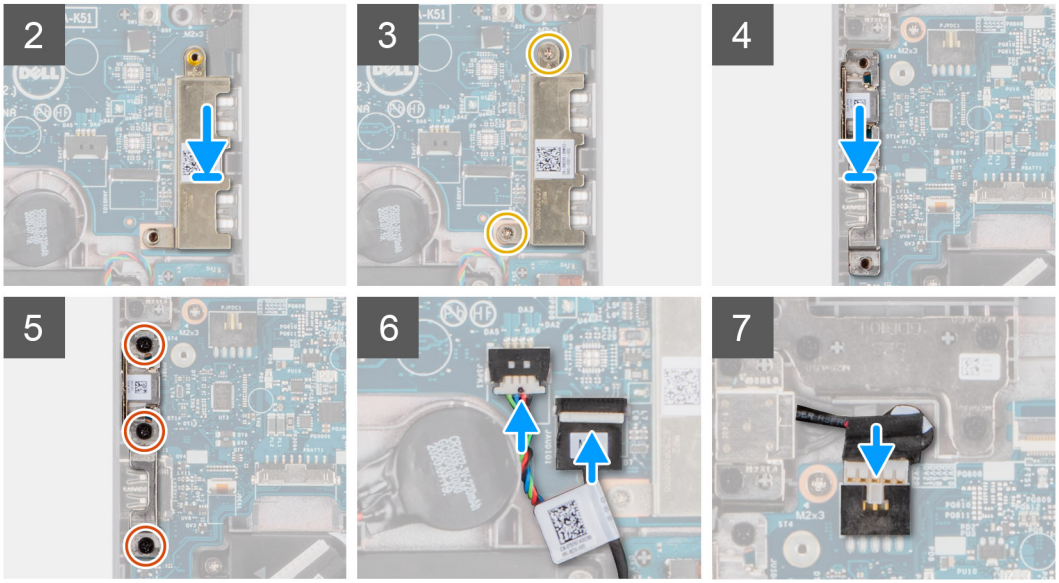
**4x**
M2x3



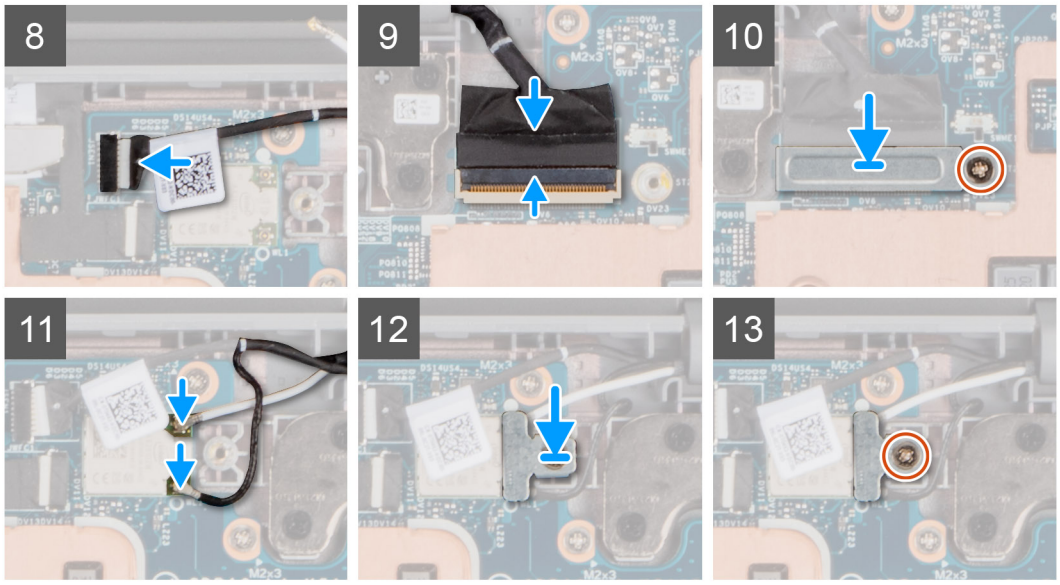



**3x**
M2x4

**2x**
M2x3



**2x**
M2x3




### Steps

1. Replace the system board into the computer chassis.
2. For systems that are shipped with a USB Type-C port, replace the four screws (M2x3) that secure the system board to the computer chassis.
3. For systems that are not shipped with a USB Type-C port, replace the six screws (M2x3) that secure the system board to the computer chassis.
4. Replace the coin cell battery into its sot on the system board.
5. Connect the coin cell battery cable to the connector on the system board.
6. Replace the USB Type-A bracket on the system board.
7. Replace the two screws (M2x3) to secure the USB Type-A bracket to the system board.
8. For systems that are shipped with a USB Type-C port, replace the USB Type-C bracket on the system board.
9. For systems that are shipped with a USB Type-C port, replace the three screws (M2x4) to secure the USB Type-C bracket to the system board.
10. Connect the speaker cable and the audio board cable to their connectors on the system board.
11. Connect the power adapter port cable to its connector on the system board.
12. For 2-in-1 systems, connect the touch cable to the connector on the system board.
13. Connect the display cable to its connector on the system board. Close the latch to secure the cable.
14. Replace the display cable bracket on the system board. Replace the singe screw (M2x3) to secure the display bracket to the system board.
15. Connect the two antenna cables to the WLAN module on the system board.
16. Replace the WLAN antenna cable bracket on the system board.
17. Replace the singe screw (M2x3) to secure the WLAN antenna cable bracket to the system board.

### Next steps

1. For systems shipped with a world-facing camera, install the world-facing camera.
2. Install the heatsink assembly.
3. For systems that are shipped with a Solid State Drive (SSD), install the solid-state drive.

4. Install the palmrest and keyboard assembly.
5. Follow the procedure in after working inside your computer.

# Touch-panel assembly

## Removing the touch-panel assembly

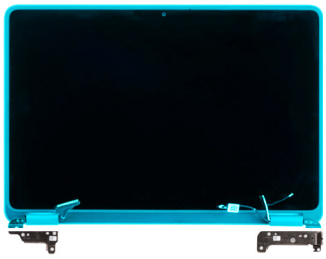
### Prerequisites

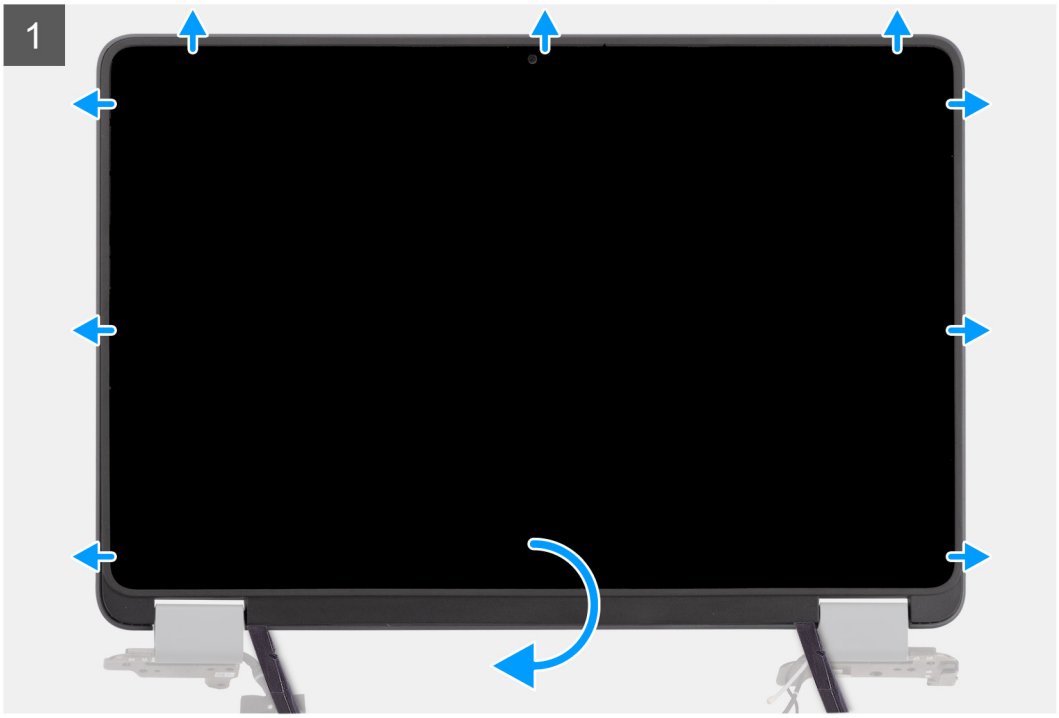
1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. Remove the display assembly.

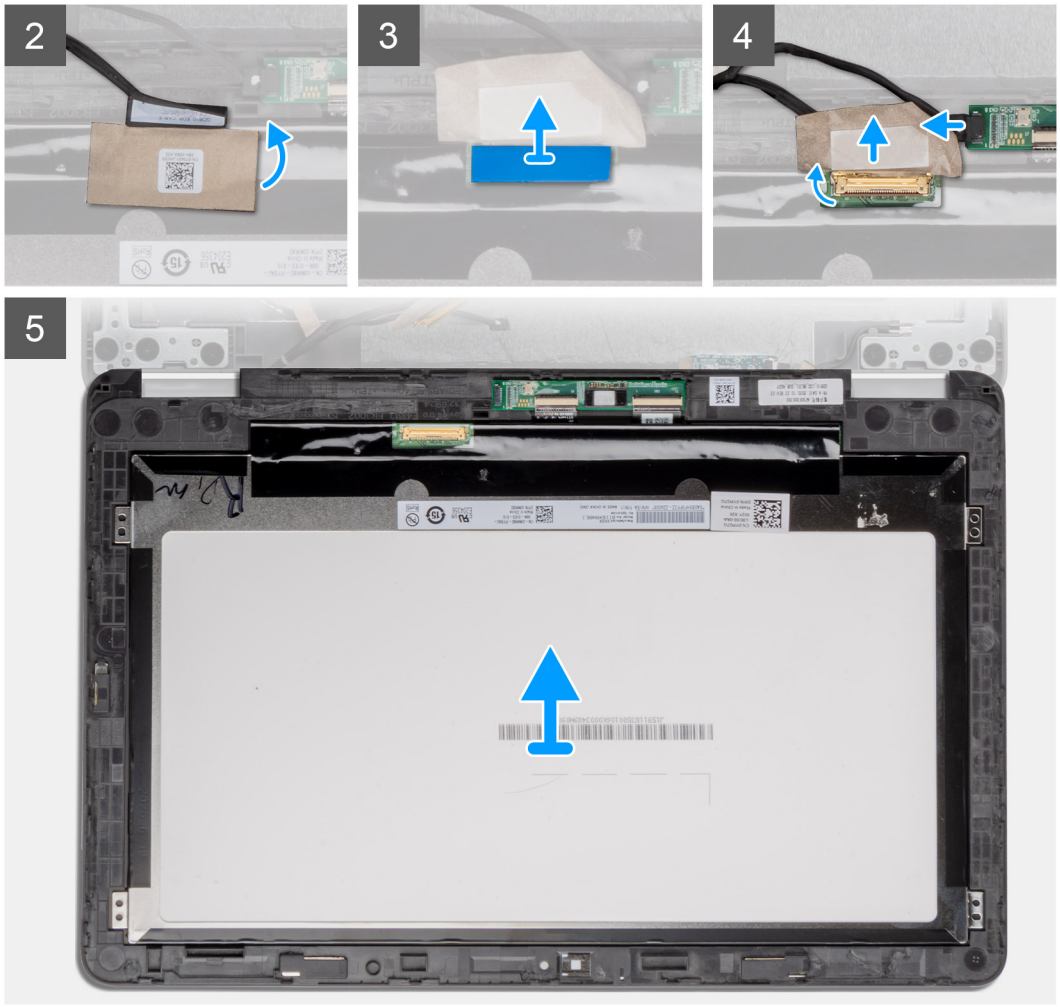
### About this task

**NOTE:** The following steps are for 2-in-1 systems.

The following images indicate the location of the touch-panel assembly and provide a visual representation of the removal procedure.








**Steps**

1. Place the display assembly on a flat surface. Open the display hinge caps to 90 degrees and open the display hinges to 180 degrees.
2. Open the display hinge caps to 180 degrees and place the display hinges over the edge of the table.
3. Use a plastic scribe to pry open the display assembly, starting from the U-shaped recesses near the hinges at the bottom edge of the display assembly.
4. Pry open the bottom side of the display assembly.
5. Adjust the display hinge caps to 90 degrees and the display hinges to 180 degrees so that the display assembly can lay flat on the surface.
6. Lift and remove the touch-panel assembly from the display cover.
7. Gently flip over the display panel assembly and place it on a flat surface.

   **CAUTION: The display cable is not long enough to completely flatten the panel. Technicians must move the touch-panel assembly underneath the display hinges.**

8. Peel off the mylar tape that secures the display cable on the rear of the display panel.
9. Peel off the rubber sticker from the display cable connector.
10. Disconnect the display cable from the connector on the display panel.
11. Peel off the tape that secures the connector on the touch control board.
12. Disconnect the display cable from the connector on the touch control board.
13. Lift and remove the touch-panel assembly.

