Latitude 5430 Rugged

Service Manual

D&LL Technologies

Notes, cautions, and warnings

(i) **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

Working inside your computer

Safety instructions

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 you have read the safety information that shipped with your computer.

⚠️ **WARNING: Before working inside your computer, read the safety information that is shipped with your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/ regulatory_compliance.**

⚠️ **WARNING: Disconnect your computer from 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 your computer to an electrical outlet.**

⚠️ **CAUTION: To avoid damaging the computer, ensure that the work surface is flat, dry, and clean.**

⚠️ **CAUTION: To avoid damaging the components and cards, handle them by their edges, and avoid touching the pins and the contacts.**

⚠️ **CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that is shipped with the product or at www.dell.com/regulatory_compliance.**

⚠️ **CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity which could harm internal components.**

⚠️ **CAUTION: When you disconnect a cable, pull it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumbscrews that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending the connector pins. When connecting cables, ensure that the ports and the connectors are correctly oriented and aligned.**

⚠️ **CAUTION: Press and eject any installed card from the media-card reader.**

⚠️ **CAUTION: Exercise caution when handling rechargeable Li-ion batteries in laptops. Swollen batteries should not be used and should be replaced and disposed properly.**

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

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. For Windows operating system, click **Start** > ⏻ **Power** > **Shut down**.

> (i) **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 notebook 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.

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 to 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 to keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

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.

After working inside your computer

About this task

(i) **NOTE:** 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.

BitLocker

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress, and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system reinstall. For more information about this subject, see Knowledge Article: updating the BIOS on Dell systems with BitLocker enabled.**

The installation of the following components triggers BitLocker:
- Hard disk drive or solid-state drive
- System board

Removing and installing components

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

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Phillips screwdriver #1
- Torx T8 screwdriver
- 5.5 mm Socket wrench
- Plastic scribe

Screw list

ⓘ **NOTE:** When removing screws from a component, it is recommended to note the screw type, the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.

ⓘ **NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.

ⓘ **NOTE:** Screw color may vary with the configuration ordered.

Table 1. Screw list

Component	Screw type	Quantity	Screw image
M.2 2230 solid state drive	M2x2 M2x4 M2x5	1 1 1	
M.2 2280 solid state drive	M2x4 M2x5	1 1	
Handle	M3.5x9	2	
Keyboard	M2.5x4 (rubberized sealed) M2.5x4 (standard)	4 6 4	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
	M2x3.5		
Base cover	M2.5x7 M2x4	22 8	
Fan	M2.5x6.5 (captive screws)	3	
Wi-Fi I/O board	M2.5x5	2	
WLAN card	M2x3.5	1	
WWAN card	M2x3.5	1	
Dock I/O port	M2.5x5	1	
LED board	M2x3.5	2	
Left I/O board	M2x3.5	2	
Speakers	M2x3.5 M2.5x6, T8	2 2 (yellow)	
Secondary daughterboard	M2x3.5	2	
Heat-sink	M2x6 (captive screws) M2x3.5	4 3 (UMA only)	
Rear I/O board	M2.5x5	2	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
System board	M2.5x5 M2x3.5 #4-40x6.5	9 5 2	
Right Type-C daughterboard	M2x3.5	5	
Left Type-C daughterboard	M2x3.5	5	
Power button board	M2.5x5 M2x3.5	4 3	
Power button board with finger print reader	M2x3.5	3	
Display assembly	M3x7, T8 M2.5x7 M2.5x5	6 (yellow) 2 2	
Display bezel	M2.5x6, T8 M2.5x6, T8	11 (blue) 4 (yellow)	
Display hinges	M3x7, T8 M3x5, T8	4 (yellow) 2 (yellow)	

Major components of Latitude 5430 Rugged

The following image shows the major components of Latitude 5430 Rugged.
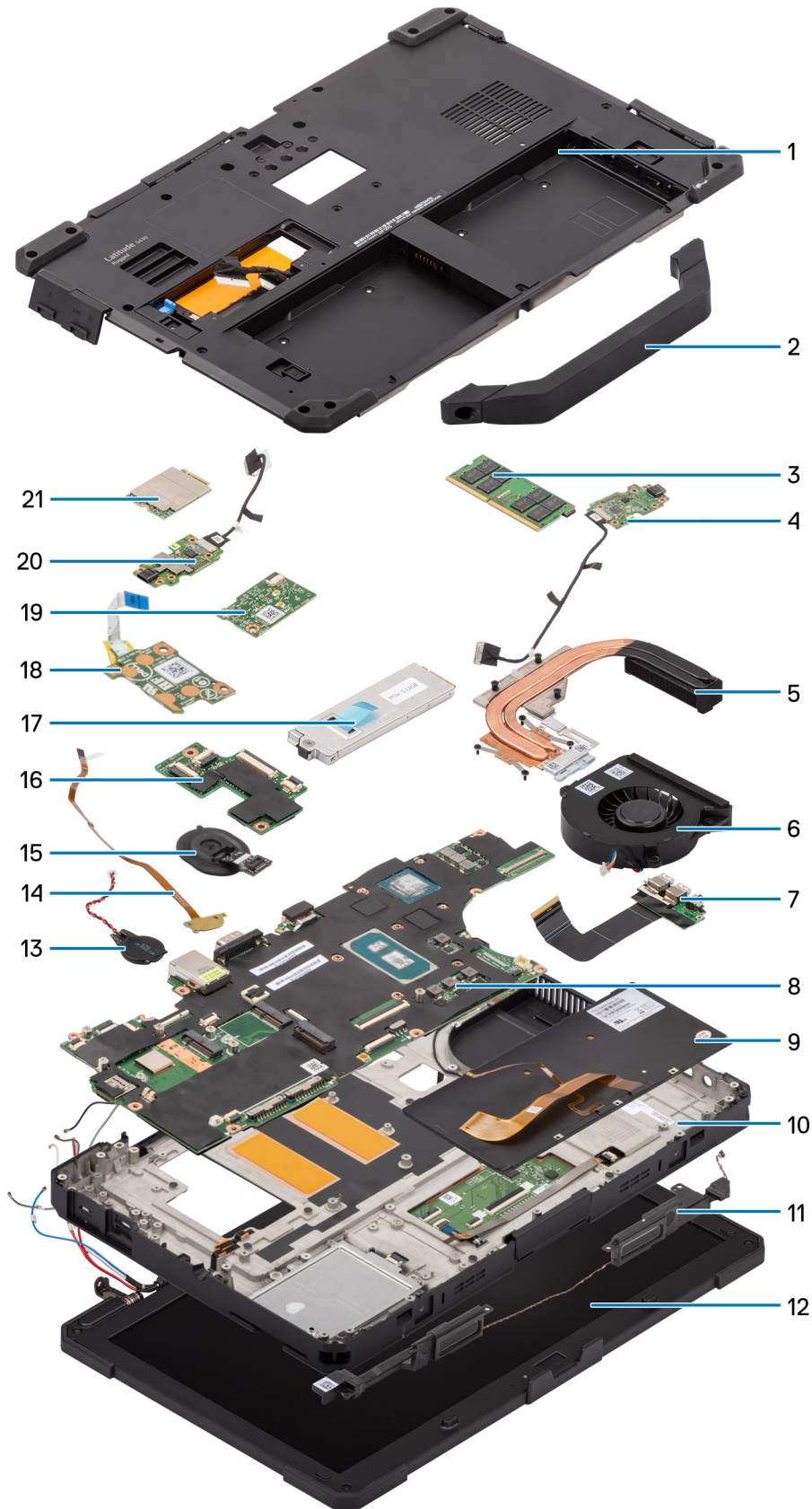
1. Base cover	2. Rigid handle
3. Memory module	4. Left Type-C daughterboard
5. Heat-sink	6. Fan
7. Left I/O board	8. System board
9. Keyboard	10. Palm-rest assembly
11. Speaker	12. Display assembly
13. Coin-cell battery	14. LED board
15. Power button with fingerprint reader	16. Secondary daughterboard
17. Primary solid-state drive	18. Power-button board
19. WiFi I/O board	20. Right Type-C daughterboard
21. WWAN module	

ⓘ **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.

Battery

Rechargeable Li-ion battery precautions

⚠ **CAUTION:**
- **Exercise caution when handling rechargeable Li-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the computer 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 computer 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 rechargeable Li-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.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen rechargeable Li-ion batteries, see Handling swollen rechargeable Li-ion batteries.**

Removing the batteries

Prerequisites

1. Follow the procedure in before working inside your computer.

About this task

ⓘ **NOTE:** Latitude 5430 Rugged can accommodate two hot-swap capable batteries (Primary and optional). The removal procedure of the primary and optional battery are identical.

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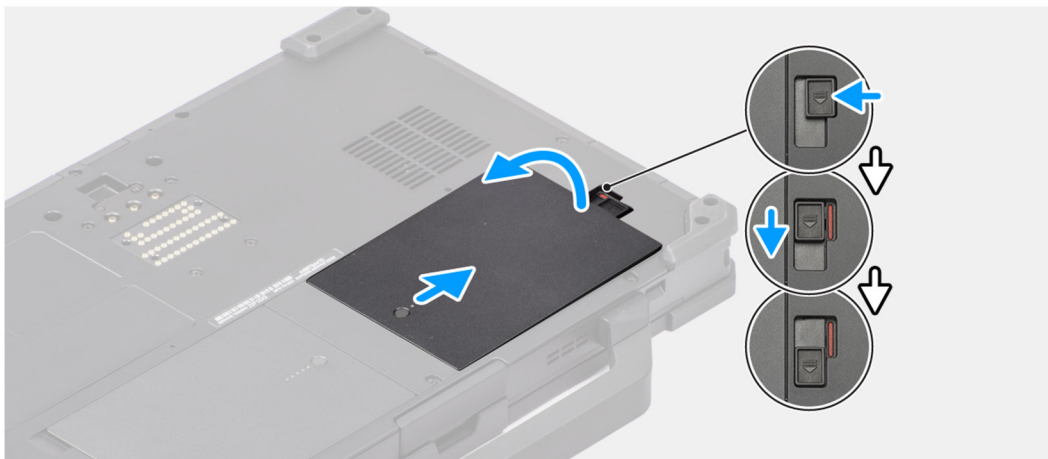
Steps

1. Slide the battery release latch to the unlock position.
2. Slide the latch down to unlock the battery.
3. Lift the battery out of the battery bay.
4. Remove the battery from the system.

Installing the batteries

Prerequisites

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

About this task

ⓘ **NOTE:** Latitude 5430 Rugged can accommodate two hot-swap capable batteries (Primary and optional). The installation procedure of the primary and optional battery are identical.

ⓘ **NOTE:** BIOS displays a Battery error when non-Latitude 5430 Rugged batteries are used.
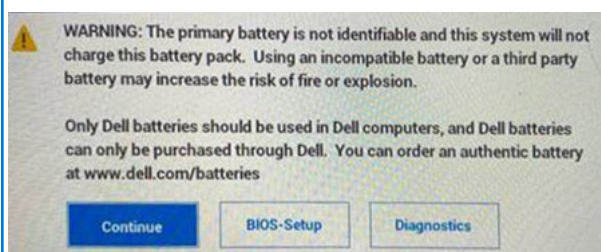
The following image indicates the location of the battery and provides a visual representation of the installation procedure.
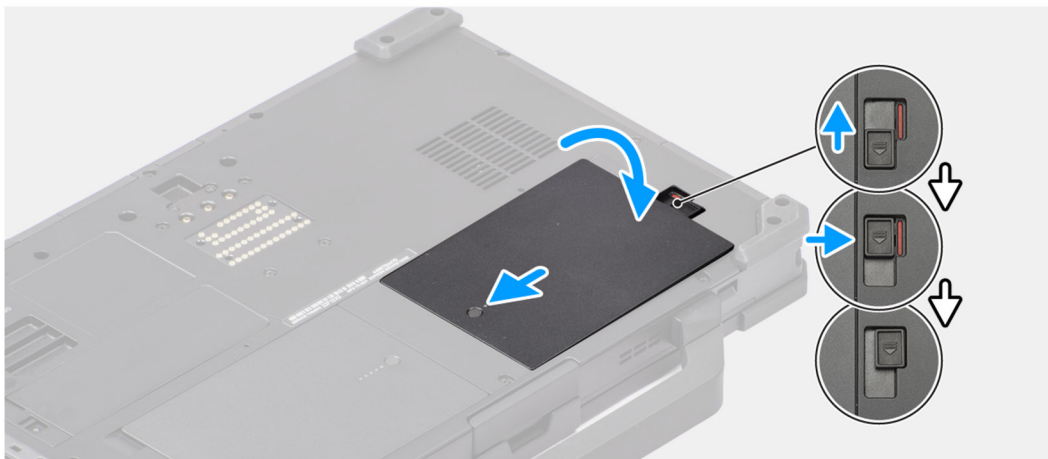
Steps

1. Align the pins on the battery with the connector on the system.

   (i) **NOTE:** Ensure that the metal pin of the battery is aligned in place.

2. Place the battery into the battery bay until it clicks into place.
3. Slide the battery latch to the locked state.
4. Ensure that the battery release latch is in the locked state.

Next steps

1. Follow the procedure in after working inside your computer.

Primary solid state drive

Removing the primary M.2 2230 solid state drive

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.