# Installing the touch-panel assembly

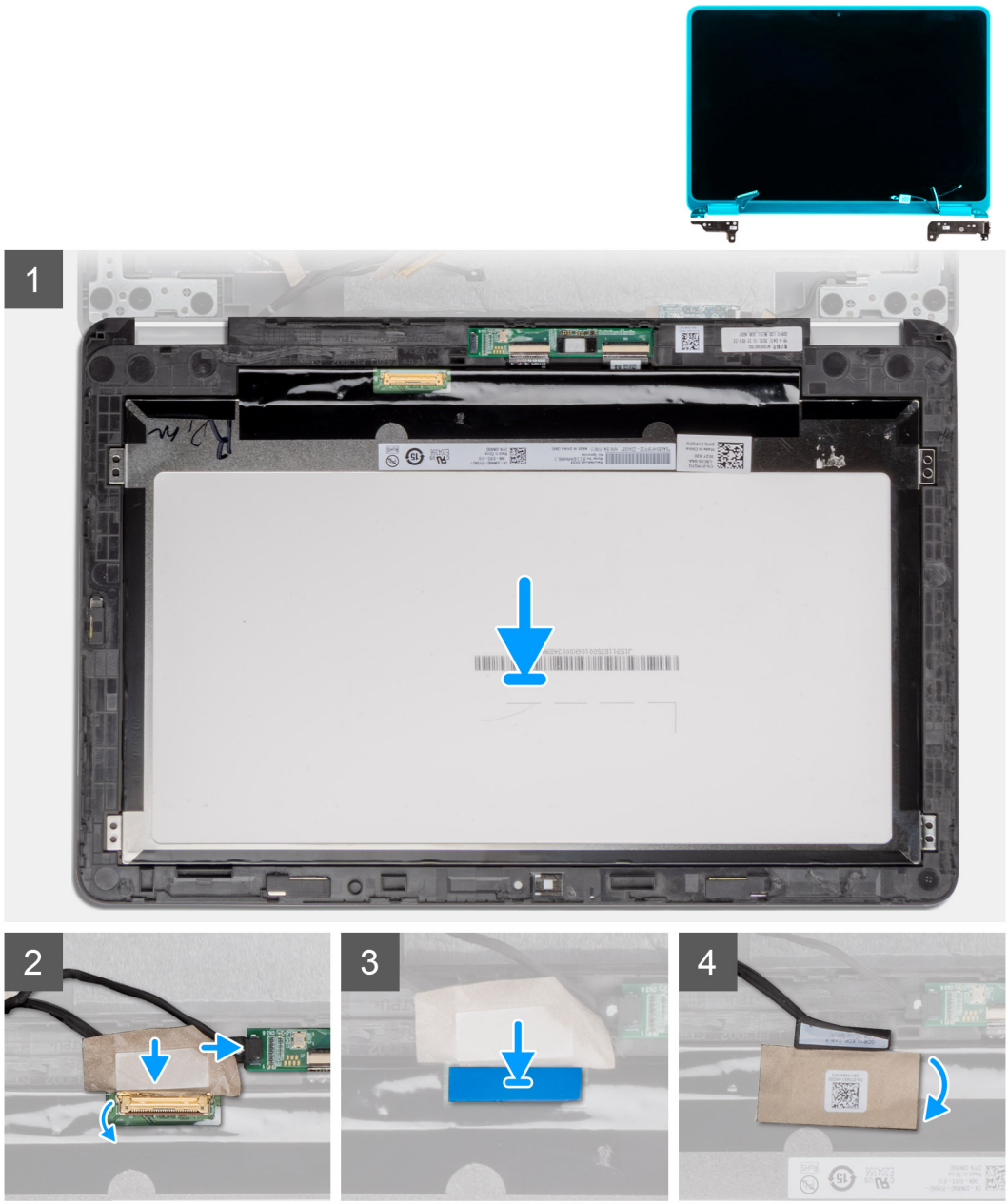
### Prerequisites

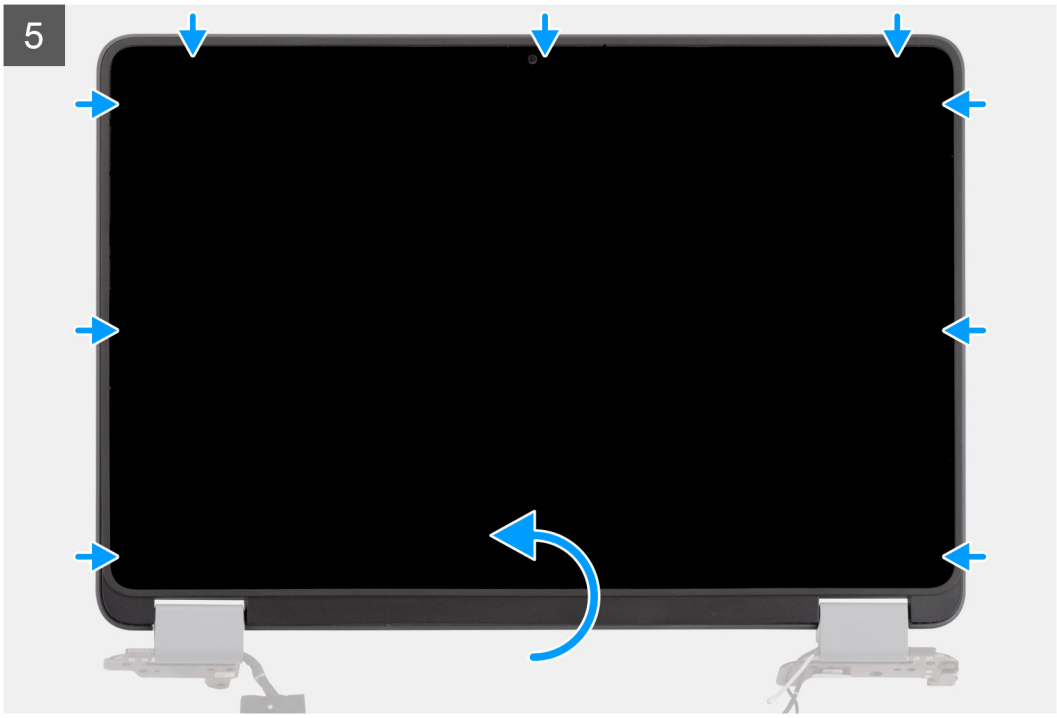
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

**NOTE:** The following steps are for 2-in-1 systems.

The following image indicates the location of the touch panel assembly and provides a visual representation of the installation procedure.






### Steps

1. Align and place the touch-panel assembly on the display cover.
2. Connect the display cable to the connector on the touch control board.
3. Affix the tape to secure the connector on the touch control board.
4. Connect the display cable to the connector on the display panel.
5. Affix the rubber sticker on the display cable connector.
6. Affix the mylar tape to secure the display cable on the rear of the display panel.
7. Gently snap the touch panel assembly into place.

### Next steps

1. Install the display assembly.
2. Install the palmrest and keyboard assembly.
3. Follow the procedure in after working inside your computer.

# Display bezel

## Removing the display bezel

### Prerequisites

**NOTE:** The following steps are for Latitude 3120 systems.

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. Remove the display assembly.

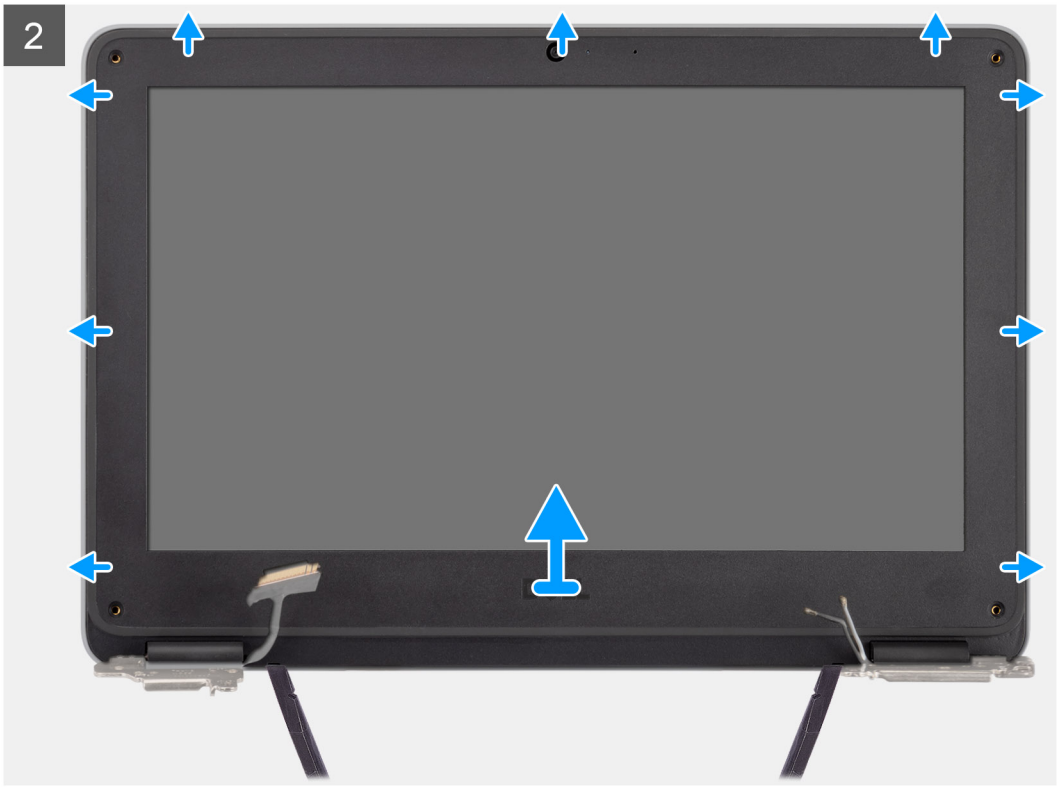
### About this task

The following images indicate the location of the display bezel and provide a visual representation of the removal procedure.

**4x**
M2.5x3.8

1

2



### Steps

1. **NOTE:** The bezel screws are covered with disposable cosmetic mylar stickers that must not be peeled off before bezel screw removal.

   Remove the four screws (M2.5x3.8) that secure the display bezel on the display assembly.
2. Use a plastic scribe to carefully pry open the recesses near the left and right hinges on the bottom edge of the display bezel.
3. Use the scribe to pry open the top, left, and right sides of the display bezel.
4. Lift and remove the display bezel from the display assembly.

## Installing the display bezel

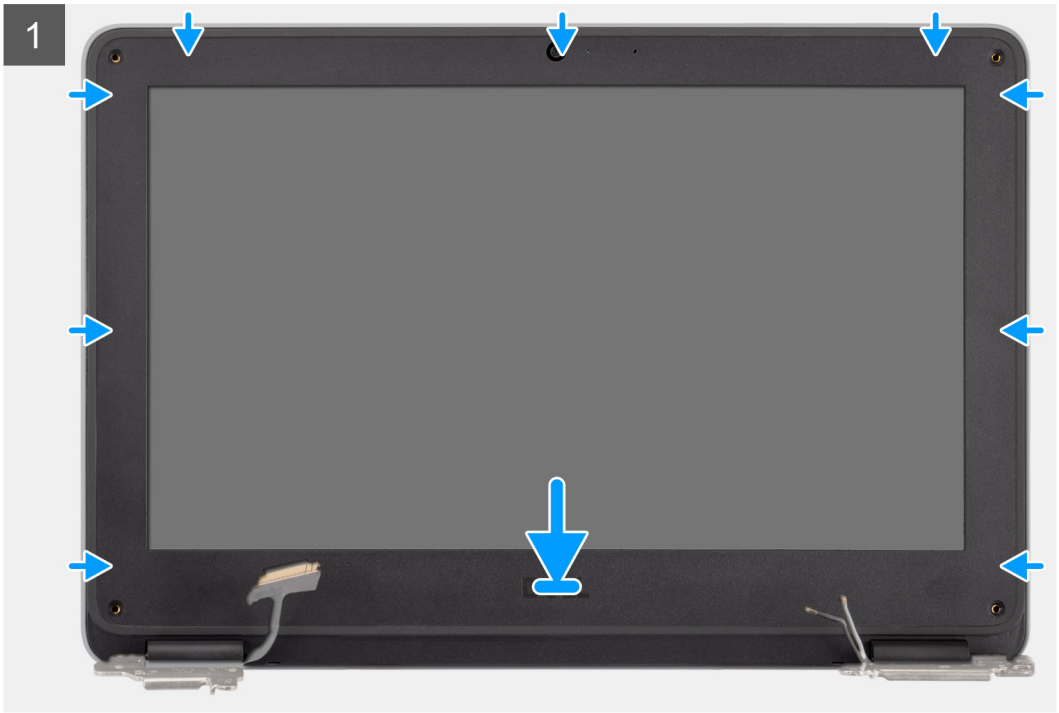
### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

**NOTE:** The following steps are for Latitude 3120 systems.

The following images indicate the location of the display bezel and provide a visual representation of the installation procedure.



**4x**
M2.5x3.8


### Steps

1. **NOTE:** Push the screwdriver directly into the stickers and turn counterclockwise to replace the screws. When replacing the new display bezel, adhere the new stickers over the screws once the screws have been secured.

   Align the display bezel with the display assembly. Gently snap the display bezel into place.
2. Replace the four screws (M2.5x3.8) to secure the display bezel on the display assembly.

### Next steps

1. Install the display assembly.
2. Install the palmrest and keyboard assembly.
3. Follow the procedure in after working inside your computer.

# Display panel

## Removing the display panel

### Prerequisites

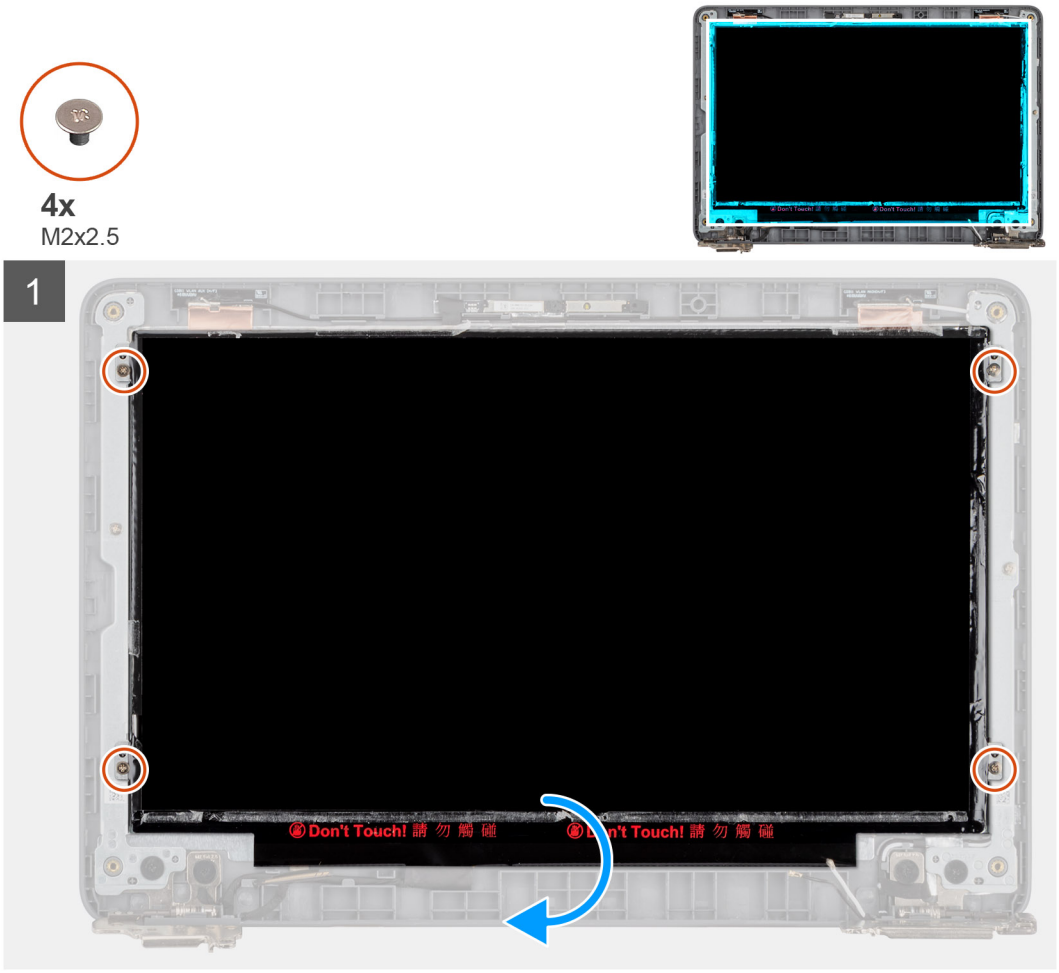
**NOTE:** The following steps are for Latitude 3120 systems.

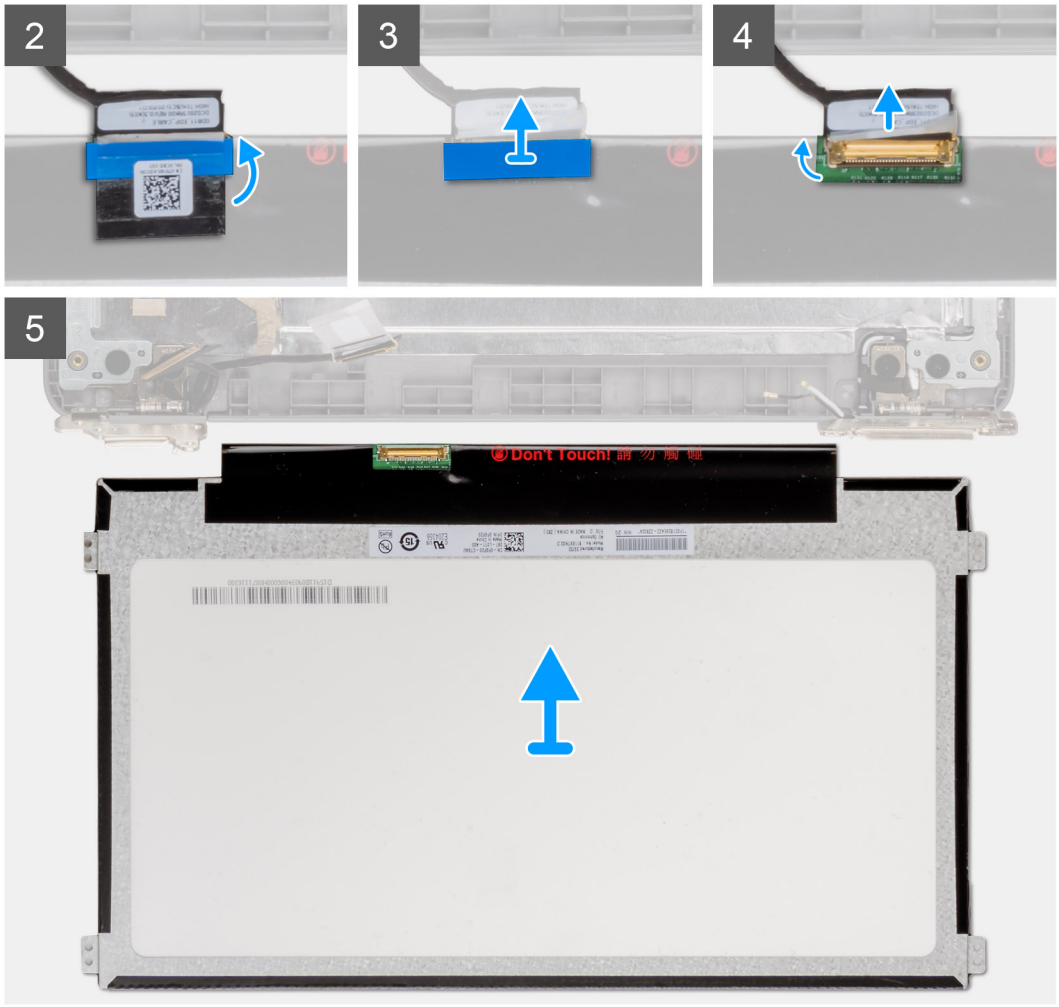
1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. Remove the display assembly.

4. Remove the display bezel.

### About this task

The following images indicate the location of the display panel and provide a visual representation of the removal procedure.






### Steps

1. Remove the four screws (M2x2.5) that secure the display panel on the display assembly.
2. Gently flip over the display panel.
3. Peel off the mylar tape that secures the display cable on the rear of the display panel.
4. Peel off the rubber sticker from the display cable connector.
5. Disconnect the display cable from the connector on the display panel.
6. Lift and remove the display panel from the display assembly.

## Installing the display panel

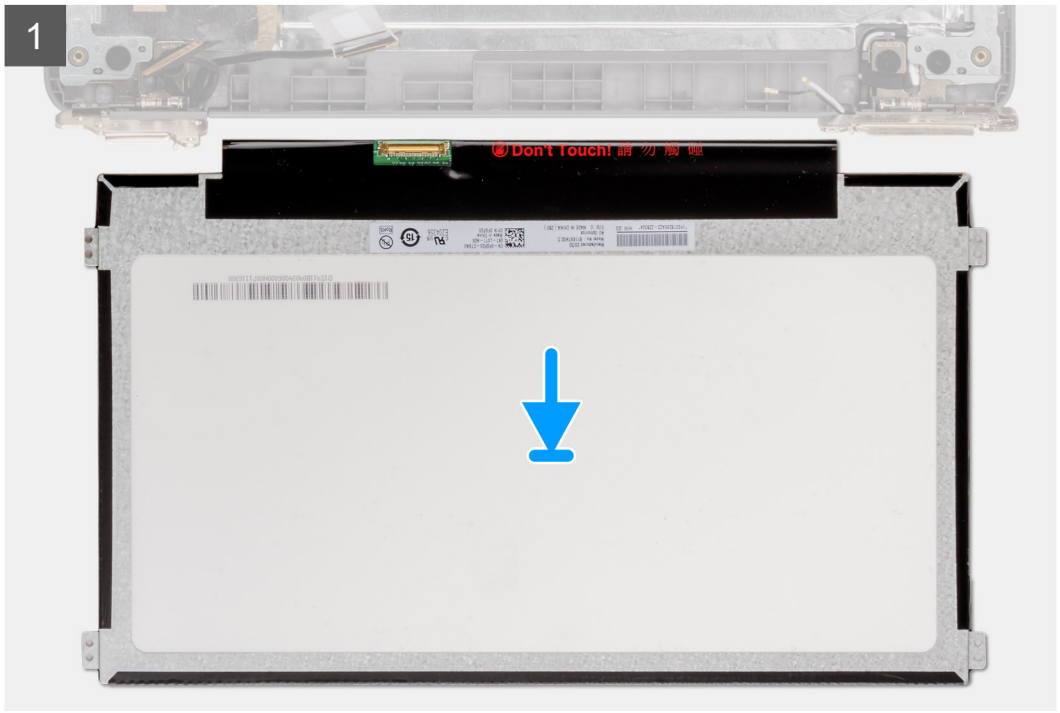
### Prerequisites

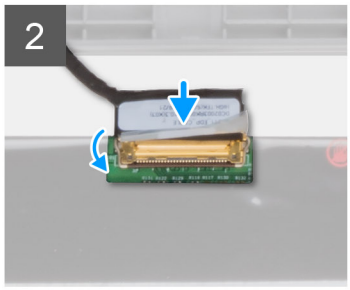
If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

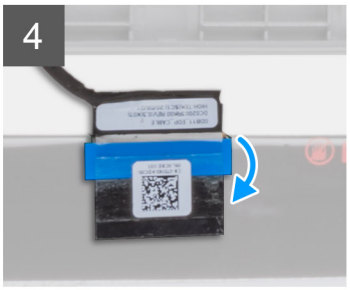
**NOTE:** The following steps are for Latitude 3120 systems.

The following images indicate the location of the display panel and provide a visual representation of the installation procedure.

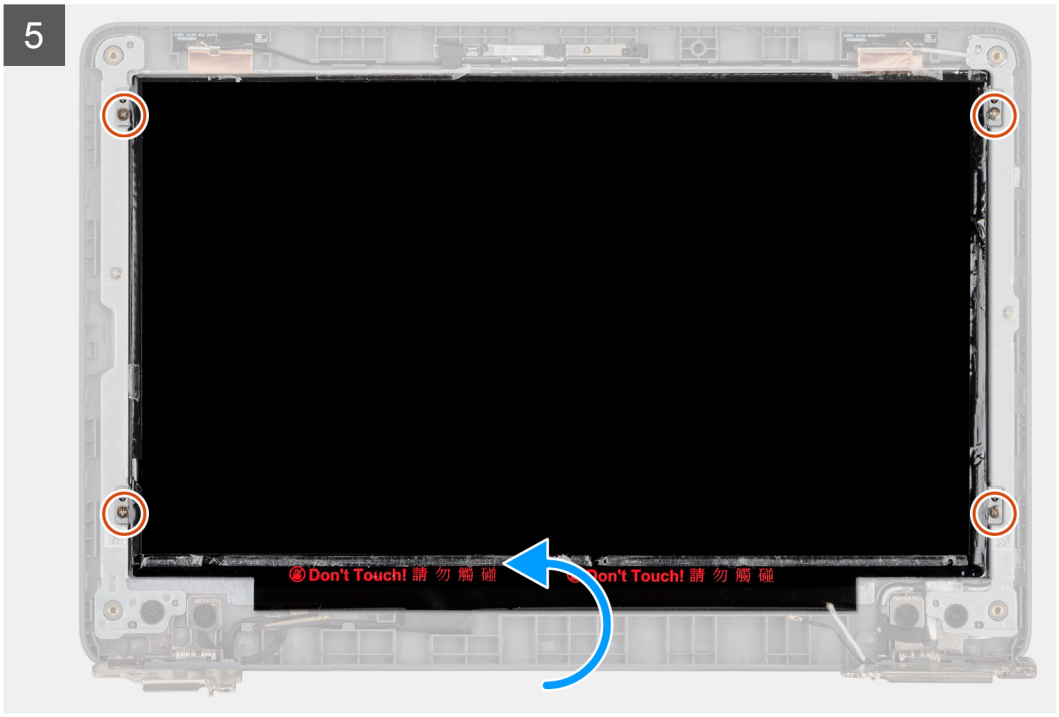

1
Don't Touch!


2


3


4

**4x**
M2x2.5




### Steps

1. Connect the display cable on the connector on the display panel.
2. Affix the rubber sticker on the display cable connector.
3. Affix the mylar tape to secure the display cable on the rear of the display panel.
4. Align the display panel with the display assembly. Gently snap the display bezel into place.
5. Replace the four screws (M2x2.5) to secure the display panel on the display assembly.
6. Gently flip over the display panel.

### Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the palmrest and keyboard assembly.
4. Follow the procedure in after working inside your computer.

# Front facing camera

## Removing the front facing camera

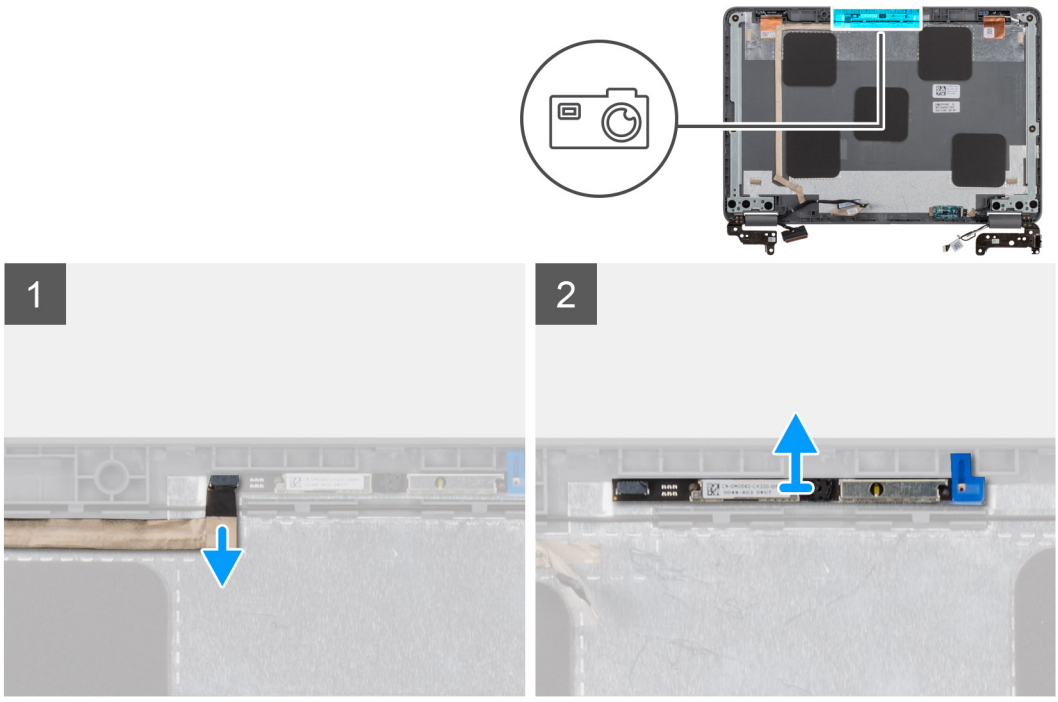
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

3. Remove the display assembly.
4. Remove the display bezel.
5. Remove the display panel.

### About this task

The following image indicates the location of the front-facing camera, and provides a visual representation of the removal procedure.




### Steps

1. Peel off the adhesive tape that secures the display connector to the front-facing camera module.
2. Disconnect the display cable from the front-facing camera module.
3. Use a plastic scribe to pry the front-facing camera module from the display cover.
4. Lift and remove the front-facing camera module from the display cover.

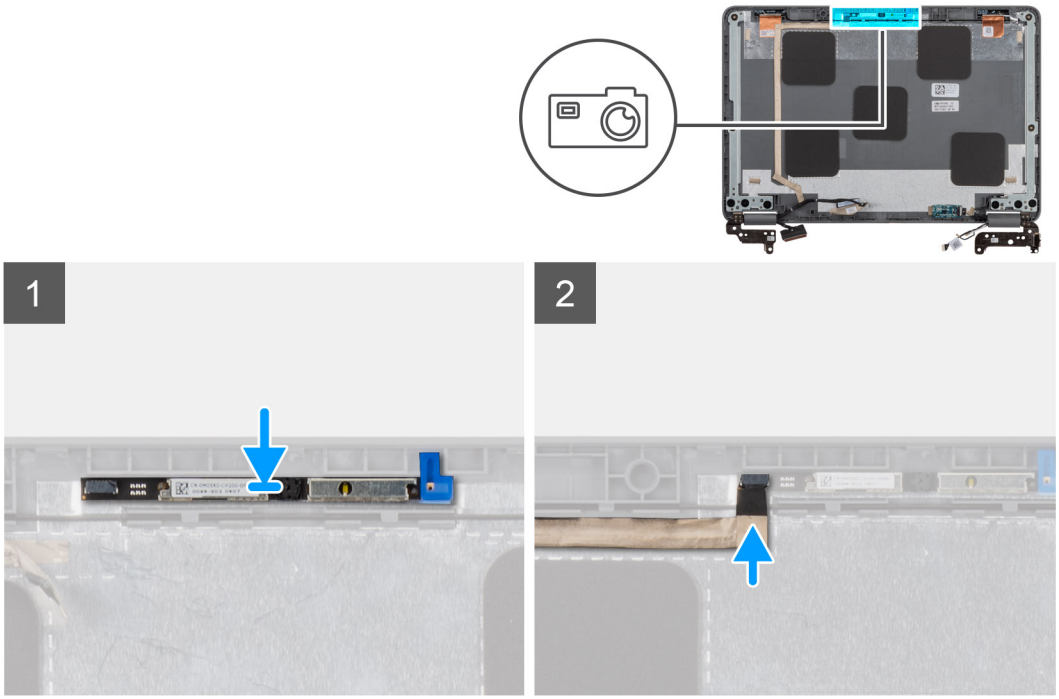
## Installing the front facing camera

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the front-facing camera, and provides a visual representation of the installation procedure.




### Steps

1. Insert the front-facing camera module into the slot on the display cover.
2. Connect the display cable to the front-facing camera module.
3. Affix the adhesive tape to secure the display connector on the front-facing camera module.

### Next steps

1. Install the display panel.
2. Install the display bezel.
3. Install the display assembly.
4. Install the palmrest and keyboard assembly.
5. Follow the procedure in after working inside your computer.

# Display cable

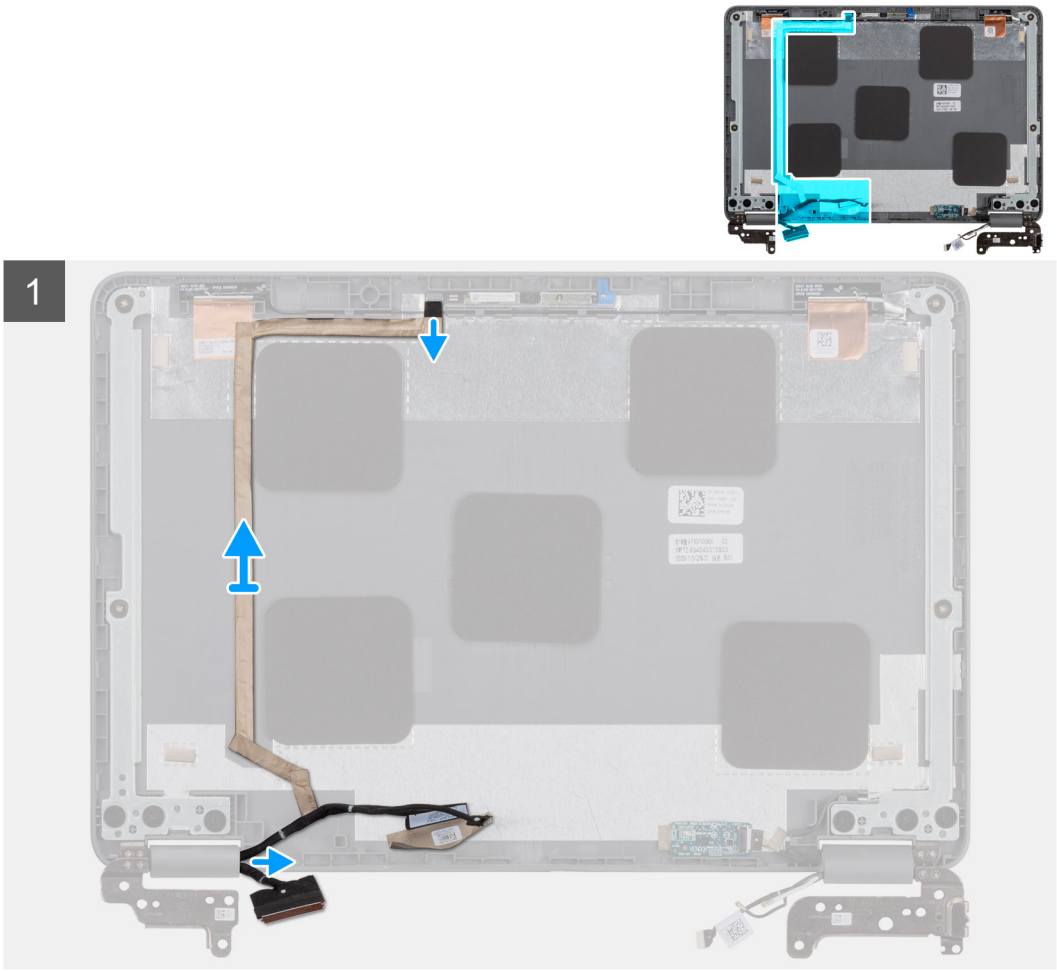
## Removing the display cable

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. Remove the display assembly.
4. Remove the display bezel.
5. Remove the display panel.

### About this task

The following image indicates the location of the display cable and provides a visual representation of the removal procedure.




### Steps

1. Peel off the tape that secures the display connector on the front-facing camera module.
2. Disconnect the display cable to the front-facing camera module.
3. Peel off the tape from the left hinge that secures the display cable.
4. Unroute the display cable from the routing channel on the bottom-left side of the display cover.
5. Peel off the display cable from the display cover.

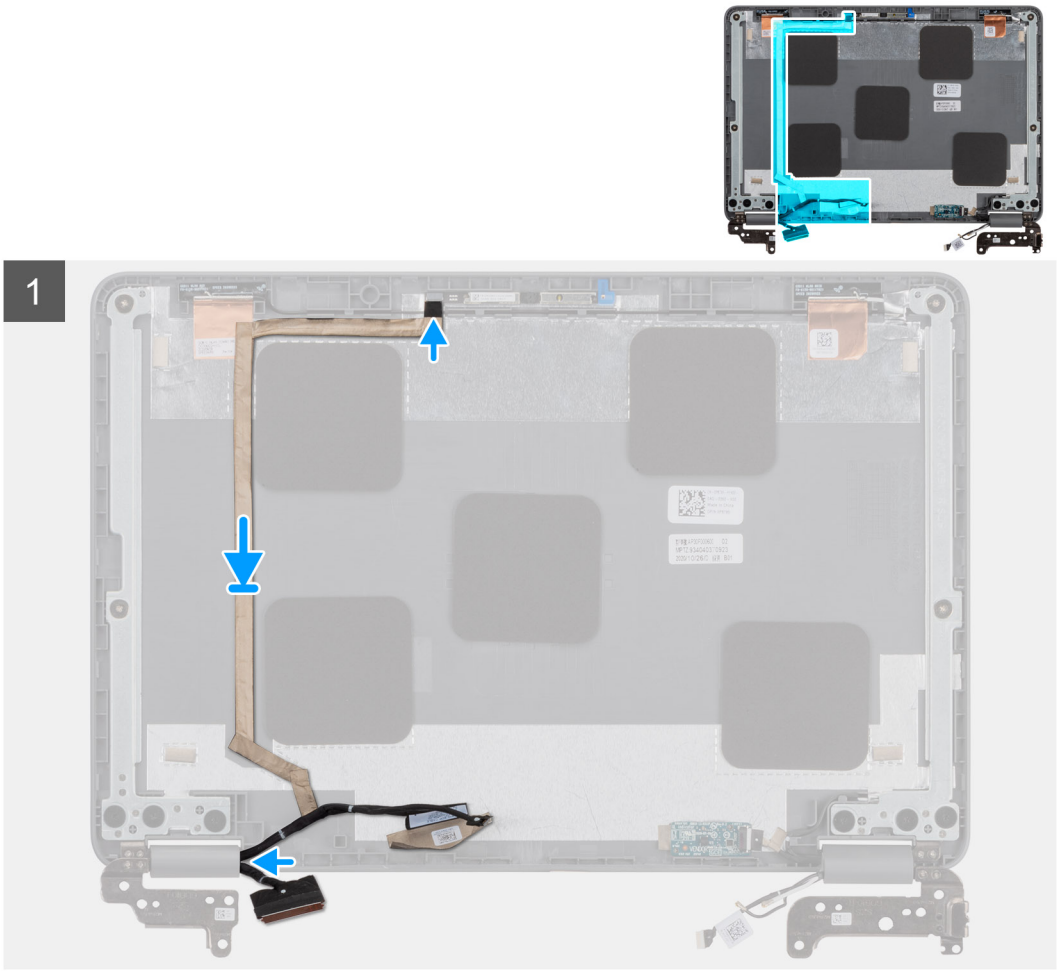
## Installing the display cable

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the display cable and provides a visual representation of the installation procedure.