About this task

The following images indicate the location of the primary solid state drive and provide a visual representation of the removal procedure.
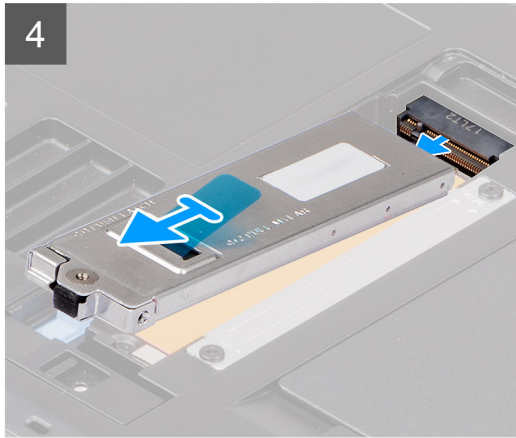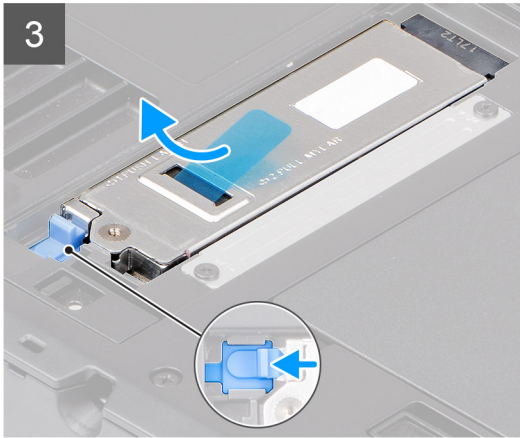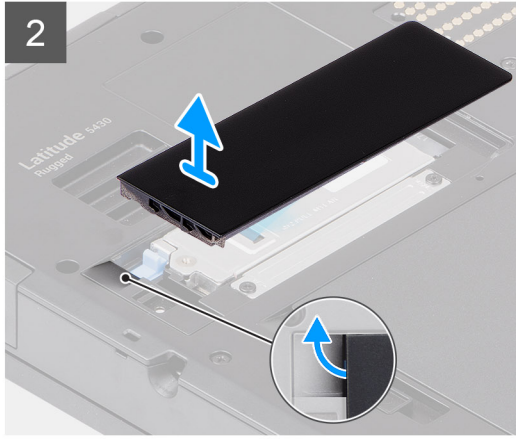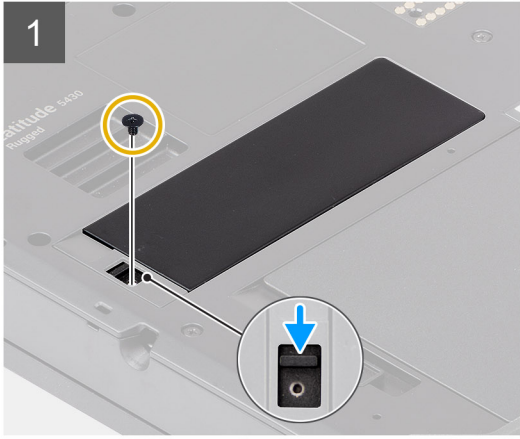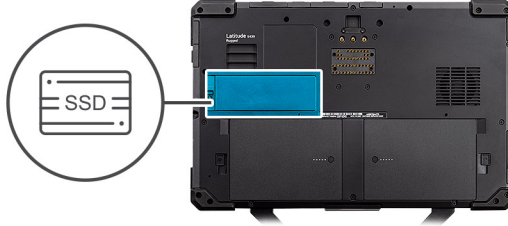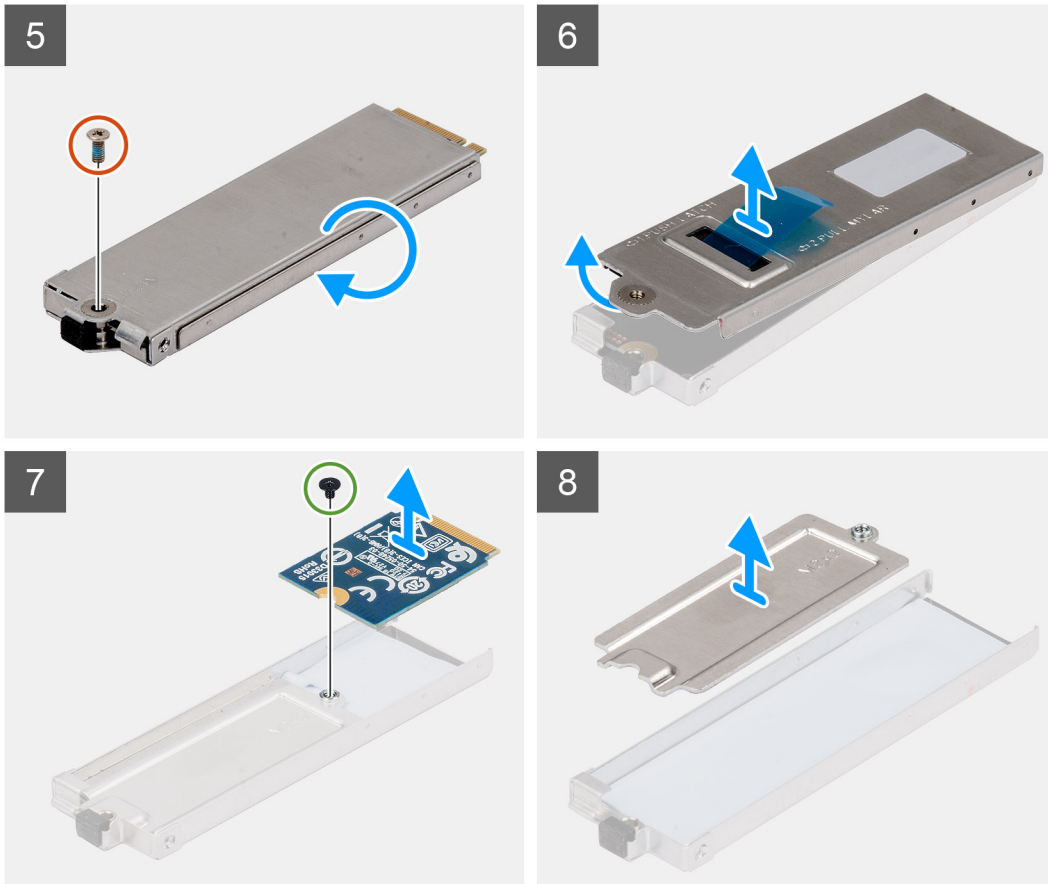
Steps

1. Remove the (M2x4) screw on the SSD door latch cover.
2. Push the SSD latch and lift the SSD door.
3. Push the carrier latch to release the SSD carrier.
4. Pull the mylar tape to lift the SSD carrier of the computer.
5. Flip the SSD carrier and remove the (M2x5) screw.
6. Pull the mylar tape and lift the SSD carrier cover.
7. Remove the (M2x2) screw that secures the M.2 2230 solid state drive to the SSD carrier cover.
8. Lift and remove the M2.2230 solid state drive.
9. Lift and remove the SSD extender of the SSD carrier.

Installing the primary M.2 2230 solid state drive

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 primary solid state drive and provides a visual representation of the installation procedure.

1x
M2x5

1x
M2x4

1x
M2x2
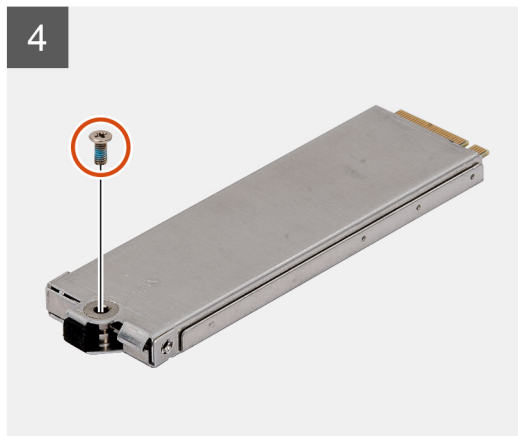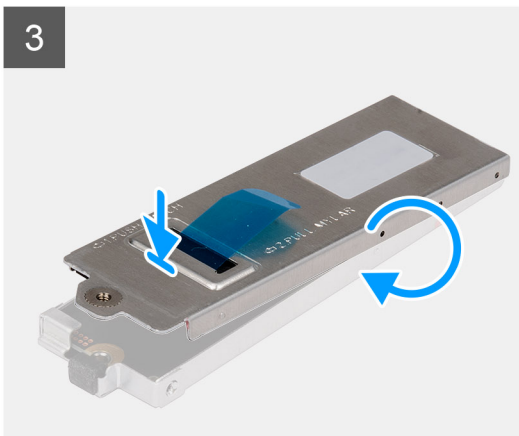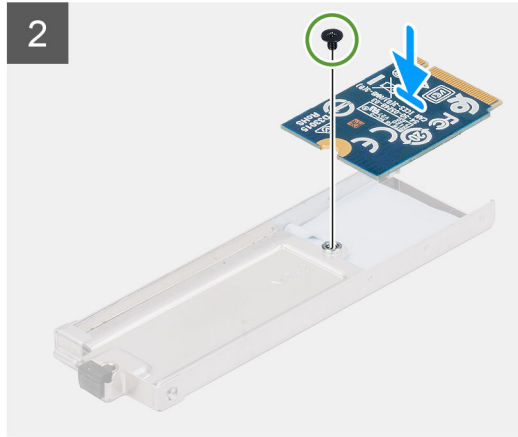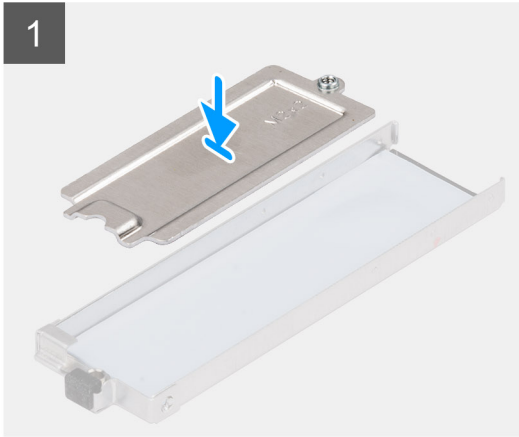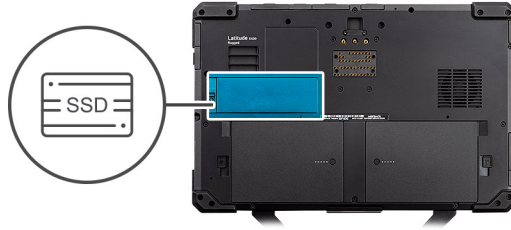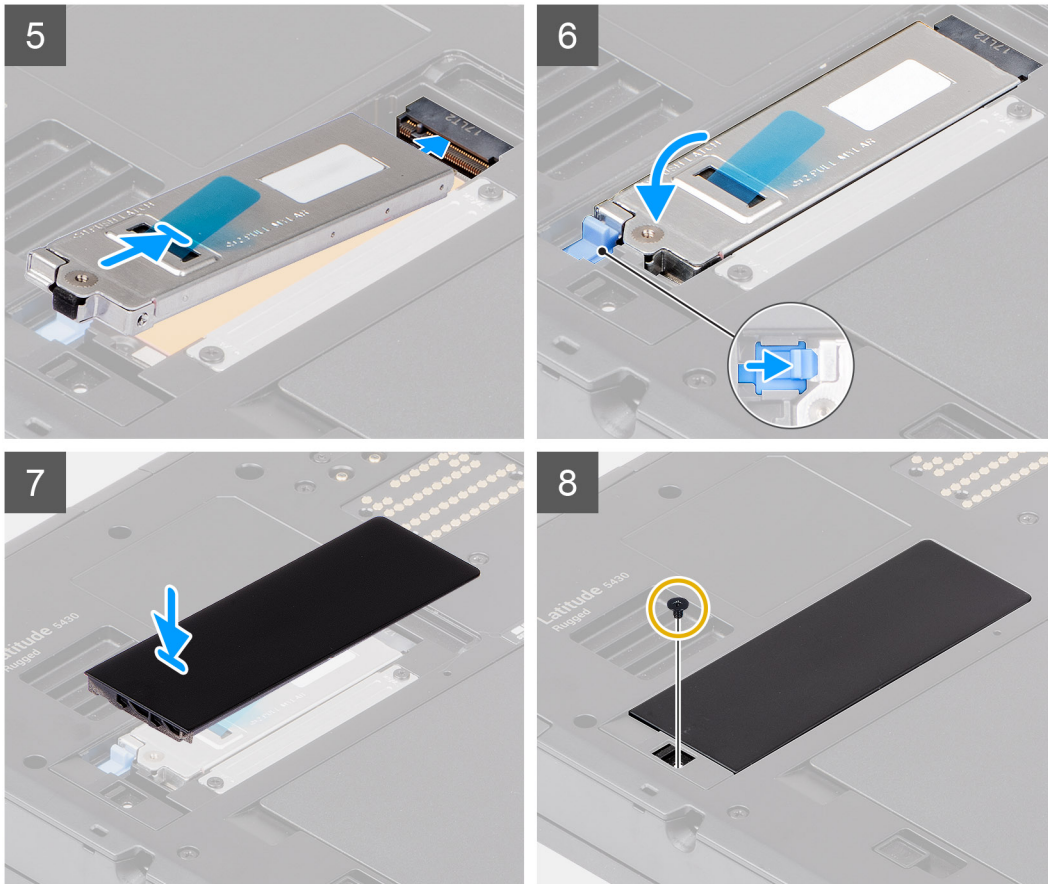
Steps

1. Place the SSD extender on the SSD carrier.
2. Replace the (M2x2) screw to secure the M.2 2230 solid state drive into the SSD carrier.
3. Place the SSD carrier cover and flip the SSD carrier.
4. Replace the (M2x5) screw.
5. Align the notch on the SSD with the tab on the M.2 slot and slide the SSD into the M.2 card slot on the chassis.
6. Pull the carrier latch to lock the SSD carrier.
7. Place the SSD door on the SSD carrier.
8. Replace the (M2x4) screw on the SSD door latch cover.

Next steps

1. Install the battery.
2. Follow the procedure in after working inside your computer.
3. Verify if the storage device is installed correctly:
   a. Turn on or restart your computer.
   b. Press F2 when the Dell logo is displayed on the screen to enter the system setup (BIOS) program.
      (i) **NOTE:** A list of storage devices are displayed under the **System Information** in the **General** group.
   c. If you have replaced the primary storage device that had the operating system that is installed, see **Reinstall Windows to the Dell factory image using recovery media** in the knowledge base article 000176966.

Removing the primary M.2 2280 solid state drive

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.