### Steps

1. Align and affix the display cable on the display cover.
2. Route the display cable through the routing channel on the bottom-left side of the display cover.
3. Affix the tape from the left hinge to secure the display cable.
4. Connect the display cable to the front-facing camera module.
5. Affix the tape to secure the display connector on the front-facing camera module.

### Next steps

1. Install the display panel.
2. Install the display bezel.
3. Install the display assembly.
4. Install the palmrest and keyboard assembly.
5. Follow the procedure in after working inside your computer.

# Display hinges

## Removing the display hinge

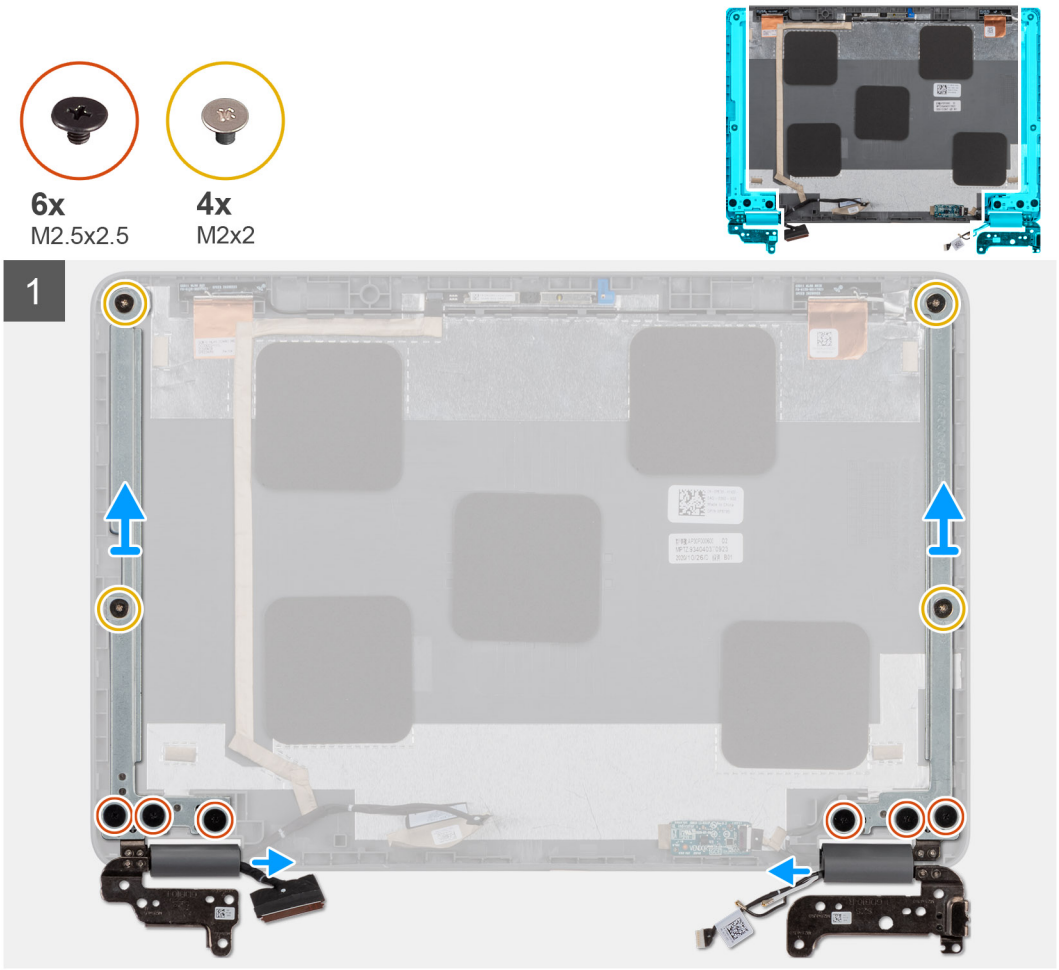
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.

3. Remove the display assembly.
4. Remove the display bezel.
5. Remove the display panel.

### About this task

The following image indicates the location of the display hinge and provides a visual representation of the removal procedure.




### Steps

1. Peel off the tape from the left hinge that secures the display cable.
2. Peel off the tape from the right hinge that secures the WLAN antenna cables.
3. For Latitude 3120, remove the two (M2x2.5) screws and four (M2.5x2.5) screws that secure the display hinges to the display assembly.
4. For Latitude 3120 2-in-1, remove the six (M2.5x2.5) screws and four (M2x2) screws that secure the display hinges to the display assembly.
5. Open the display hinges to 45 degrees.
6. Remove the display hinges from the display assembly.

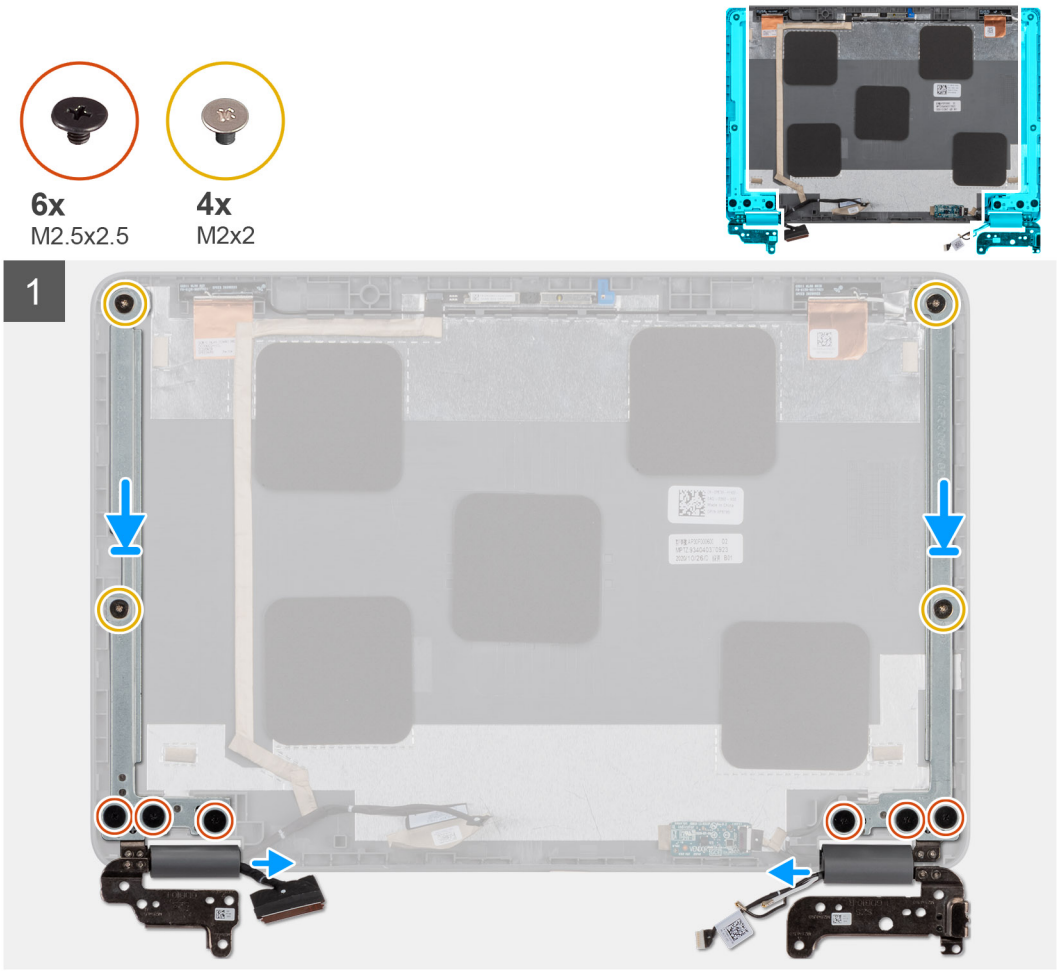
## Installing the display hinge

### Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

### About this task

The following image indicates the location of the display hinge and provides a visual representation of the installation procedure.




### Steps

1. Align and place the display hinges on the display assembly.
2. For Latitude 3120, replace the two (M2x2.5) screws and four (M2.5x2.5) screws to secure the display hinges to the display assembly.
3. For Latitude 3120 2-in-1, replace the six (M2.5x2.5) screws and four (M2x2) screws to secure the display hinges to the display assembly.
4. Affix the tape from the left hinge to secure the display cable.
5. Affix the tape from the right hinge to secure the WLAN antenna cables.

### Next steps

1. Install the palmrest and keyboard assembly.
2. Install the display assembly.
3. Install the display bezel.
4. Install the display panel.
5. Follow the procedure in after working inside your computer.

# Display back cover assembly

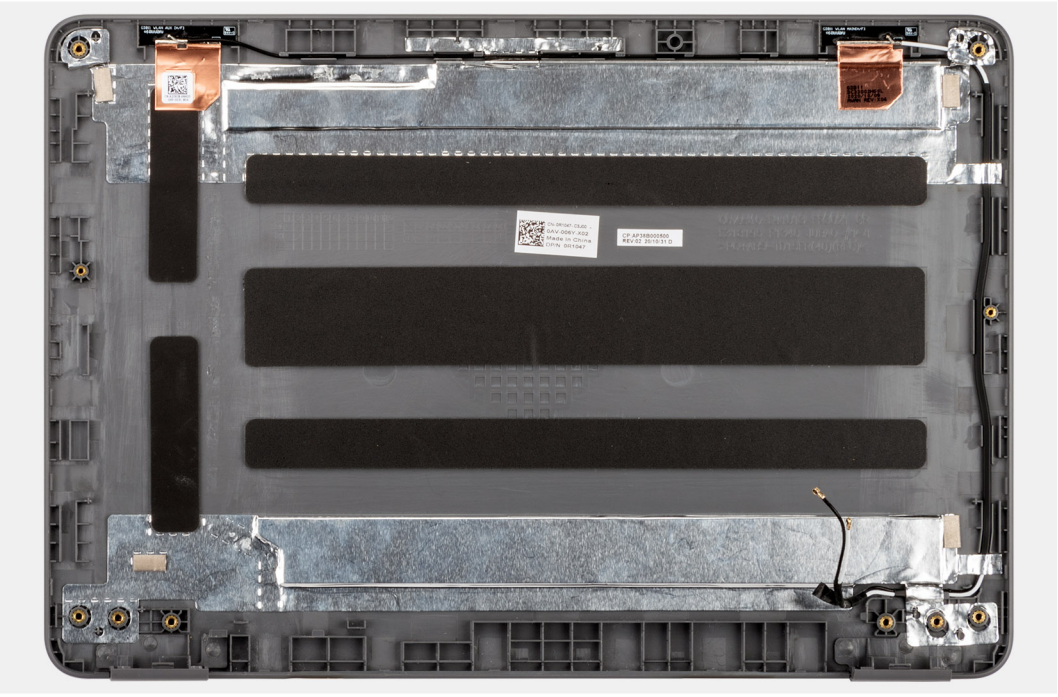
## Display back cover assembly

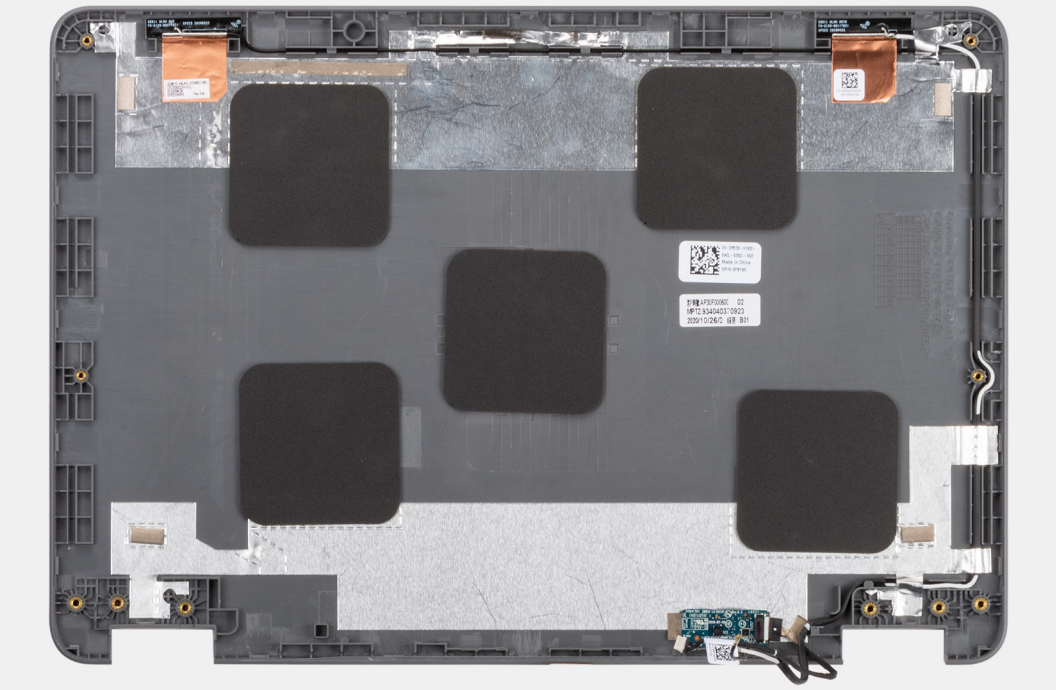
### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. Remove the display assembly.
4. Remove the display bezel.
5. Remove the display panel.
6. For 2-in-1 systems, remove the touch-panel assembly.
7. Remove the front-facing camera.
8. Remove the display cable.
9. Remove the display hinges.

### About this task

After performing the preceding steps, you are left with the display cover assembly.





### Next steps

1. Install the display hinges.
2. Install the display cable.
3. Install the front-facing camera.
4. For 2-in-1 systems, install the touch-panel assembly
5. Install the display panel.
6. Install the display bezel.
7. Install the display assembly.
8. Install the palmrest and keyboard assembly.
9. Follow the procedure in after working inside your computer.

# Base cover assembly

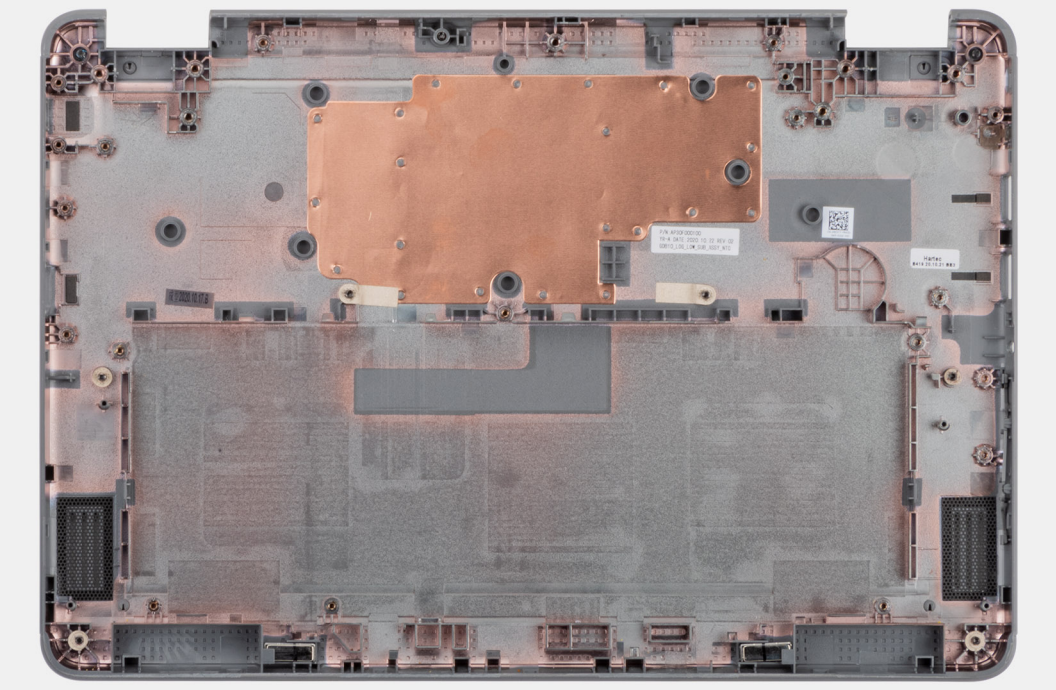
## Replacing the base cover assembly

### Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the palmrest and keyboard assembly.
3. For systems that are shipped with a Solid State Drive (SSD), remove the solid-state drive.
4. Remove the speakers.
5. Remove the audio board.
6. Remove the 3-cell battery or the 4-cell battery depending on the system configuration.
7. Remove the display assembly.
8. Remove the power adapter port.
9. For systems shipped with a world-facing camera, remove the world-facing camera.
10. Remove the heatsink assembly.
11. For systems that are shipped with a 3-cell battery, remove the dummy battery cell.
12. Remove the system board.

### About this task

After performing the preceding steps, you are left with the base cover assembly.



### Next steps

1. Install the system board.
2. For systems that are shipped with a 3-cell battery, install the dummy battery cell.
3. Install the heatsink assembly.
4. For systems shipped with a world-facing camera, install the world-facing camera.
5. Install the power adapter port.
6. Install the display assembly.
7. Install the 3-cell battery or the4-cell battery depending on the system configuration.
8. Install the audio board.
9. Install the speakers.
10. For systems that are shipped with a Solid State Drive (SSD), install the solid-state drive.
11. Install the palmrest and keyboard assembly.
12. Follow the procedure in after working inside your computer.

# 3

# Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

**Topics:**



## Downloading Windows drivers

**Steps**

1. Turn on the notebook.
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your notebook, and then click **Submit**.

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

4. Click **Drivers and Downloads**.
5. Select the operating system installed on your notebook.
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your notebook.
8. After the download is complete, navigate to the folder where you saved the driver file.
9. Double-click the driver file icon and follow the instructions on the screen.

# 4

# System setup

**CAUTION: Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.**

**NOTE:** Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

**Topics:**



## BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.

## Entering BIOS setup program

**About this task**

Turn on (or restart) your computer and press F2 immediately.

## Navigation keys

**NOTE:** For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

| Keys | Navigation |
|---|---|
| **Up arrow** | Moves to the previous field. |
| **Down arrow** | Moves to the next field. |
| **Enter** | Selects a value in the selected field (if applicable) or follow the link in the field. |
| **Spacebar** | Expands or collapses a drop-down list, if applicable. |
| **Tab** | Moves to the next focus area. |
| **Esc** | Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system. |

# Boot Sequence

Boot sequence enables you to bypass the System Setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self-Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key.

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive

  **NOTE:** XXXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

  **NOTE:** Choosing **Diagnostics**, displays the **SupportAssist** screen.

The boot sequence screen also displays the option to access the System Setup screen.

# System setup options

**NOTE:** Depending on the tabletcomputerlaptop and its installed devices, the items listed in this section may or may not appear.

## General options

### Table 2. General

| Option | Description |
|---|---|
| System Information | Displays the following information:<br>• System Information: Displays **BIOS Version, Service Tag, Asset Tag, Ownership Tag, Manufacture Date, Ownership Date,** and **Express Service Code**<br>Signed Firmware Update is enabled.<br>• Memory Information: Displays **Memory Installed, Memory Available, Memory Speed, Memory Channel Mode,** and **Memory Technology**<br>**NOTE:** Due to an amount of memory being assigned for system use, 'Memory Available' is less than 'Memory Installed'.<br>**NOTE:** Certain operating systems may not be able to use all the available memory.<br>• Processor Information: Displays **Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable,** and **64-Bit Technology.**<br>• Device Information: Displays **M.2 PCIe SSD-0, Passthrough MAC Address, Video Controller, Video BIOS Version, Video Memory, Panel type, Native Resolution, Audio Controller, Wi-Fi Device,** and **Bluetooth Device.** |
| Battery Information | Displays the battery status health and whether the AC adapter is installed. |
| Boot Sequence | Allows you to specify the order in which the computer attempts to find an operating system from the devices specified in this list. |
| Advanced Boot Options | Allows you to enable UEFI Network Stack. If enabled, UEFI Networking Protocols are installed and available, allowing pre-OS and early OS networking features to use any enabled NICs. |

### Table 2. General (continued)

| Option | Description |
|---|---|
| UEFI Boot Path Security | This option controls whether or not the system will prompt the user to enter the Admin password when booting a UEFI boot path from the F12 Boot Menu.<br>● Always, Except Internal HDD (enabled by default)<br>● Always, Except Internal HDD&PXE<br>● Always<br>● Never |
| Date/Time | Allows you to set the date and time settings. Changes to the system date and time take effect immediately. |

.

# System information

### Table 3. System Configuration

| Option | Description |
|---|---|
| SATA Operation | Allows you to configure the operating mode of the integrated SATA hard drive controller.<br>● Disabled = The SATA controllers are hidden.<br>● AHCI = SATA is configured for AHCI mode (enabled by default). |
| Drives | Allows you to enable or disable the various drives on-board: The **M.2 PCIe SSD-0** is enabled by default. |
| Smart Reporting | This field controls whether hard drive errors for integrated drives are reported during system startup. The **Enable Smart Reporting option** is disabled by default. |
| USB Configuration | Allows you to enable or disable the integrated USB controller for:<br>● Enable USB Boot Support (enabled by default)<br>**NOTE:** If the Fastboot option is set to 'Minimal', the 'Enable USB Boot Support' setting is ignored, and the system will not boot from any Pre-boot USB devices.<br>● Enable External USB Port (enabled by default)<br>**NOTE:** A USB keyboard and/ mouse connected to the platform's USB ports will continue to function within the BIOS Setup if this option is disabled. |
| USB PowerShare | This option configures the USB PowerShare feature behavior.<br>● Enable USB PowerShare (disabled by default)<br>This feature is intended to allow users to power or charge external devices, such as phones and portable music players, using the stored system battery power through the USN PowerShare port on the notebook, while the notebook is in a sleep state.<br>When this option is disabled, the USB PowerShare feature will be turned off and devices attached to the USB PowerShare port will not be powered/charged when the device is in sleep state. |
| Audio | Allows you to enable or disable the integrated audio controller. The option **Enable Audio** is enabled by default.<br>● Enable Microphone (enabled by default)<br>● Enable Internal Speaker (enabled by default) |
| Touchscreen (2-in-1 only) | Allows you to enable or disable touchscreen. The **Touchscreen** is enabled by default. |
| Miscellaneous Devices | Allows you to enable or disable the following devices:<br>Laptop:<br>Enable Camera (enabled by default)<br>2-in-1: |

### Table 3. System Configuration (continued)

| Option | Description |
|---|---|
| | • Enable User-Facing Camera (enabled by default)<br>• Enable World-Facing Camera (enabled by default) |
| MAC Address Pass-Through | The feature replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the system. The default option is to use the Passthrough MAC address.<br>• System Unique MAC Address (enabled by default)<br>• Disabled |

## Video

### Table 4. Video

| Option | Description |
|---|---|
| LCD Brightness | Allows you to set the display brightness depending up on the power source—On Battery and On AC. The LCD brightness is independent for battery and AC adapter. It can be set using the slider. |

## Security

### Table 5. Security

| Option | Description |
|---|---|
| Admin Password | Allows you to set, change, and delete the admin password.<br>**NOTE:** If you delete the admin password, the system password, if set, is also deleted. The admin password can be used to delete the HDD password. For this reason, you cannot set an admin password if a system password or HDD password is already set. The admin password must be set first if an admin password is used with a system password and/or HDD password. |
| System Password | Allows you to set, change, and delete the system password. |
| Password Configuration | Allows you to control the rules when setting a password. The value of characters cannot be less than 4.<br>• Lower Caste Letter<br>• Upper Case Letter<br>• Digit<br>• Special Character<br>All options are disabled by default.<br>• Minimum Characters (Set at 4 by default) |
| Password Bypass | This option lets you bypass the System (Boot) Password and the internal HDD password prompts during a system restart.<br>• Disabled — Always prompt for the system and internal HDD password when they are set. This option is enabled by default.<br>• Reboot Bypass — Bypass the password prompts on Restarts (warm boots).<br>**NOTE:** The system will always prompt for the system and internal HDD passwords when powered on from the off state (a cold boot). Also, the system will always prompt for passwords on any module bay HDDs that may be present. |
| Password Change | This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set.<br>The**Allow Non-Admin Password Changes** option is enabled by default. |