About this task

The following images indicate the location of the primary solid state drive and provide a visual representation of the removal procedure.
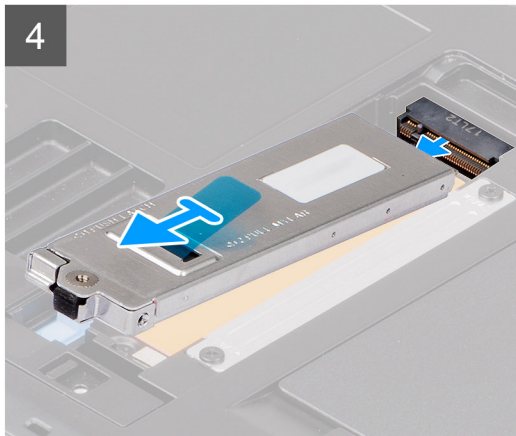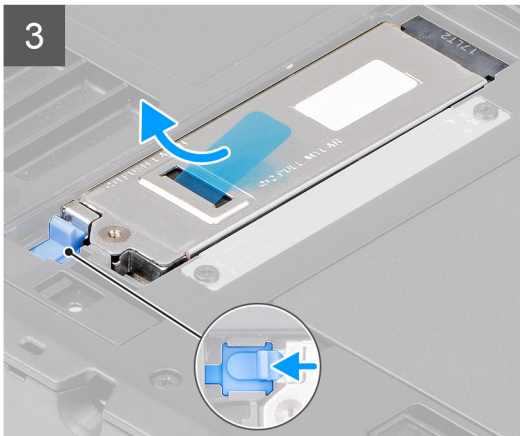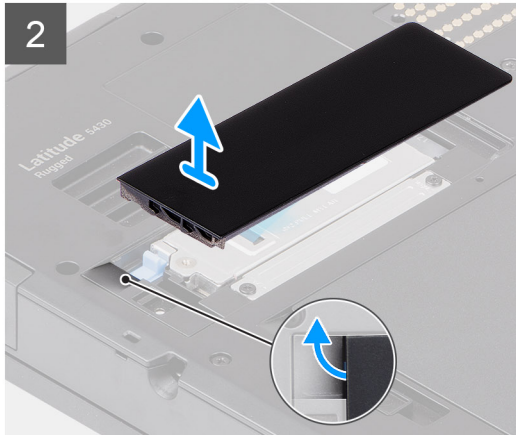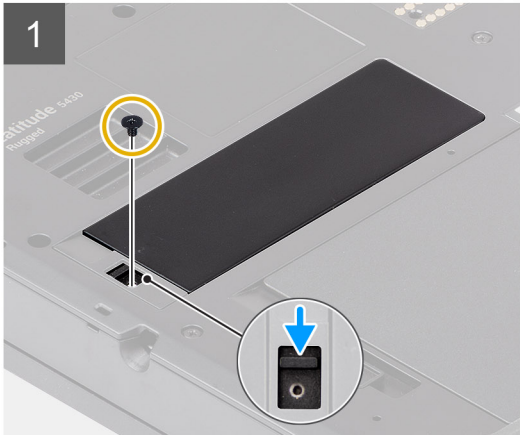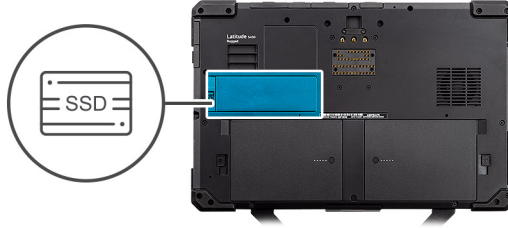
Steps

1. Remove the (M2x4) screw on the SSD door latch cover.
2. Push the SSD latch and lift the SSD door.
3. Push the carrier latch to release the SSD carrier.
4. Pull the mylar tape to lift the SSD carrier of the computer.
5. Flip the SSD carrier and remove the (M2x5) screw.
6. Pull the mylar tape and lift the SSD carrier cover.
7. Remove the M.2 2280 solid state drive.

Installing the primary M.2 2280 solid state drive

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 primary solid state drive and provides a visual representation of the installation procedure.

1x M2x5   **1x** M2x4
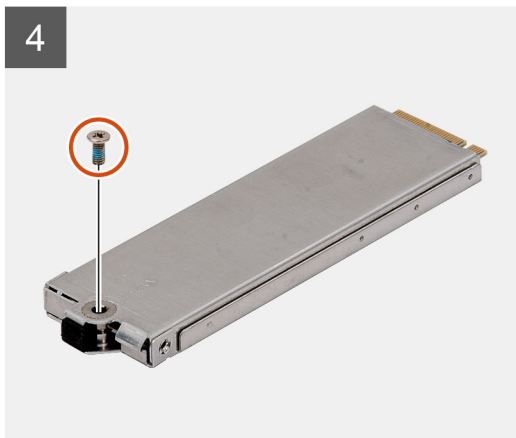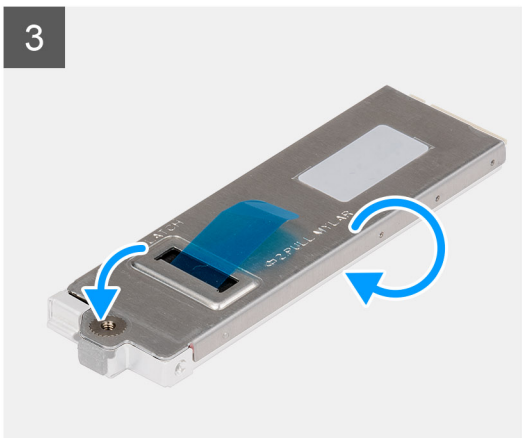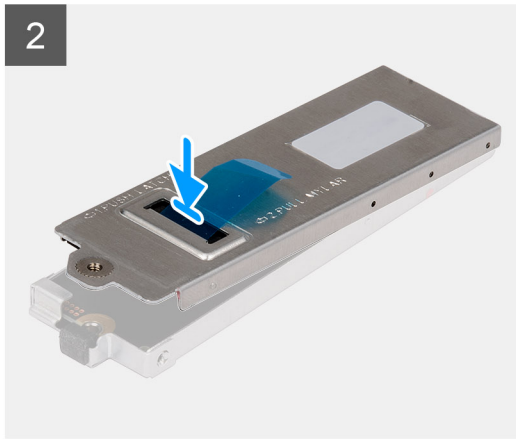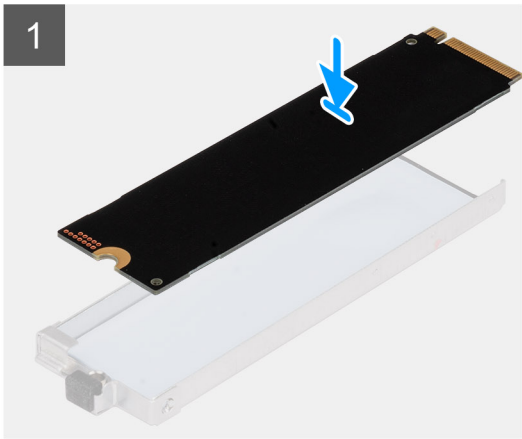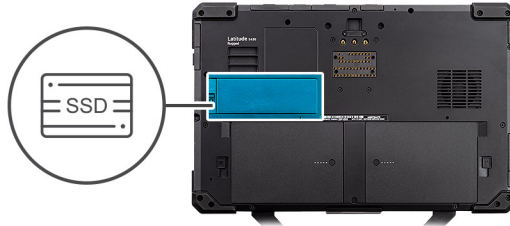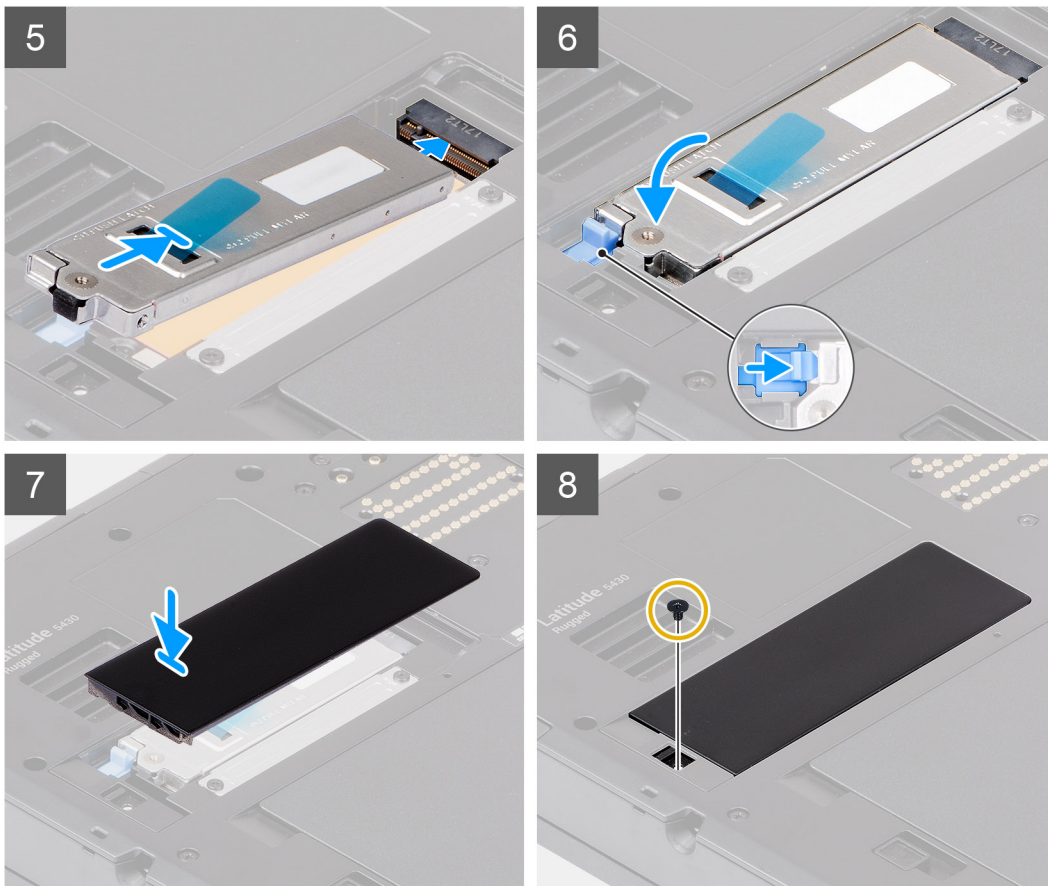
Steps

1. Place the M.2 2280 solid state drive into the SSD carrier.
2. Place the SSD carrier cover.
3. Flip the SSD carrier.
4. Replace the (M2x5) screw.
5. Align the notch on the SSD with the tab on the M.2 slot and slide the SSD into the M.2 card slot on the chassis.
6. Pull the carrier latch to lock the SSD carrier.
7. Place the SSD door on the SSD carrier.
8. Replace the (M2x4) screw on the SSD door latch cover.

Next steps

1. Install the battery.
2. Follow the procedure in after working inside your computer.
3. Verify if the storage device is installed correctly:
   a. Turn on or restart your computer.
   b. Press F2 when the Dell logo is displayed on the screen to enter the system setup (BIOS) program.
      (i) **NOTE:** A list of storage devices are displayed under the **System Information** in the **General** group.
   c. If you have replaced the primary storage device that had the operating system that is installed, see **Reinstall Windows to the Dell factory image using recovery media** in the knowledge base article 000176966.

Passive stylus

Removing the stylus

Prerequisites

1. Follow the procedure in before working inside your computer.

About this task

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

Steps

1. Slide the stylus out using the groove on the stylus pen.

   (i) **NOTE:** Avoid pulling the stylus with the stretchable thread.

2. Loosen the knot and slip the stylus through the hole to remove the tether from the chassis.

Installing the stylus

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 stylus and provides a visual representation of the installation procedure.

Steps

1. Slip the stylus through the hole to create a knot that holds the tether to the chassis.
2. Insert the stylus into the slot on the system.

   (i) **NOTE:** When not in use, avoid hanging the stylus that is detached from its groove.

Next steps

1. Follow the procedure in after working inside your computer.

Handle

Removing the handle

Prerequisites

(i) **NOTE:** The handle screw is part of the handle assembly and cannot be ordered separately.

1. Follow the procedure in before working inside your computer.

About this task

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

2x
M3.5x9

Steps

1. Remove the two (M3.5x9) screws that secure the handle to the system.
2. Remove the handle from the system.

Installing the handle

Prerequisites

ⓘ **NOTE:** The handle screw is part of the handle assembly and cannot be ordered separately.

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 handle and provides a visual representation of the installation procedure.
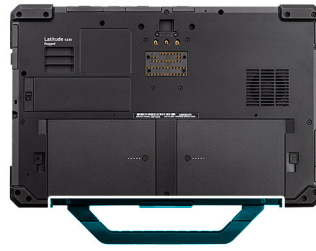
Steps

1. Align the handle and the screw holes on the system.
2. Replace the two (M3.5x9) screws to secure the handle to the system.

Next steps

1. Follow the procedure in after working inside your computer.

Keyboard

Removing the keyboard (rubberized)

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.

About this task

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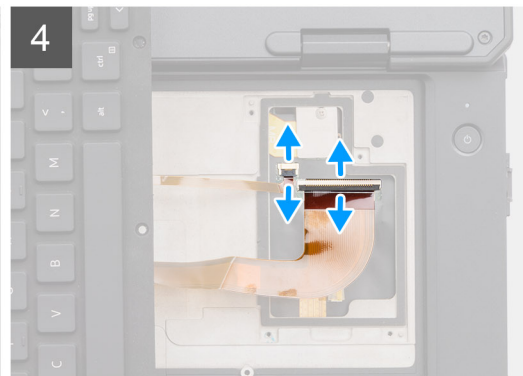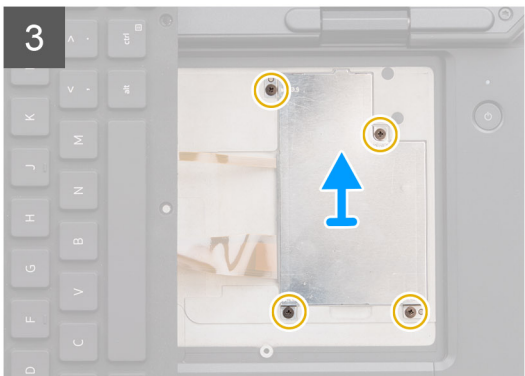
Steps

1. Remove the four (M2.5x4) screws that secure the keyboard and pry at the bottom edge of the keyboard.
2. Pry the keyboard from the front and then round the sides before flipping it 90° to incline over the touchpad.
3. Remove the four (M2x3.5) screws that secure the keyboard cover to the system chassis.
4. Disconnect the keyboard and backlight flexible printed cables from the connectors on the system board.
5. Lift the keyboard from the system.

Installing the keyboard (rubberized)

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 keyboard and provides a visual representation of the installation procedure.

Steps

1. Place the keyboard on the system chassis.
2. Connect the keyboard and backlight flexible printed cables to the connectors on the system board.
   Adhere the keyboard and backlight flexible printed cable with kapton tapes to the connectors.
3. Replace the four (M2x3.5) screws that secure the keyboard cover to the system chassis.
4. Flip the keyboard on the chassis and slide it towards the display to align with the screw holes.
5. Replace the four (M2.5x4) screws to secure the keyboard.

Next steps

1. Install the battery.
2. Follow the procedure in after working inside your computer.

Removing the keyboard (standard)

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.

About this task

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

Steps

1. Remove the six (M2.5x4) screws that secure the keyboard and pry at the bottom edge of the keyboard.
2. Pry the keyboard from the front and then round the sides before flipping it 90° to incline over the touchpad.
3. Remove the four (M2x3.5) screws that secure the keyboard cover to the system chassis.
4. Disconnect the keyboard and backlight flexible printed cables from the connectors on the system board.
5. Lift the keyboard from the system.

Installing the keyboard (standard)

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 keyboard and provides a visual representation of the installation procedure.

Steps

1. Place the keyboard on the system chassis.
2. Connect the keyboard and backlight flexible printed cables to the connectors on the system board.
   Adhere the keyboard and backlight flexible printed cable with kapton tapes to the connectors.
3. Replace the four (M2x3.5) screws that secure the keyboard cover to the system chassis.
4. Flip the keyboard on the chassis and slide it towards the display to align with the screw holes.
5. Replace the six (M2.5x4) screws to secure the keyboard.