### Table 5. Security (continued)

| Option | Description |
|---|---|
| UEFI Capsule Firmware Updates | This option controls whether this system allows BIOS updates via UEFI capsule update packages. The **Enable UEFI Capsule Firmware Updates** option is selected by default.<br>**NOTE:** Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS) |
| PTT Security | • PTT On (enabled by default) — This option allows you to control whether the Platform Trust technology (PTT) is visible to the operating system.<br>**NOTE:** Disabling this option does not change any settings you have made to the PTT, nor does it delete or change any information or keys you may have stored in the PTT. Changes to this setting take effect immediately.<br>• Clear — This setting clears the PTT owner information, and returns the PTT to the default state. Changes to this setting will be latched in BIOS after checking "apply", but will not take effect in the PTT until after exiting the BIOS setup menu.<br>• PPI Bypass for Clear Commands — This option controls the PTT Physical Presence Interface (PPI). When enabled, this setting will allow the OS to skip BIOS PPI user prompts when issuing the Clear command. Changes to this setting take effect immediately. |
| Absolute | This field lets you Enable, Disable or Permanently Disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software.<br>• Enabled (enabled by default) — Enable the Absolute Persistence and load the firmware Persistence Module.<br>• Disabled — Disable Absolute Persistence. The firmware Persistence Module is not installed.<br>• Permanently Disabled — Permanently disables Absolute Persistence module interface from farther use.<br>**WARNING: The Permanently Disabled option can only be selected once. When Permanently Disabled is selected, Absolute Persistence cannot be re-enabled. No further changes to the Enabled/Disabled state are allowed.** |
| Admin Setup Lockout | Allows you to prevent users from entering Setup when an Admin password is set. This option is not set by default. |
| Master Password Lockout | Allows you to disable master password support. Hard Disk passwords need to be cleared before the settings can be changed. This option is not set by default. |
| SMM Security Mitigation | Allows you to enable or disable additional UEFI SMM Security Mitigation protections. This option is not set by default. |

# Secure boot

### Table 6. Secure Boot

| Option | Description |
|---|---|
| Secure Boot Enable | Allows you to enable or disable the Secure Boot feature. The **Secure Boot Enable** option is enabled by default. |
| Secure Boot Mode | Allows you to modify the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures.<br>• Deployed Mode (enabled by default)<br>• Audit Mode |
| Expert key Management | Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options for Custom Mode Key Management are:<br>• PK (enabled by default)<br>• KEK<br>• db |

### Table 6. Secure Boot (continued)

| Option | Description |
|---|---|
| | • dbx<br>If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are:<br>• **Save to File**- Saves the key to a user-selected file<br>• **Replace from File**- Replaces the current key with a key from a user-selected file<br>• **Append from File**- Adds a key to the current database from a user-selected file<br>• **Delete**- Deletes the selected key<br>• **Reset All Keys**- Resets all keys to default setting<br>**NOTE:** If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings. |

# Performance

### Table 7. Performance

| Option | Description |
|---|---|
| Multi Core Support | This field specifies whether the processor has one or all cores enabled. The performance of some applications will improve with the additional cores.<br>• **All**( enabled by default)<br>• **1**<br>• **2**<br>• **3** |
| Intel SpeedStep | Allows you to enable or disable the Intel SpeedStep mode of the processor.<br>The **Enable Intel SpeedStep** option is enabled by default. If the option is disabled, it places the processor into the highest performance state and prevents the Intel SpeedStep applet or native operating system driver from adjusting the processor's performance. If the option is enabled, it allows the Intel SpeedStep-enabled CPU to operate in multiple performance states. |
| C-States Control | Allows you to enable or disable the additional processor sleep states. The operating system may optionally use these for additional power savings when idle.<br>The **C states** option is enabled by default. |
| Intel TurboBoost | Allows you to enable or disable the Intel TurboBoost mode of the processor.<br>The **Enable Intel TurboBoost** option is enabled by default. If the option is disabled, it does not allow the TurboBoost driver to increase the performance state of the processor above the standard performance. If the option is enabled, it allows the Intel TurboBoost driver to increase the performance of the CPU/graphics processor. |

# Power management

### Table 8. Power management

| Option | Description |
|---|---|
| Lid Switch | • **Enable Lit Switch**(enabled by default) — allows you to disable the lid switch so the screen does not shut off when the lid is closed.<br>• **Power On Lid Open**(enabled by default) — when enabled, this option allows the system to power up from the off state whenever the lid is opened. The system will power on when powered either by the AC adapter or by the system battery. |
| AC Behavior | Allows the system (if Off or in Hibernate) to power-on automatically, when AC is inserted. The **Wake on AC** option is disabled by default. |
| Enable Intel Speed Shift Technology | Allows you to enable.disable Intel Spped Shift Technology support. Setting this option to enable allows the operating system to select the appropriate processor performance automatically. The **Enable Intel Speed Shift Technology** option is enabled by default. |
| Auto On Time | Allows you to set the time at which the computer must turn on automatically.<br>• Disabled (enabled by default)<br>• Every Day<br>• Weekdays<br>• Select Days |
| USB Wake Support | Allows you to enable USB devices to wake the system from S3.<br>**NOTE:** This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.<br>• **Wake on Dell USB-C Dock** (enabled by default) — allows the system to automatically wake up when connecting to a Dell USB-C dock.<br>• **Enable USB Wake Support** (disabled by default) |
| Wireless Radio Control | If Enabled, this feature will sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN and/ or WWAN). Upon disconnection from the wired network, the selected wireless radios will be re-enabled. The **Control WLAN radio** option is disabled by default. |
| Wake on LAN | Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal or special Dell USB-C Dock LAN signal. Wakeup from the standby state is unaffected by this setting and must be enabled in the operating system. This feature only works when the computer is connected to AC.<br>• Disabled (enabled by default)<br>• LAN Only<br>• LAN with PXE Boot |
| Block Sleep | This option allows you to block entering to sleep in OS environment. When enabled system won't go to sleep, Intel Rapid Start will be disabled automatically and OS Power |

### Table 8. Power management (continued)

| Option | Description |
|---|---|
| | option will be blank if it was set to sleep. The **Block Sleep** option is disabled by default. |
| Peak Shift | This option enables you to minimize the AC power consumption at the times of peak demand. When enabled with user set daily times and threshold value:<br>• from **Peak Shift Start** until **Peak Shift End**, AC power is not used unless **Battery Threshold** is reached.<br>• from **Peak Shift End** until **Peak Shift Charge Start**, AC power is used when available but the battery does not charge.<br>• At all other times, AC power is used when available and the batter is able to charge.<br>The **Enable Peak Shift** option is disabled by default. The battery threshold (15% to 100%) is set to 15% by default. |
| Advanced Battery Charge Configuration | This option enables you to maximize the battery health while supporting heavy use during the work day. The following takes place using the user set daily times and time periods:<br>• from **Beginning of Day** and lasting for **Work Period**, ExpressCharge is used for accelerated battery charging.<br>• At all other times Standard Charge is used for maximum battery health.<br>• Setting **Work Period** to zero disables this feature for that day.<br>The **Enable Advanced Battery Charge Mode** option is disabled by default. |
| Primary Battery Charge Configuration | Allows you to select the charging mode for the battery. The options are:<br>• **Adaptive** (enabled by default) — battery settings are adaptively optimized based on your typical battery usage patter.<br>• **Standard** (disabled by default) — fully charges your battery at a standard rate.<br>• **ExpressCharge** (disabled by default) — the battery charges over a shorter time using Dell's fast charging technology.<br>• **Primarily AC use** (disabled by default) — Extends battery lifespan for users who primarily operate their system while plugged into an external power source.<br>• **Custom** (disabled by default) — Custom select when battery starts and stops charging<br>The **Custom Charge Start** is set at 50 by default. The **Custom Charge Stop** is set at 90 by default.<br>**NOTE:** Battery settings may not be available for all battery types. In order to enable this option, **Advanced Battery Charge Mode** must be disabled. |

# POST behavior

### Table 9. POST behavior

| Option | Description |
|---|---|
| Adapter Warnings | Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. |

**Table 9. POST behavior (continued)**

| Option | Description |
|---|---|
| | The **Enable Adapter Warnings** option is enabled by default. |
| USB-C Warnings | Allows you to choose one of the following two methods to enable the keypad that is embedded in the internal keyboard.<br>The **Enable Dock Warning Messages** option is enabled by default. |
| Keypad (Embedded) | Allows you to choose whether the system displays warning messages for USB-C devices.<br>● Fn Key Only — the keypad is enabled when you hold down the Fn key (enabled by default).<br>● By Numlock — the keypad is enabled when 1) the Numlock LED is on, and 2) no external keyboard is detached (disabled by default).<br>**NOTE:** When Setup is running, this option has no effect. Setup works in the **Fn Key Only** mode. |
| Fn Lock Options | Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are:<br>● Fn Lock (enabled by default)<br>● Lock Mode Disable/Standard — The F1-F2 keys behave as function keys. Holding Fn is required to access their secondary functions (enabled by default).<br>● Lock Mode Enable/Secondary — The F1-F2 keys control the secondary functions. Fn is required to access the standard functions (disabled by default). |
| Fastboot | Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are:<br>● Minimal — reduces boot time by skipping certain hardware and configuration initialization during boot (enabled by default).<br>● Thorough — performs complete hardware and configuration initialization during boot (disabled by default).<br>● Auto — allows the BIOS to decide configuration initialization performed during boot (disabled by default). |
| Extended BIOS POST Time | Allows you to create an additional pre-boot delay. This allows the user to see POST status messages. The options are:<br>● 0 seconds (enabled by default)<br>● 5 seconds<br>● 10 seconds |
| Full Screen Log | Allows you to display full screen logo if your image matches the screen resolution.<br>The**Enable Full Screen Logo** option is disabled by default. |
| Warnings and Errors | Allows the boot process to only pause when warnings or errors are detected, rather than stop. Users may select to have the Power On Self Test (POST) process either stop, prompt and wait for the user input when warnings/errors are detected, or continue when warnings are detected but pause on errors, or continue when either warnings or errors are detected during the POST process.<br>● Prompt on warnings and errors (enabled by default) |

### Table 9. POST behavior (continued)

| Option | Description |
|---|---|
| | • Continue on warnings (disabled by default)<br>• Continue on warnings and errors (disabled by default)<br>**NOTE:** The errors deemed critical to the operation of the system hardware will always halt the system. |

## Virtualization support

### Table 10. Virtualization support

| Option | Description |
|---|---|
| Virtualization | This field specifies whether a Virtual Machine Monitor (VMM) can utilize the conditional hardware capabilities provided by Intel Virtualization Technology.<br>**NOTE:** Trusted Execution requires Virtualization Technology to be enabled.<br>The **Enable Intel Virtualization Technology** option is enabled by default. |
| VT for Direct I/O | Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel Virtualization technology for direct I/O.<br>**NOTE:** Trusted Execution requires VT for Direct I/O to be enabled.<br>The **Enable VT for Direct I/O** option is enabled by default. |

## Wireless

### Table 11. Wireless

| Option | Description |
|---|---|
| Wireless Device Enable | Allows you to enable or disable the internal wireless devices.<br>• WLAN<br>• Bluetooth<br>All the options are enabled by default. |

## Maintenance

### Table 12. Maintenance

| Option | Description |
|---|---|
| Service Tag | Displays the Service Tag of your computer. If, for some reason, the service tag was not already set, you would be able to use this field to set it. |
| Asset Tag | Allows you to create a system asset tag if an asset tag is not already set, it is limited to 64 characters. This option is not set by default. |
| BIOS Downgrade | This controls flashing of the system firmware to previous revisions. The **Allow BIOS downgrade** option is enabled by default. |

### Table 12. Maintenance (continued)

| Option | Description |
|---|---|
| Data Wipe | This field allows users to erase the data securely from all internal storage devices. The **Wipe on Next boot** option is disabled by default. The following is a list of devices affected:<br>• Internal SATA HDD/SSD<br>• Internal M.2 SATA SDD<br>• Internal M.2 PCIe SSD<br>• Internal eMMC<br>**NOTE:** To preserve the data on a specific device, please remove any of the above devices prior to initiating this process.<br>**WARNING: This operation will permanently delete all data from the device(s).** |
| BIOS Recovery | This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key. The **BIOS Recovery from Hard Drive** option is enabled by default. Bios Recovery from Hard Drive is not available for Self-encrypting drives (SED). |

## System logs

### Table 13. System logs

| Option | Description |
|---|---|
| BIOS Events | Allows you to view and clear the System Setup (BIOS) POST events. |
| Thermal and Self-Test Events | Allows you to view and clear the System Setup (Thermal) events. |
| Power Events | Allows you to view and clear the System Setup (Power) events. |

## SupportAssist System Resolution

### Table 14. SupportAssist System Resolution

| Option | Description |
|---|---|
| Auto OS Recovery Threshold | Allows you to control the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool. The options are:<br>• Off<br>• 1<br>• 2 (Enabled by default)<br>• 3 |
| SupportAssist OS Recovery | Allows you to enable or disable the boot flow for SupportAssist OS Recovery tool in the event of certain system errors. The **SupportAssist OS Recovery** option is enabled by default. |
| BIOSConnect | Allows you to enable or disable cloud Service OS upon absence of Local OS Recovery. The **BIOSConnect** option is enabled by default. |

# System and setup password

**Table 15. System and setup password**

| Password type | Description |
|---|---|
| System password | Password that you must enter to log on to your system. |
| Setup password | Password that you must enter to access and make changes to the BIOS settings of your computer. |

You can create a system password and a setup password to secure your computer.

**CAUTION: The password features provide a basic level of security for the data on your computer.**

**CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.**

**NOTE:** System and setup password feature is disabled.

## Assigning a system setup password

### Prerequisites

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

### About this task

To enter the system setup, press F2 immediately after a power-on or reboot.

### Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press **Enter**.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - The password can contain the numbers 0 through 9.
   - Only lower case letters are valid, upper case letters are not allowed.
   - Only the following special characters are allowed: space, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press **Esc** and a message prompts you to save the changes.
5. Press **Y** to save the changes.
   The computer reboots.

## Deleting or changing an existing system setup password

### Prerequisites

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

### About this task

To enter the System Setup, press **F2** immediately after a power-on or reboot.

### Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press **Enter**.

The **System Security** screen is displayed.

2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, alter or delete the existing system password and press **Enter** or **Tab**.
4. Select **Setup Password**, alter or delete the existing setup password and press **Enter** or **Tab**.

   **NOTE:** If you change the System and/or Setup password, re enter the new password when prompted. If you delete the System and Setup password, confirm the deletion when prompted.

5. Press **Esc** and a message prompts you to save the changes.
6. Press **Y** to save the changes and exit from System Setup.
   The computer restarts.

# 5

# Troubleshooting

**Topics:**



## Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows 10 operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into their primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/support.

## Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell proposes multiple options for recovering Windows operating system on your Dell PC. For more information. see Dell Windows Backup Media and Recovery Options.

## Dell SupportAssist Pre-boot System Performance Check diagnostics

**About this task**

SupportAssist diagnostics (also known as system diagnostics) performs a complete check of your hardware. The Dell SupportAssist Pre-boot System Performance Check diagnostics is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)

- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

**NOTE:** Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

For more information, see Resolve Hardware Issues With Built-in and Online Diagnostics (SupportAssist ePSA, ePSA or PSA Error Codes) .

## Running the SupportAssist Pre-Boot System Performance Check

**Steps**

1. Turn on your computer.
2. As the computer boots, press the F12 key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.
4. Click the arrow at the bottom left corner.
   Diagnostics front page is displayed.
5. Click the arrow in the lower-right corner to go to the page listing.
   The items detected are listed.
6. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
7. Select the device from the left pane and click **Run Tests**.
8. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

# Diagnostic LED behavior

### Table 16. Diagnostic LED behavior

| Blinking pattern | | Problem description | Suggested resolution |
|---|---|---|---|
| Amber | White | | |
| 1 | 1 | TPM detection failure | Replace the system board. |
| 1 | 2 | Unrecoverable SPI Flash Failure | Replace the system board. |
| 1 | 5 | EC unable to program i-Fuse | Replace the system board. |
| 1 | 6 | Generic catch-all for ungraceful EC code flow errors | Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing & holding down power button. |
| 2 | 1 | CPU failure | • Run the Dell Support Assist/Dell Diagnostics tool.<br>• If problem persists, replace the system board. |
| 2 | 2 | System board failure (included BIOS corruption or ROM error) | • Flash latest BIOS version<br>• If problem persists, replace the system board. |
| 2 | 3 | No memory/RAM detected | • Confirm that the memory module is installed properly.<br>• If problem persists, replace the memory module. |

**Table 16. Diagnostic LED behavior (continued)**

| Blinking pattern | | Problem description | Suggested resolution |
|---|---|---|---|
| **Amber** | **White** | | |
| 2 | 4 | Memory/RAM failure | • Reset and swap memory modules amongst the slots.<br>• If problem persists, replace the memory module. |
| 2 | 5 | Invalid memory installed | • Reset and swap memory modules amongst the slots.<br>• If problem persists, replace the memory module. |
| 2 | 6 | System board/Chipset Error | Replace the system board. |
| 2 | 7 | LCD failure (SBIOS message) | Replace the LCD module. |
| 2 | 8 | LCD failure (EC detection of power rail failure) | Replace the system board. |
| 3 | 1 | CMOS battery failure | • Reset the CMOS battery connection.<br>• If problem persists, replace the RTS battery. |
| 3 | 2 | PCI or Video card/chip failure | Replace the system board. |
| 3 | 3 | BIOS Recovery image not found | • Flash latest BIOS version<br>• If problem persists, replace the system board. |
| 3 | 4 | BIOS Recovery image found but invalid | • Flash latest BIOS version<br>• If problem persists, replace the system board. |
| 3 | 5 | Power rail failure | Replace the system board. |
| 3 | 6 | Flash corruption detected by SBIOS. | Replace the system board. |
| 3 | 7 | Timeout waiting on ME to reply to HECI message. | Replace the system board. |

**NOTE:** Blinking 3-3-3 LEDs on Lock LED (Caps-Lock or Nums-Lock), Power button LED (without Fingerprint reader), and Diagnostic LED indicates failure to provide input during LCD panel test on Dell SupportAssist Pre-boot System Performance Check diagnostics.

# Real-Time Clock (RTC Reset)

The Real Time Clock (RTC) reset function allows you or the service technician to recover Dell Inspiron, systems from No POST/No Power/No Boot situations. The legacy jumper enabled RTC reset has been retired on these models.

Start the RTC reset with the system powered off and connected to AC power. Press and hold the power button for thirty (30) seconds. The system RTC Reset occurs after you release the power button.

# Flashing BIOS (USB key)

### Steps

1. Follow the procedure from step 1 to step 7 in "Flashing the BIOS" to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information see the knowledge base article SLN143196 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** when the Dell logo is displayed on the screen.
6. Boot to the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
8. The **BIOS Update Utility** appears. Follow the instructions on the screen to complete the BIOS update.

# Flashing the BIOS

### About this task

You may need to flash (update) the BIOS when an update is available or when you replace the system board.

Follow these steps to flash the BIOS:

### Steps

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. 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.

# WiFi power cycle

### About this task

If your computer is unable to access the internet due to WiFi connectivity issues a WiFi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a WiFi power cycle:

**NOTE:** Some ISPs (Internet Service Providers) provide a modem/router combo device.

### Steps

1. Turn off your computer.
2. Turn off the modem.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on your computer.

# Flea power release

### About this task

Flea power is the residual static electricity that remains on the computer even after it has been powered off and the battery has been removed. The following procedure provides the instructions on how to conduct flea power release:

### Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Press and hold the power button for 15 seconds to drain the flea power.
4. Connect the power adapter to your computer.
5. Turn on your computer.

# BIOS recovery

The BIOS recovery is designed to fix the main BIOS, and cannot work if the boot is damaged. The BIOS recovery will not work in the event of EC corruption, ME corruption, or a hardware related issue. The BIOS recovery image should be available on the unencrypted partition on the drive for BIOS recovery feature.

## Rollback BIOS feature

Two versions of the BIOS recovery image are saved on the hard drive:

- Current running BIOS (old)
- To-be-updated BIOS (new)

The old version is already stored on the hard drive. The BIOS adds new version to the hard drive, maintains the old version, and deletes other existing versions. For example, A00 and A02 versions are already on the hard drive, A02 is the running BIOS. The BIOS adds A04, maintains A02, and deletes A00. Having two BIOS version enables the Rollback BIOS feature.

If the recovery file cannot be stored (hard drive is out of space), the BIOS sets a flag to indicate this condition. The flag is reset in the event it later becomes possible to store the recovery file. The BIOS notifies the user during POST and in BIOS Setup, the BIOS recovery is degraded. BIOS recovery through hard drive may not be possible, however BIOS recovery through USB flash drive is still possible.

For USB key: root directory or "\"

BIOS_IMG.rcv: the recovery image stored on the USB key.

# BIOS recovery using hard drive

### About this task

**NOTE:** Ensure that you have the previous version and the latest version of the BIOS from the Dell support site available to use.

**NOTE:** Ensure that you have the file type extensions visible in the operating system (OS).

### Steps

1. Browse to the location of the BIOS update executable (.exe) files.
2. Rename the BIOS executable files to **BIOS_PRE.rcv** for the earlier version of the BIOS and **BIOS_CUR.rcv** for the latest version of the BIOS.
   For example, if the latest version's file name is **PowerEdge_T30_1.0.0.exe**, rename it to **BIOS_CUR.rcv** and if the previous version's file name is **PowerEdge_T30_0.0.9.exe**, rename it to **BIOS_PRE.rcv**

   **NOTE:**

   a. If the hard drive is new, there will be no operating system installed.

b. If the hard drive has been partitioned at the Dell factory, there will be a **Recovery Partition** available.

3. Disconnect the hard drive and install the hard drive into another system that has a full operational operating system.
4. Start up the system and in the Windows operating system environment follow these steps to copy the BIOS recovery file to the **Recovery Partition**.
   a. Open a Windows Command Prompt window.
   b. At the prompt, type **diskpart** to start the **Microsoft DiskPart**.
   c. At the prompt, type **list disk** to list out the available hard drives.
   Select the hard drive that was installed in Step 3.
   d. At the prompt, type **list partition** to view the available partitions on this hard drive.
   e. Select **Partition 1** which is the **Recovery Partition**. The size of the partition will be 39 MB.
   f. At the prompt, type **set id=07** to set the partition ID.

   **NOTE:** The partition will be visible to the operating system as **Local Disk (E)** to read and write data.

   g. Create the following folders in **Local Disk (E)**, **E:\EFI\Dell\BIOS\Recovery**.
   h. Copy both the BIOS files **BIOS_CUR.rcv** and **BIOS_PRE.rcv** to the recovery folder on **Local Disk (E)**.
   i. In the **Command Prompt** window, at the **DISKPART** prompt, type **set id=DE**.
   After the executing this command, the partition **Local Disk (E)** will not be accessible by the OS.
5. Shut the system down, remove the hard drive, and install the hard drive into the original system.
6. Start the system up and boot to System Setup, in the **Maintenance** section ensure that **BIOS Recovery from Hard Drive** is enabled in the **BIOS Recovery** section of the setup.
7. Press the power button to shut the system down.
8. Holding the **Ctrl and Esc** keys, press the power button to start the system up. Keep holding the **Ctrl and Esc** keys until the **BIOS Recovery Menu** page is displayed.
   Ensure that the **Recover BIOS** radio button is selected and click **Continue** to start the BIOS recovery.

# BIOS recovery using USB drive

### About this task

**NOTE:** Ensure that you have the file type extensions visible in the operating system.

**NOTE:** Ensure that you have downloaded the latest BIOS from the Dell support site and save it on your system.

### Steps

1. Browse to the location of the downloaded BIOS update executable (.exe) file.
2. Rename the file to BIOS_IMG.rcv.
   For example, if the file name is PowerEdge_T30_0.0.5.exe, rename it to BIOS_IMG.rcv
3. Copy the BIOS_IMG.rcv file to the root directory of the USB key.
4. If not plugged in, plug in the USB drive, restart the system, press F2 to enter the System Setup, and then press power button to shut down the system.
5. Start the system.
6. While the system is starting up, press the **Ctrl+Esc** keys while holding the power button until the **BIOS Recovery Menu** dialog box is displayed.
7. Click **Continue** to start the BIOS recovery process.

   **NOTE:** Ensure that the **Recovery BIOS** option is selected in the **BIOS Recovery Menu** dialog box.

8. Select the path on the USB drive where BIOS recovery file is stored( root directory or "\") and follow the on-screen instructions.

# M-BIST

M-BIST (Built In Self-Test) diagnostics tool, featuring improved accuracy in system board failures.

**NOTE:** M-BIST can be manually initiated before POST (Power On Self Test).

## How to run M-BIST

**NOTE:** M-BIST must be initiated on the system from a power-off state either connected to AC power or with battery only.

1. Press and hold both the **M** key on the keyboard and the **power button** to initiate M-BIST.
2. With both the **M** key and the **power button** held down, the battery indicator LED may exhibit two states:
   a. OFF: No fault detected with the system board
   b. AMBER: Indicates a problem with the system board

# LCD Built-in Self Test (BIST)

Dell laptops have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (screen) of the Dell laptop or with the video card (GPU) and PC settings.

When you notice screen abnormalities like flickering, distortion, clarity issues, fuzzy or blurry image, horizontal or vertical lines, color fade etc., it is always a good practice to isolate the LCD (screen) by running the Built-In Self Test (BIST).

## How to invoke LCD BIST Test

1. Power off the Dell laptop.
2. Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold **D** key and **Power on** the laptop to enter LCD built-in self test (BIST) mode. Continue to hold the D key, until you see color bars on the LCD (screen).
5. The screen will display multiple color bars and change colors on the entire screen to red, green, and blue.
6. Carefully inspect the screen for abnormalities.
7. Press **Esc** key to exit.

**NOTE:** Dell SupportAssist Pre-boot diagnostics upon launch, initiates an LCD BIST first, expecting a user intervention confirm functionality of the LCD.

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# 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 17. 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.<br>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.<br>2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**.<br>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.