Next steps

1. Install the battery.
2. Follow the procedure in after working inside your computer.

Base cover

Removing the base cover

Prerequisites

1. Follow the procedure in before working inside your computer.
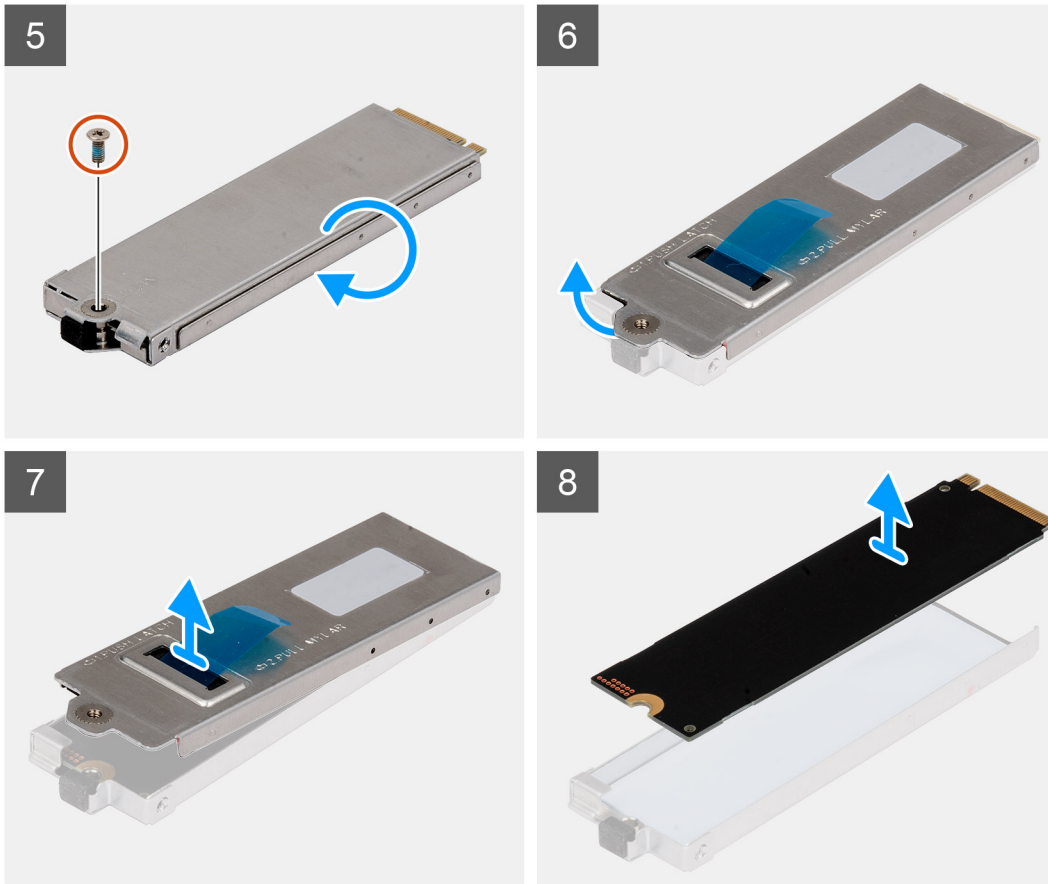2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.

About this task

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

22x M2.5x7 **8x** M2.5x4

Steps

1. Remove the 22 (M2.5x7) and six (M2x4) screws that secure the base cover to the system chassis.

2. Remove the two (M2x4) screws that secure the battery cable cover to the system chassis.
3. Disconnect the left and right battery cables from the connectors on the system board.
4. Lift the base cover from the system chassis.

Installing the base cover

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 base cover and provides a visual representation of the installation procedure.
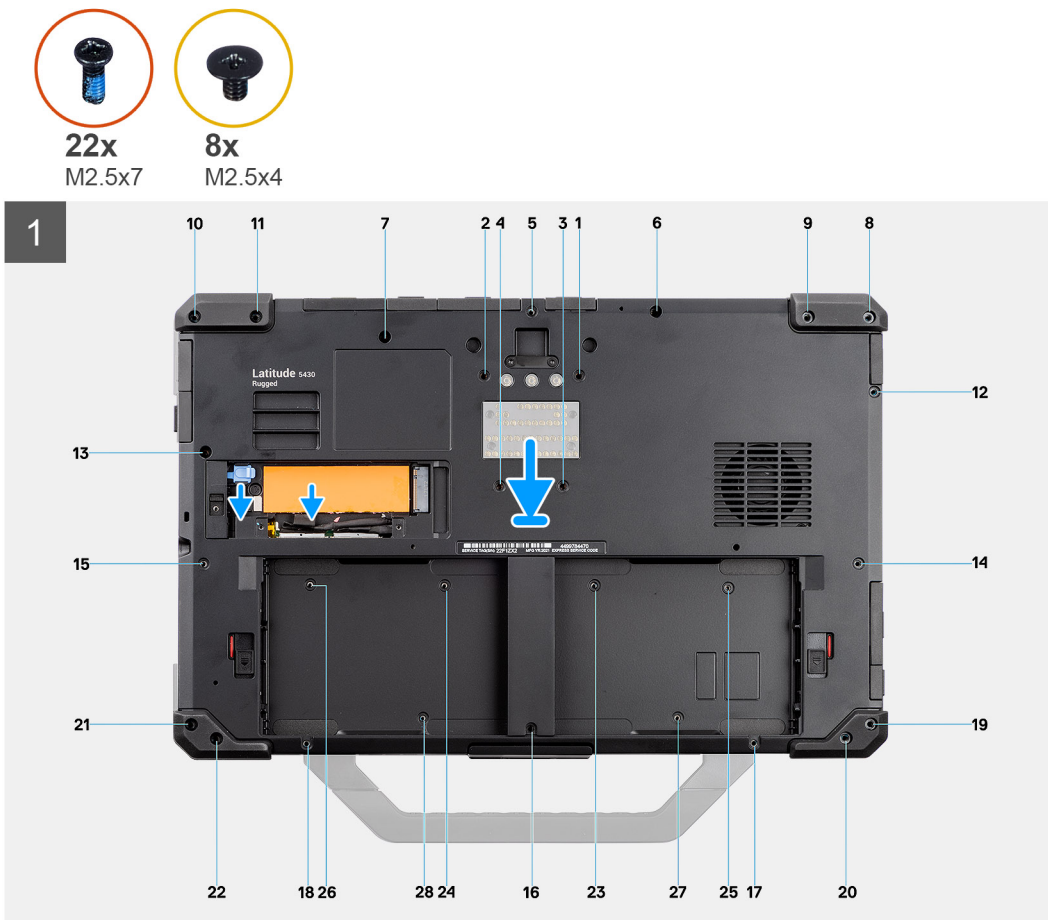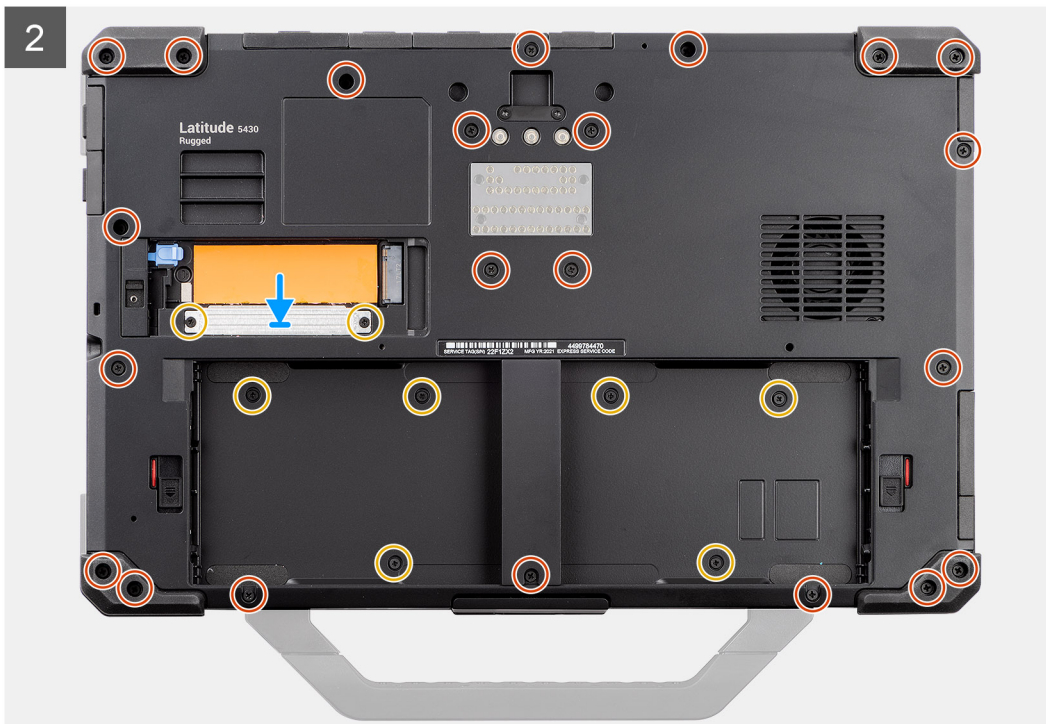
Steps

1. Place the base cover on the system chassis.
2. Connect the left and right battery cables to the connectors on the system board.
3. Replace the two (M2x4) screws that secure the battery cable cover to the system chassis.
4. In sequential order, replace the 22 (M2.5x7) and six (M2x4) screws that secure the base cover to the system chassis.

Next steps

1. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
2. Install the battery.
3. 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 battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

ⓘ **NOTE:** Removing the coin-cell battery resets the BIOS setup programs settings to default. It is recommended that you note the BIOS setup programs settings before removing the coin-cell battery.

About this task

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

Steps

1. Disconnect the coin-cell battery cable from the system board.
2. Peel the coin-cell battery off the system 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

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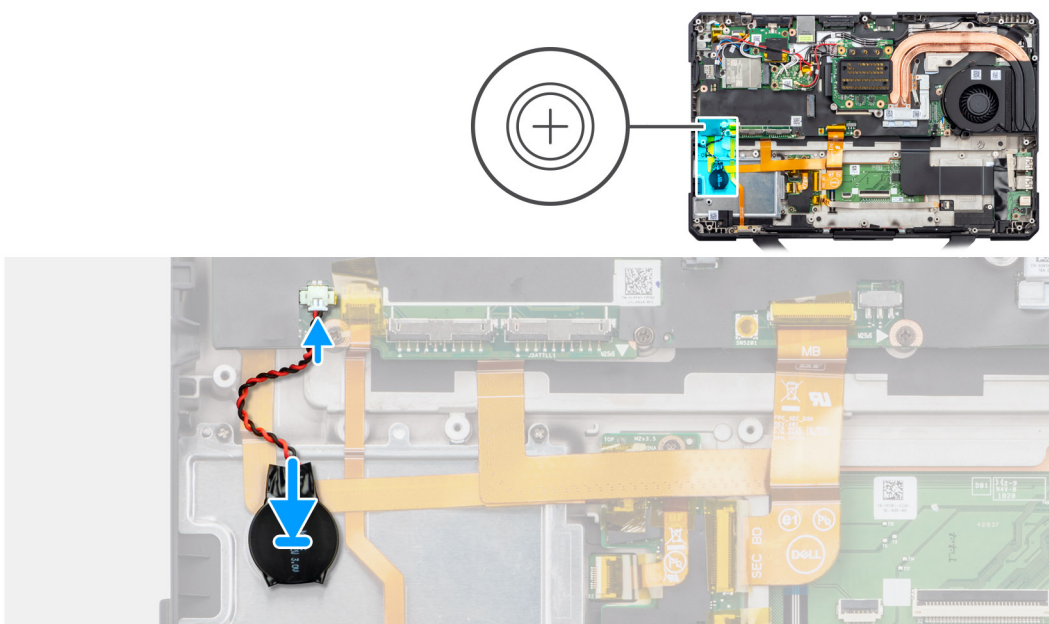
Steps

1. Adhere the coin-cell battery to the slot on the system chassis.
2. Connect the coin-cell battery cable to the connector on the system board.

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. Follow the procedure in after working inside your computer.

Fan

Removing the fan

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

About this task

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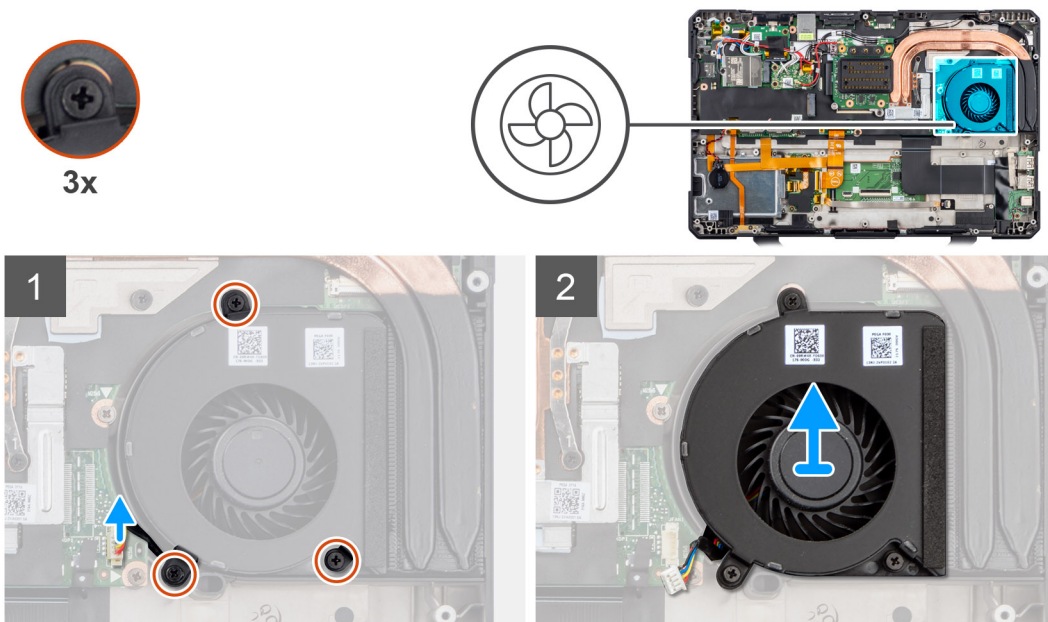
Steps

1. Disconnect the fan cable from its connector on the system board.
2. Remove the three (M2.5x6.5) screws that secure the fan to the system chassis.
3. Lift the fan from the system chassis.

Installing the fan

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 fan and provides a visual representation of the installation procedure.
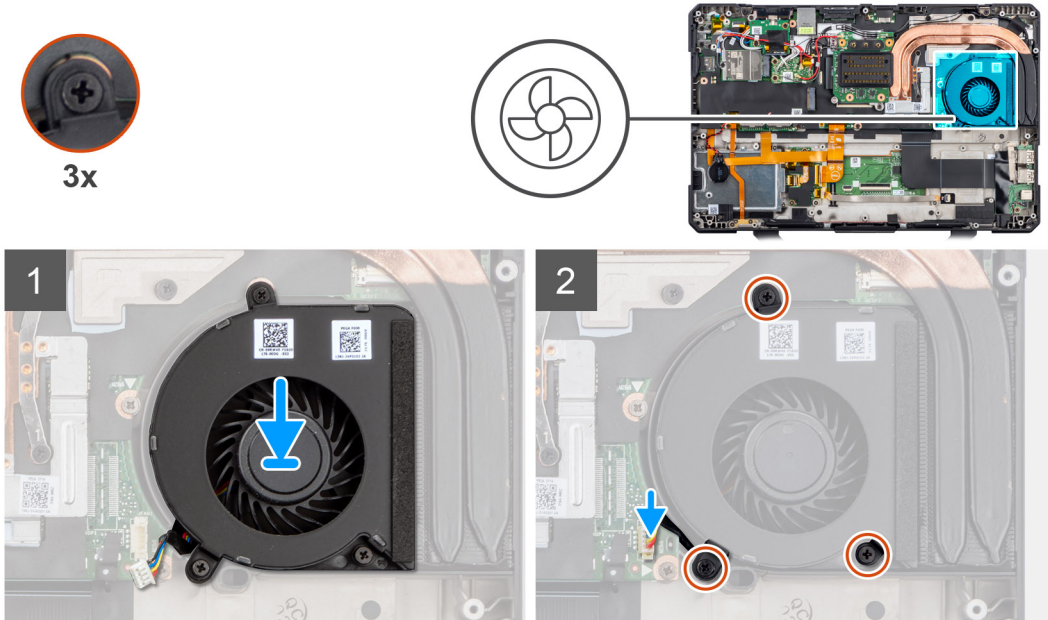
Steps

1. Place the fan on the system chassis.
2. Connect the fan cable to its connector on the system board.
3. Replace the three (M2.5x6.5) screws that secure the fan to the system chassis.

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. Follow the procedure in after working inside your computer.

Wi-Fi I/O board

Removing the Wi-Fi I/O board

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

About this task

The following images indicate the location of the Wi-Fi I/O board and provide a visual representation of the removal procedure.

2x
M2.5x5
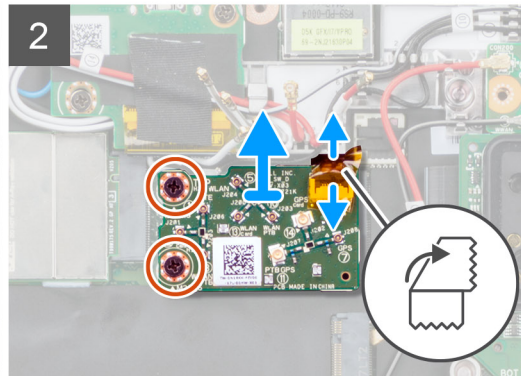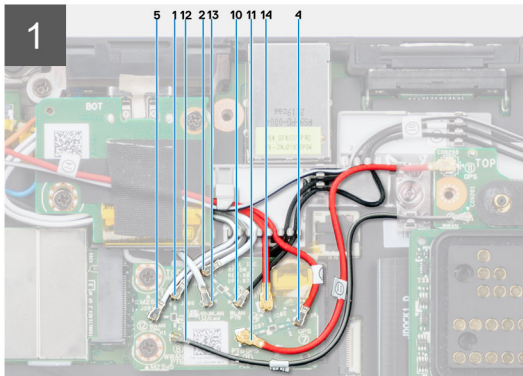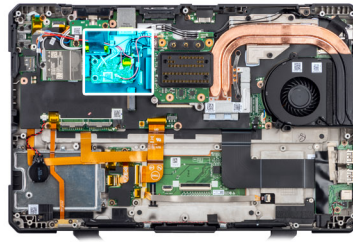
Steps

1. Disconnect the WLAN, WWAN, and GPS antennas from the Wi-Fi I/O board.

Cable number	Antenna
5	WWAN antenna on Wi-Fi I/O board
1	WWAN antenna on Wi-Fi I/O board
12	WWAN antenna on Wi-Fi I/O board
2	WLAN antenna on Wi-Fi I/O board
13	WLAN antenna on Wi-Fi I/O board
10	WLAN antenna on Wi-Fi I/O board
11	GPS antenna on Wi-Fi I/O board
14	GPS antenna on Wi-Fi I/O board
4	GPS antenna on Wi-Fi I/O board

2. Peel the adhesive tape and disconnect the flexible printed cable from the Wi-Fi I/O board.
3. Remove the two (M2.5x5) screws that secure the Wi-Fi I/O board to the system board.
4. Lift the Wi-Fi I/O board from the system board.
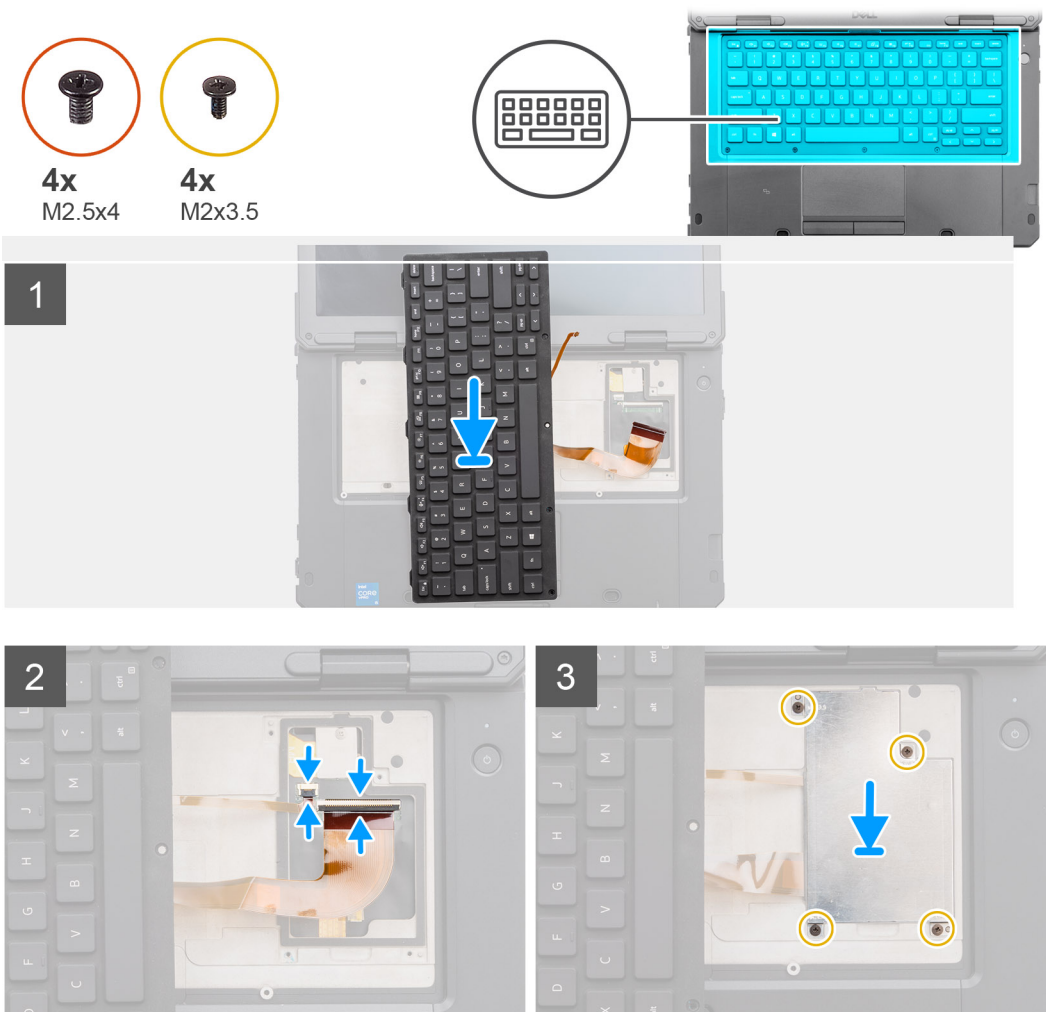
Installing the Wi-Fi I/O board

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 Wi-Fi I/O board and provides a visual representation of the installation procedure.

2x
M2.5x5
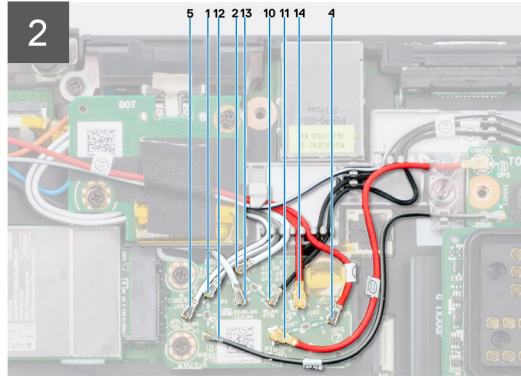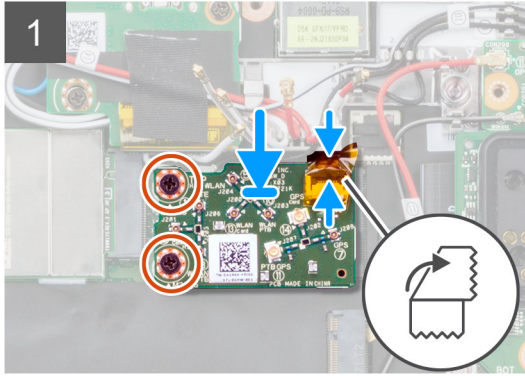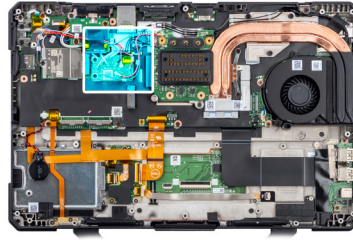
Steps

1. Place and align the Wi-Fi I/O board with screw holes on the system board.
2. Connect the flexible printed cable to the Wi-Fi I/O board.

   Adhere the flexible printed cable with kapton tape to the connector.
3. Replace the two (M2.5x5) screws that secure the Wi-Fi I/O board to the system board.
4. Connect the WLAN, WWAN, and GPS antennas to the Wi-Fi I/O board.

Table 3. Cable connectors on Latitude 5430 Rugged

Cable number	Antenna
5	WWAN antenna on Wi-Fi I/O board
1	WWAN antenna on Wi-Fi I/O board
12	WWAN antenna on Wi-Fi I/O board
2	WLAN antenna on Wi-Fi I/O board
13	WLAN antenna on Wi-Fi I/O board
10	WLAN antenna on Wi-Fi I/O board
11	GPS antenna on Wi-Fi I/O board
14	GPS antenna on Wi-Fi I/O board
4	GPS antenna on Wi-Fi I/O board

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. Follow the procedure in after working inside your computer.

WLAN card

Removing the WLAN card

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.
5. Remove the Wi-Fi I/O board.

About this task

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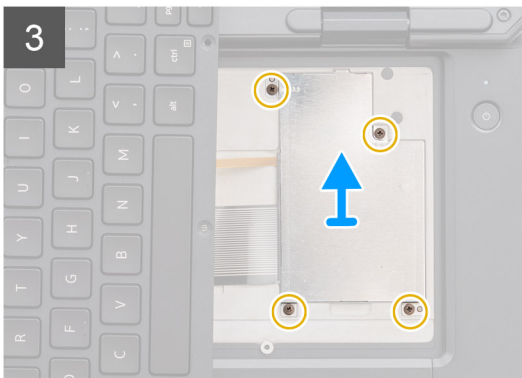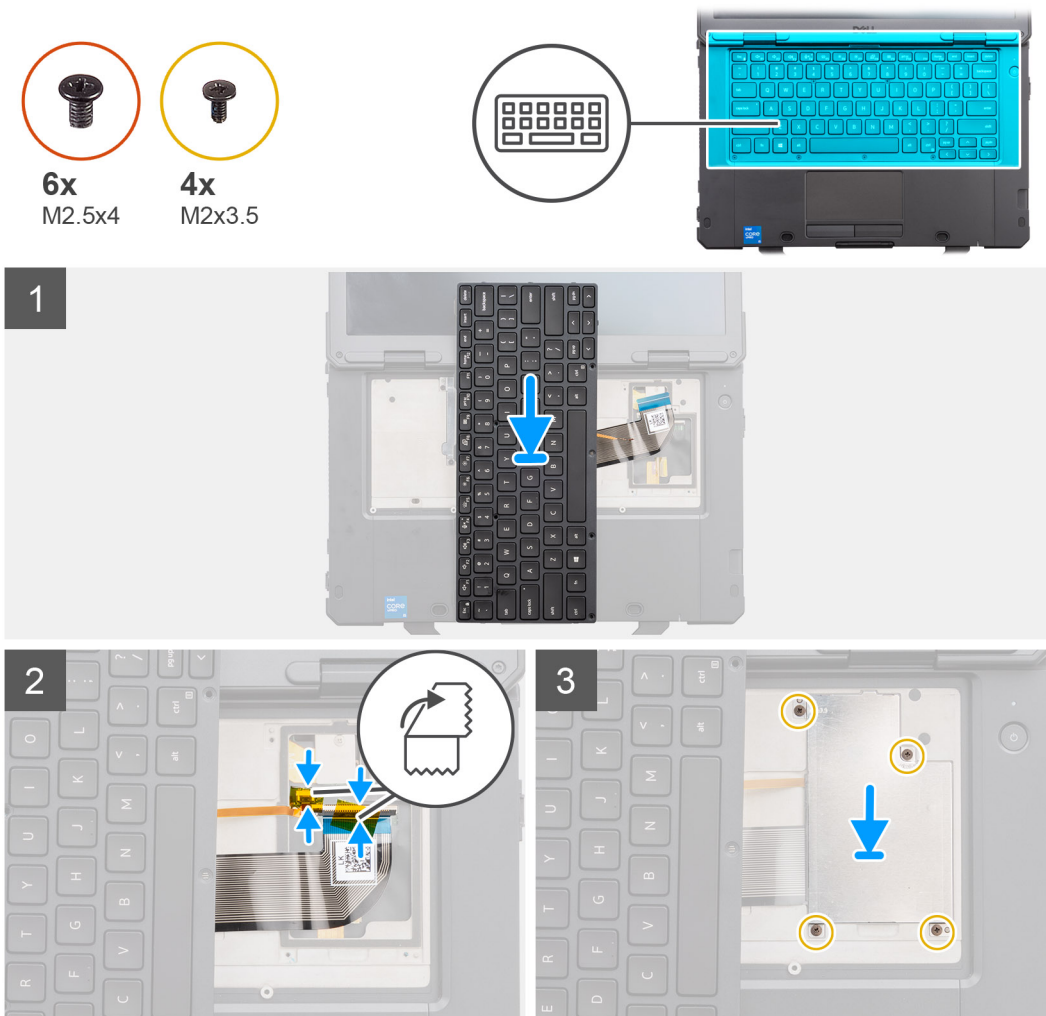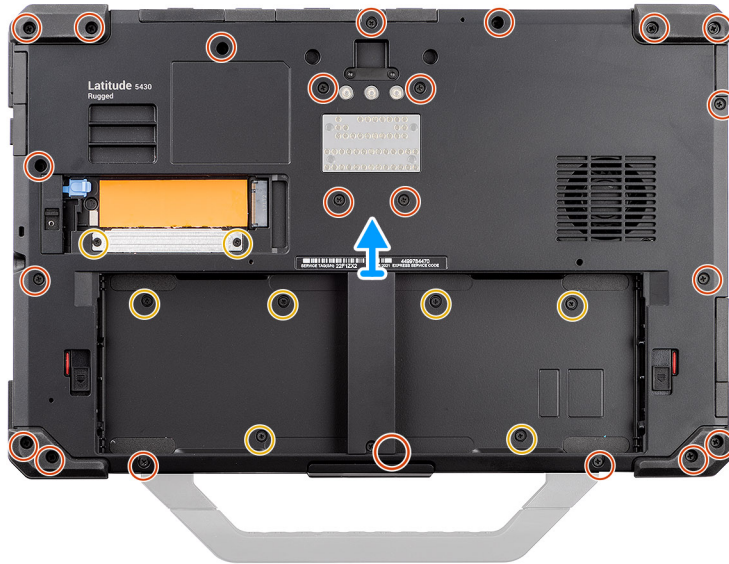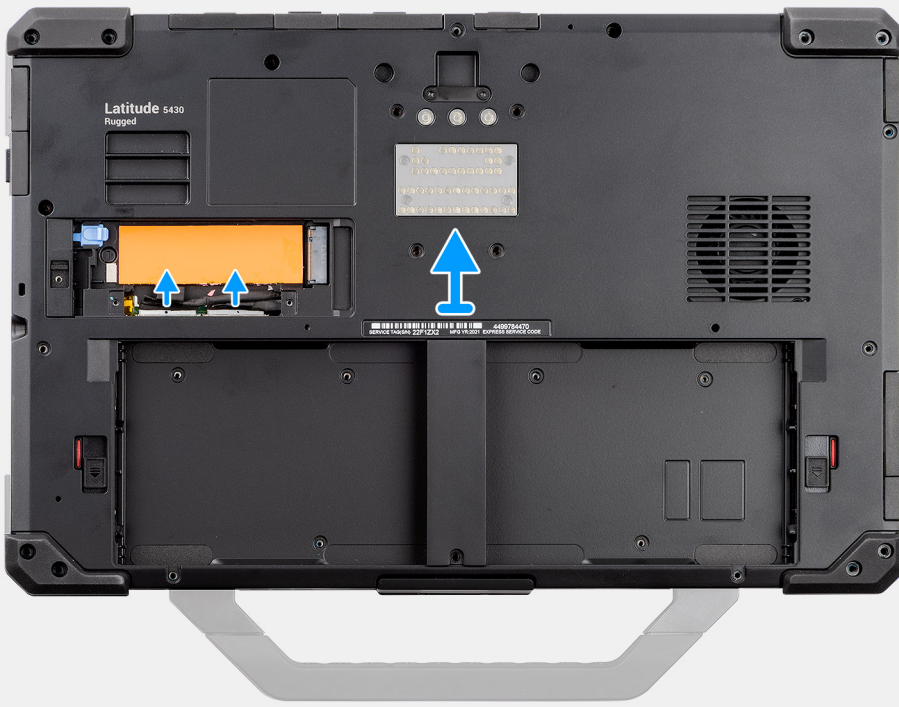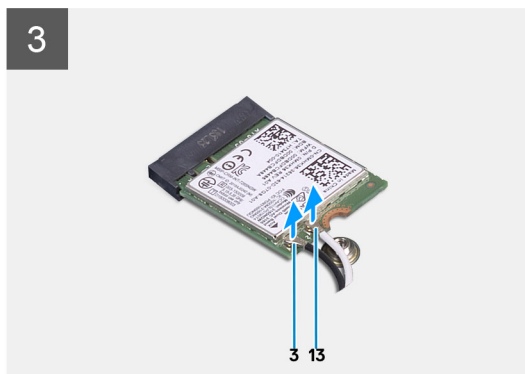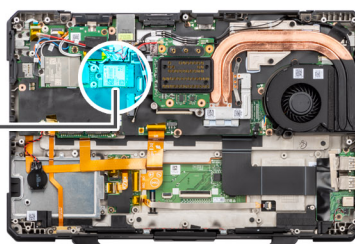

Steps

1. Remove the (M2x3.5) screw that secures the WLAN card holder to the system board.
2. Remove the WLAN card holder.
3. Disconnect the antenna cables from the WLAN card.

Table 4. Connectors on the wireless card

Antenna	Cable Color
Main (white triangle)	White (cable number 13)
Auxiliary (black triangle)	Black (cable number 3)

4. Slide and remove the WLAN card from the WLAN card slot.

Installing the WLAN card

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 WLAN card and provides a visual representation of the installation procedure.
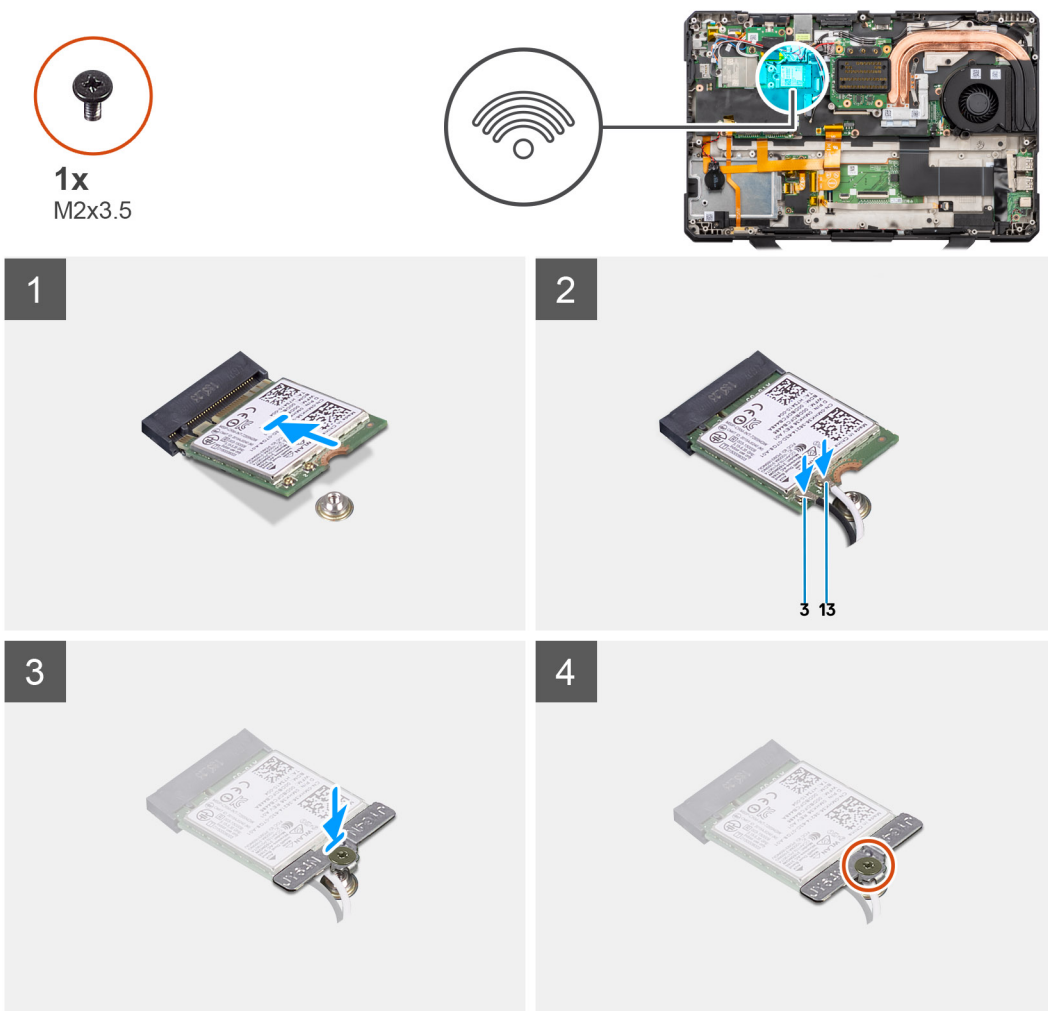
Steps

1. Slide the WLAN card at an angle into the WLAN card slot.
2. Connect the antenna cables to the WLAN card. The following table provides the antenna-cable color scheme for the WLAN card that supports your laptop.

Table 5. Connectors on the wireless card

Antenna	Cable Color
Main (white triangle)	White (cable number 13)
Auxiliary (black triangle)	Black (cable number 3)

3. Place the WLAN card holder on the WLAN card.
4. Replace the (M2x3.5) screw to secure the WLAN card holder to the WLAN card.

Next steps

1. Install the Wi-Fi I/O board.
2. Install the base cover.
3. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Install the battery.
5. Follow the procedure in after working inside your computer.

Wireless Wide Area Network (WWAN) card

Removing the WWAN card

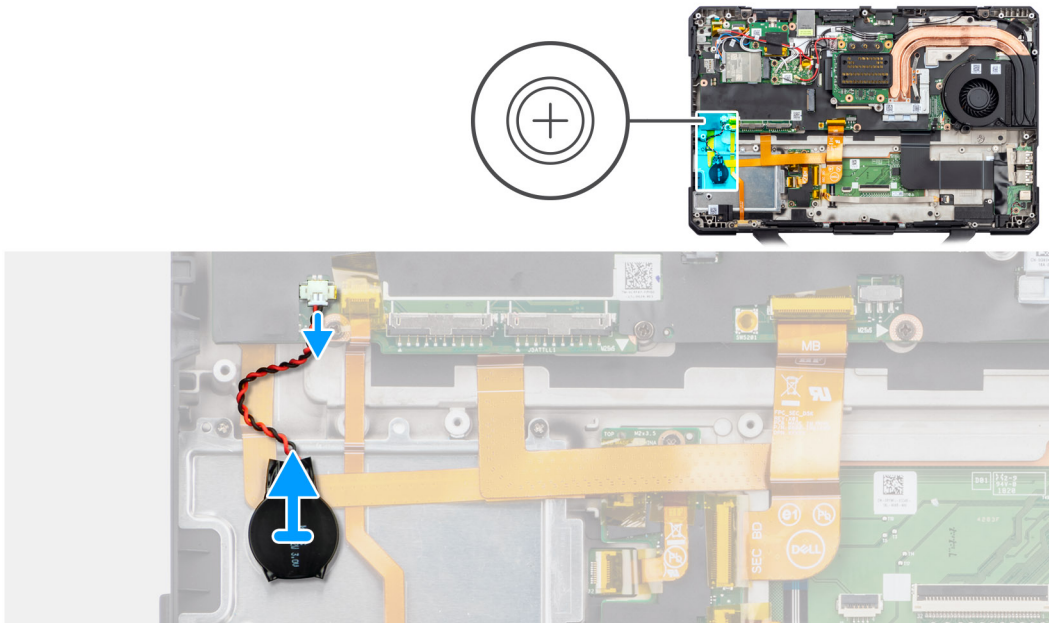**Prerequisites**

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

About this task

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

1x
M2x3.5
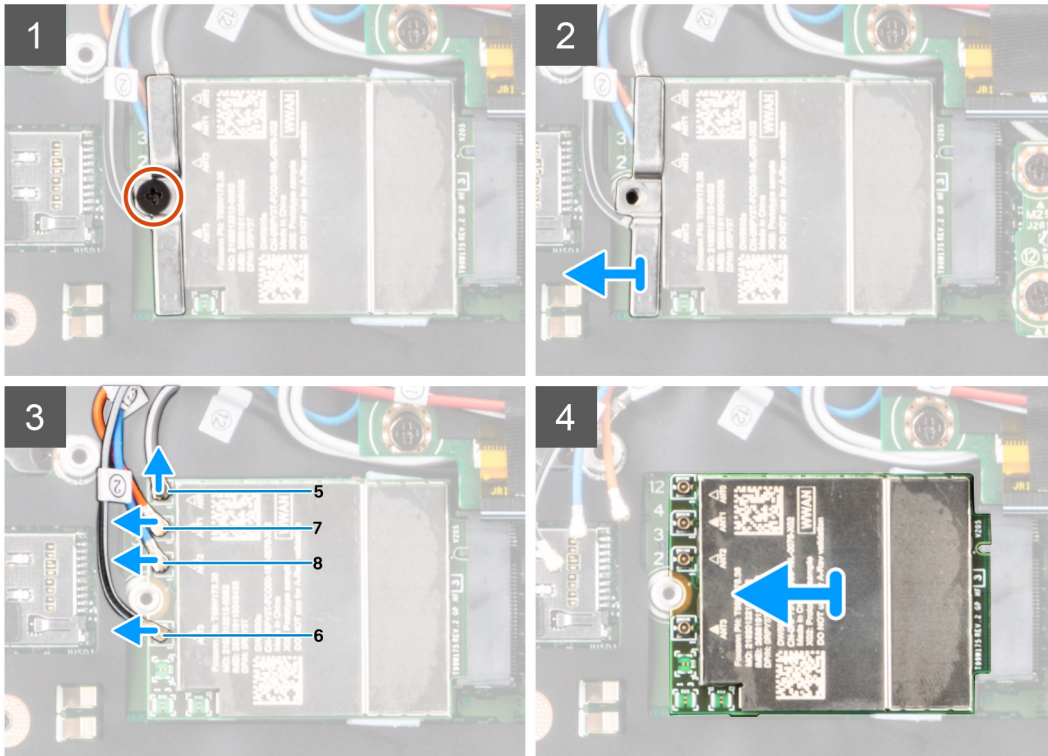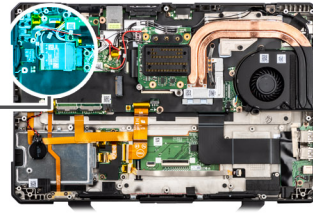
Steps

1. Remove the (M2x3.5) screw that secures the WWAN card holder to the system board.
2. Remove the WWAN card holder.
3. Disconnect the antenna cables from the WWAN card.

Table 6. Connectors on the WWAN card

| Antenna	Cable Color
Main (white triangle) - ANT1	Orange (cable number 7)
Main (white triangle) - ANT3	White and Black (cable number 6)
Auxiliary (black triangle) - ANT0	White and Grey (cable number 5)
Auxiliary (black triangle) - ANT2	Blue (cable number 8)

4. Slide and remove the WWAN card from the WWAN card slot.

Installing the WWAN card

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 WWAN card and provides a visual representation of the installation procedure.
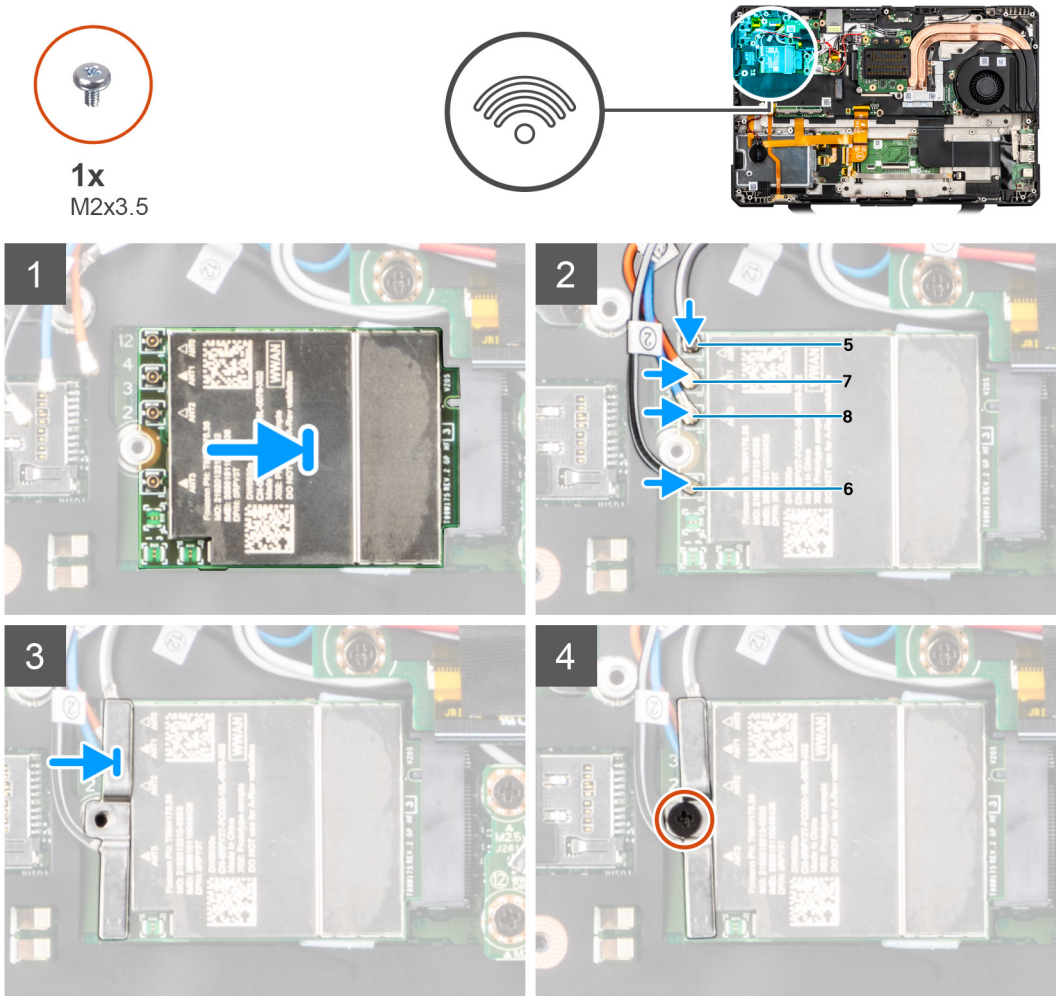
Steps

1. Slide the WWAN card at an angle into the WWAN card slot.
2. Connect the antenna cables to the WWAN card.

Table 7. Connectors on the WWAN card

Antenna	Cable Color
Main (white triangle) - ANT1	Orange (cable number 7)
Main (white triangle) - ANT3	White and Black (cable number 6)
Auxiliary (black triangle) - ANT0	White and Grey (cable number 5)
Auxiliary (black triangle) - ANT2	Blue (cable number 8)

3. Place the WWAN card holder on the WWAN card.
4. Replace the (M2x3.5) screw that secures the WWAN card holder to the system board.

   (i) **NOTE:** For instructions on how to find your computer's IMEI (International Mobile Station Equipment Identity) number, see the knowledge base article 000143678 at https://www.dell.com/support/.

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. Follow the procedure in after working inside your computer.

Dock I/O board

## Removing the dock I/O board

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.
5. Remove the Wi-Fi I/O board.
6. Remove the WLAN card.

About this task

The following images indicate the location of the dock I/O board and provide a visual representation of the removal procedure.

1x
M2x3.5
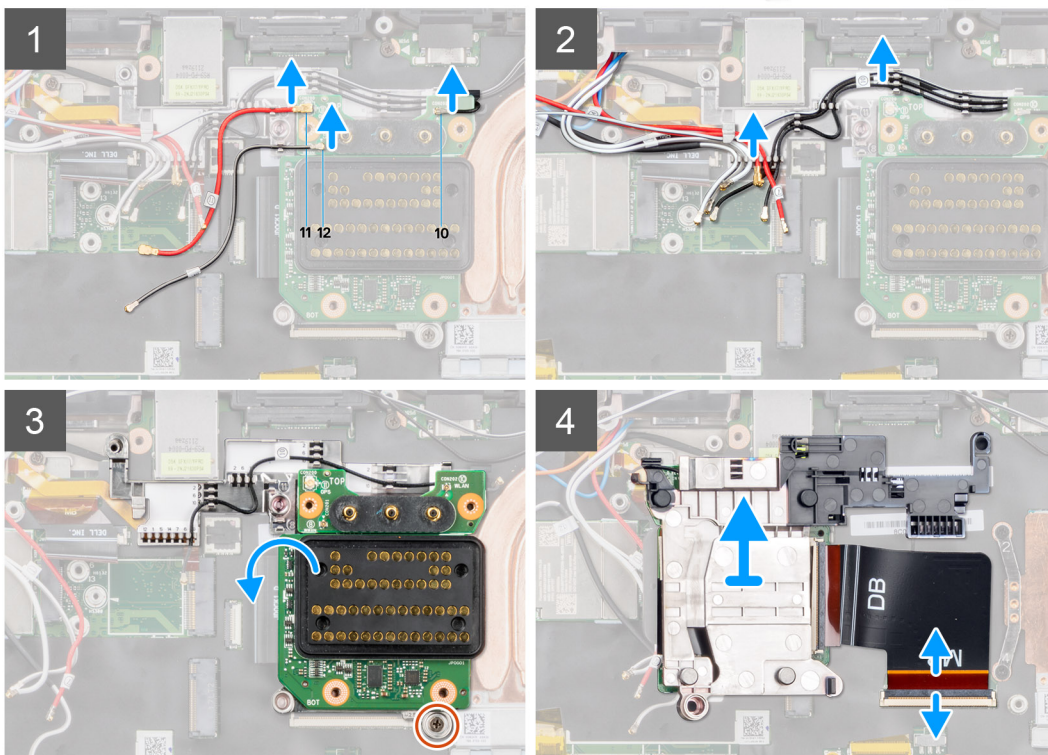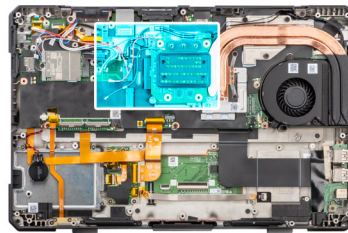
Steps

1. Disconnect the GPS, WWAN, and WLAN antennas from the dock I/O board.

Table 8. Connectors on the dock I/O board

Cable number	Antenna
11	GPS antenna on dock I/O board
12	WWAN antenna on dock I/O board
10	WLAN antenna on dock I/O board

2. Unroute the antenna cables from the routing channels on the system chassis.
3. Remove the (M2.5x5) screw that secures the dock I/O board to the system board.
4. Flip the dock I/O board and disconnect the dock I/O flexible printed cable from the system board.
5. Lift the dock I/O board from the system board.

# Installing the dock I/O 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 dock I/O board and provides a visual representation of the installation procedure.

1x
M2x3.5
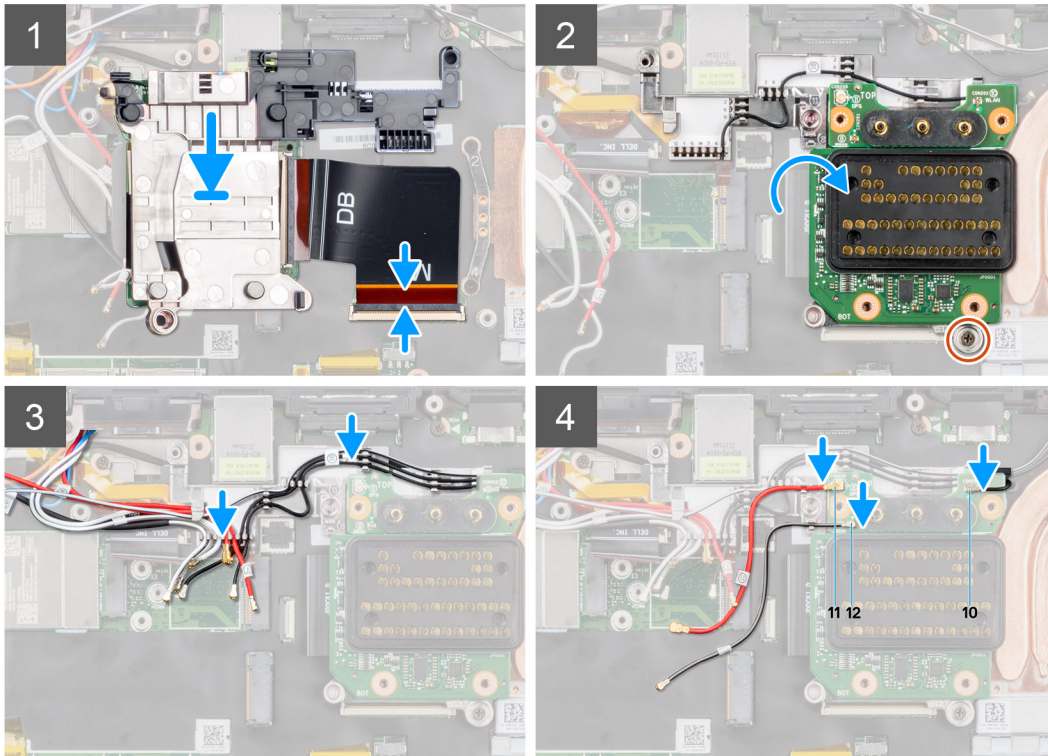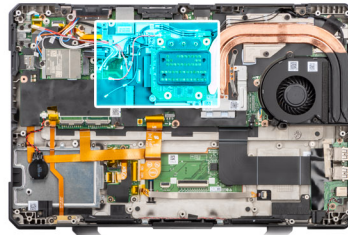
Steps

1. Place the dock I/O board and connect the dock I/O flexible printed cable to the system board.

   ⓘ **NOTE:** Adhere the dock I/O flexible printed cable with kapton tapes to the connector.

2. Flip the dock I/O board and replace the (M2.5x5) screw that secures it to the system board.
3. Route the antenna cables using the routing channels on the system chassis.
4. Connect the GPS, WWAN, and WLAN antennas to the dock I/O board.

Table 9. Connectors on the dock I/O board

Cable number	Antenna
11	GPS antenna on dock I/O board
12	WWAN antenna on dock I/O board
10	WLAN antenna on dock I/O board

Next steps

1. Install the WLAN card.
2. Install the Wi-Fi I/O board.
3. Install the base cover.
4. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
5. Install the battery.

6. Follow the procedure in after working inside your computer.

LED board

Removing the LED board

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

About this task

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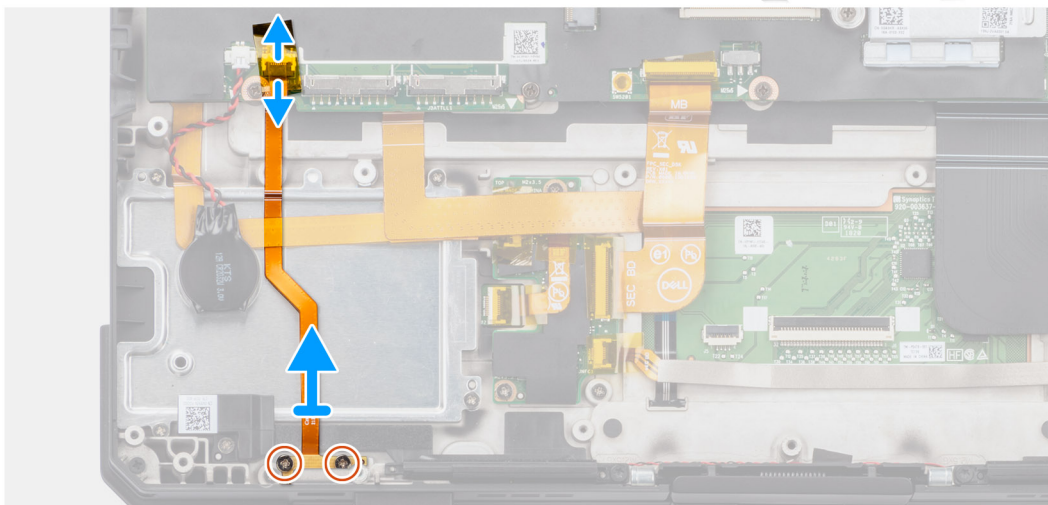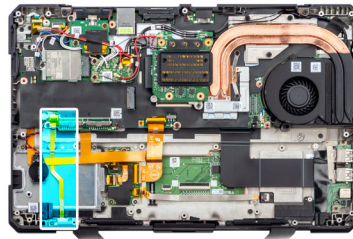
Steps

1. Disconnect the LED cable from the connector on the system board.
2. Remove the two (M2x3.5) screws that secure the LED board to the system chassis.
3. Lift the LED board from the system chassis.

## Installing the LED 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 LED board and provides a visual representation of the installation procedure.

2x
M2x3.5
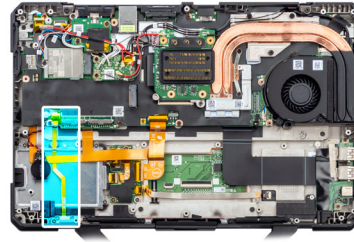
Steps

1. Place the LED board and replace the two (M2x3.5) screws that secure the LED board to the system chassis.
2. Connect the LED cable to the connector on the system board.

   Adhere the LED flexible printed cable with kapton tapes to the connector.

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. Follow the procedure in after working inside your computer.

Left I/O board

Removing the left I/O board

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

About this task

The following images indicate the location of the left I/O board and provide a visual representation of the removal procedure.

2x
M2x3.5
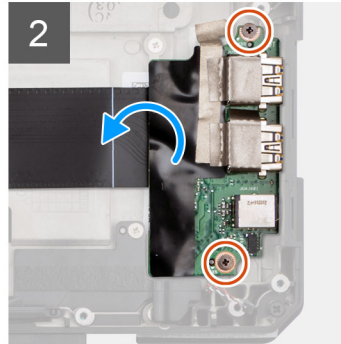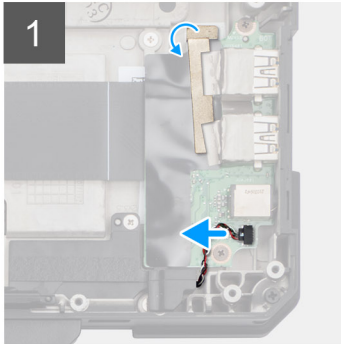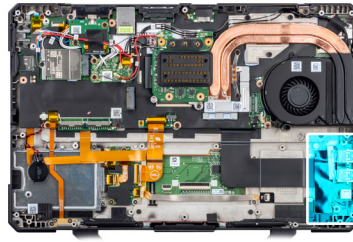
Steps

1. Disconnect the speaker cable and peel the adhesive on the left I/O board.
2. Remove the two (M2x3.5) screws that secure the left I/O board to the system chassis.
3. Flip the left I/O board and disconnect the flexible printed cable to remove the left I/O board.

Installing the left I/O 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 left I/O board and provides a visual representation of the installation procedure.

2x
M2x3.5
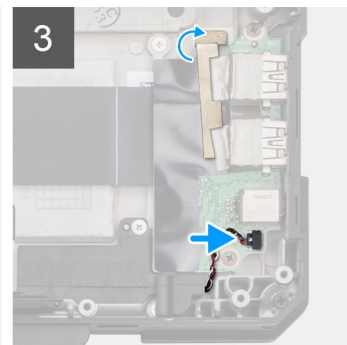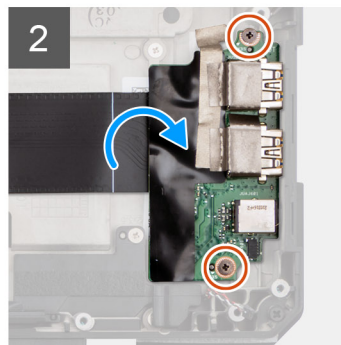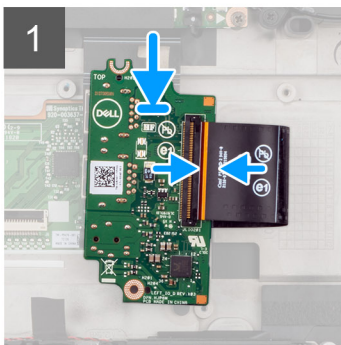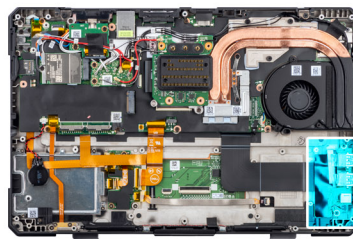
Steps

1. Place the left I/O board and connect the flexible printed cable to its connector.
2. Flip the left I/O board and replace the two (M2x3.5) screws to secure it to the system chassis.
3. Adhere the adhesive on the left I/O board and connect the speaker cable.

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. 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 battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.
5. Remove the LED board.

About this task

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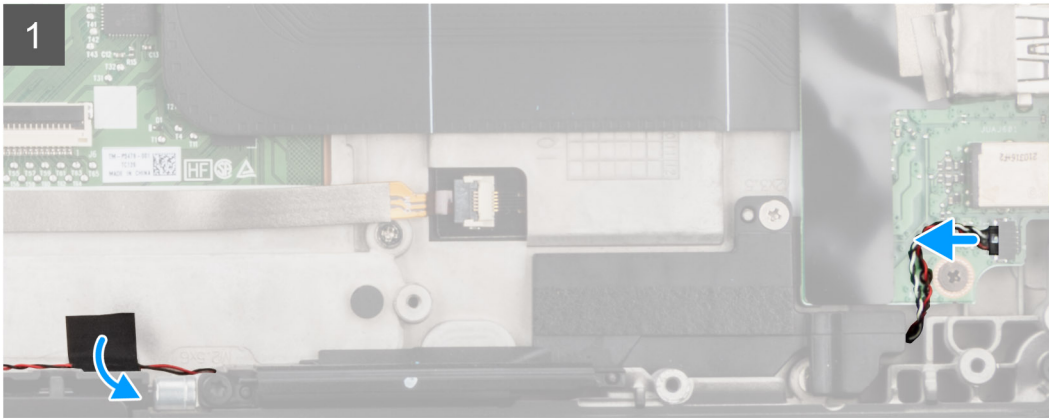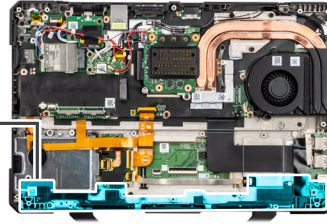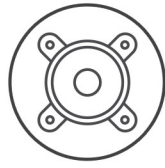
Steps

1. Disconnect the speaker cable from the connector on the left I/O board and unroute the cable from the routing channel.
2. Remove the two (M2x3.5) and two (M2.5x6, T8) epoxy screws that secure the speakers to the system chassis.
3. Left the speakers from the system chassis.

Installing the speakers

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 speakers and provides a visual representation of the installation procedure.
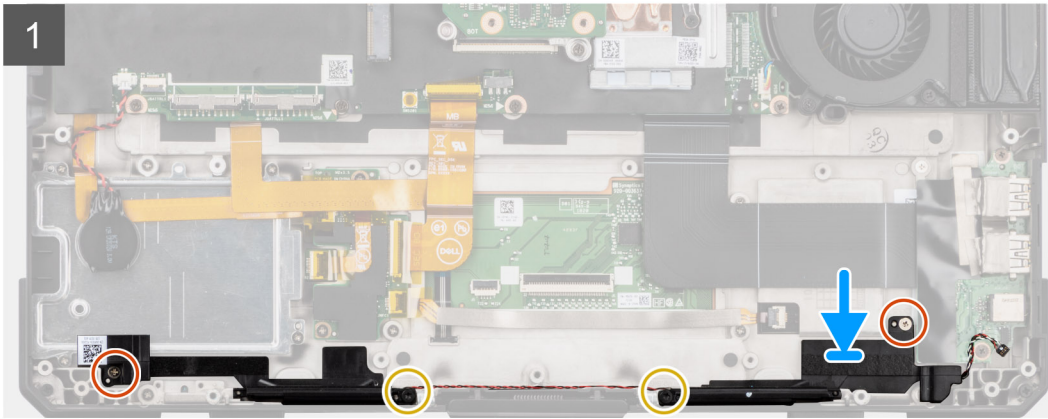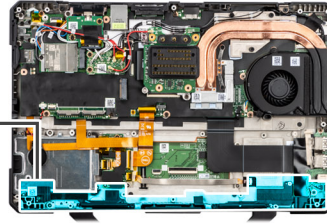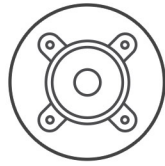
Steps

1. Place the speakers on the system chassis.
2. Replace the two (M2x3.5) and two (M2.5x6, T8) epoxy screws to secure the speakers to the system chassis.
3. Route the cable using the routing channel and connect the speaker cable to the connector on the left I/O board.

Next steps

1. Install the LED board.
2. Install the base cover.
3. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Install the battery.
5. Follow the procedure in after working inside your computer.

Secondary daughterboard

Removing the secondary daughterboard

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

About this task

The following images indicate the location of the secondary daughterboard and provide a visual representation of the removal procedure.
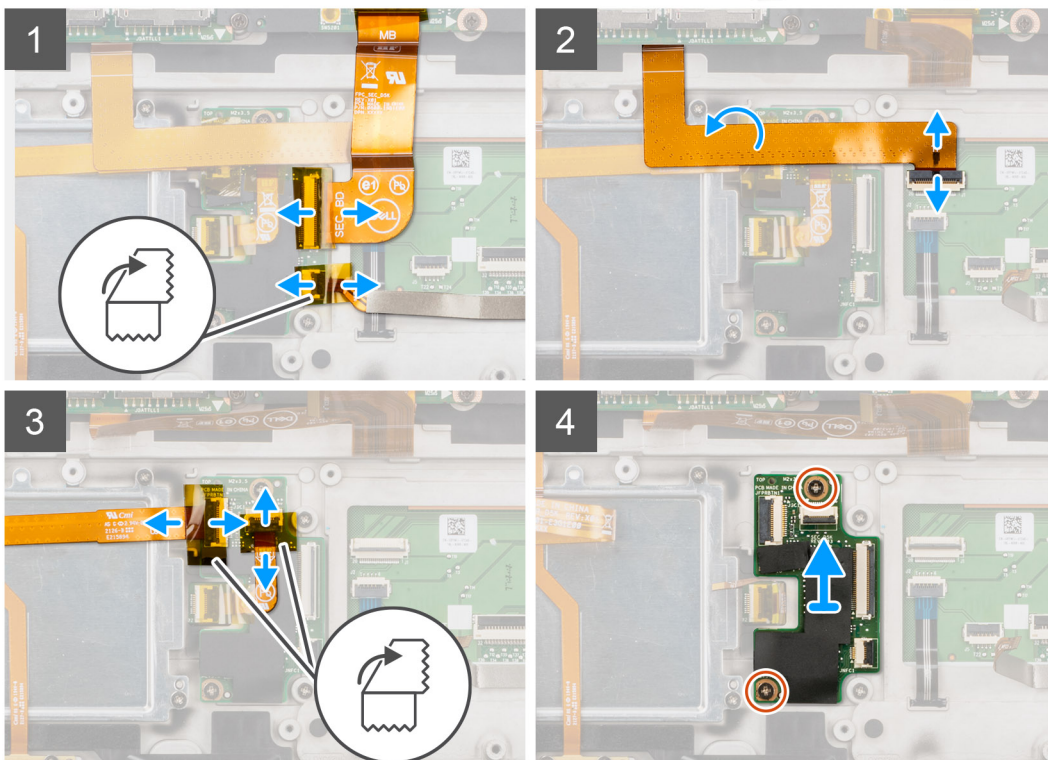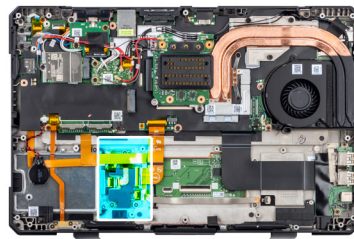
Steps

1. Disconnect the secondary daughterboard flat printed cable and smart card cable from the connector on the secondary daughterboard.
2. Disconnect the touchpad flat printed cable from the connector on the touchpad.
3. Disconnect the contactless smartcard flat printed cable and fingerprint cable from the connector on the secondary daughterboard.
4. Remove the two (M2x3.5) screws that secure the secondary daughterboard to the system chassis.

5. Lift the secondary daughterboard from the system chassis.

Installing the secondary daughterboard

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 secondary daughterboard and provides a visual representation of the installation procedure.
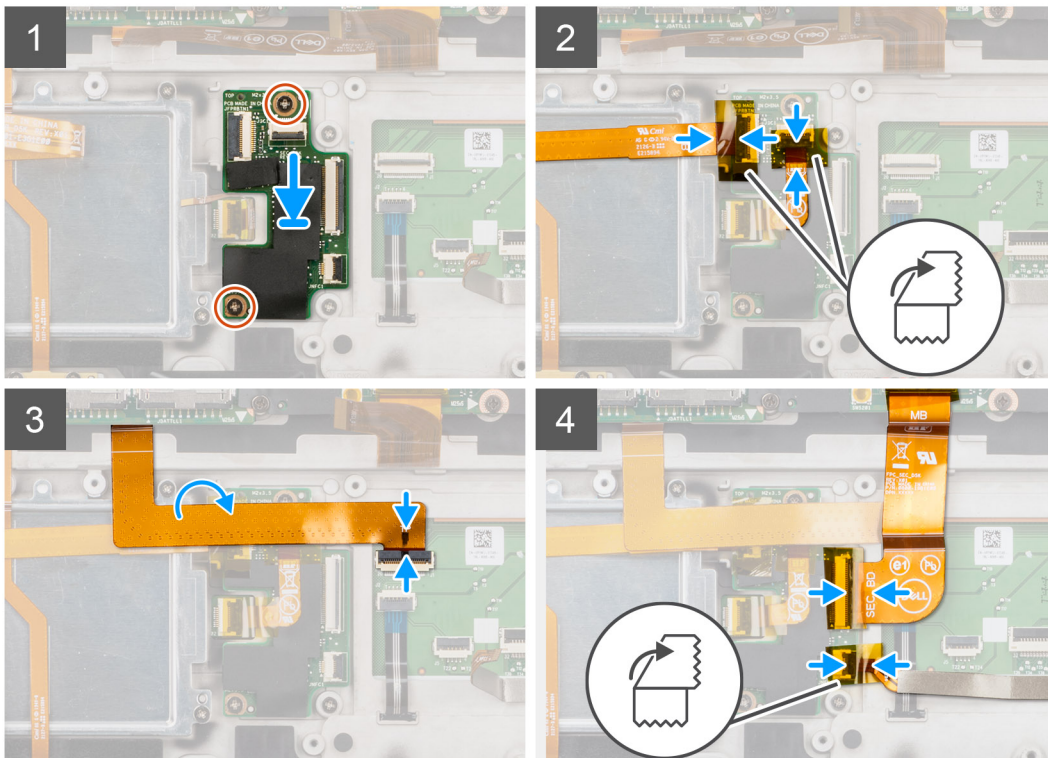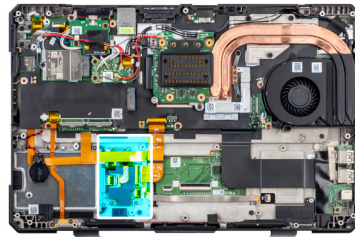
Steps

1. Align the screw holes and replace the two (M2x3.5) screws that secure the secondary daughterboard with system chassis.
2. Connect the contactless smartcard flat printed cable and fingerprint cable to the connector on the secondary daughterboard.

   Adhere the contactless smartcard flat printed cable and fingerprint cable with kapton tapes to the connector.
3. Connect the touchpad flat printed cable to the connector on the touchpad.
4. Connect the secondary daughterboard flat printed cable and smart card cable to the connector on the secondary daughterboard.

   Adhere the secondary daughterboard flat printed cable and smart card cable with kapton tapes to the connector.

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. Follow the procedure in after working inside your computer.

Heat sink

Removing the heat-sink

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.
5. Remove the Wi-Fi I/O board.
6. Remove the WLAN.
7. Remove the dock I/O board.

About this task

The following images indicate the location of the heat-sink and provide a visual representation of the removal procedure.

Steps

1. Remove the three (M2x3.5) and four (M2x6) screws (in reverse order, 7->6->5->4->3->2->1) that secure the heat-sink to the system board.
2. Lift the heat-sink from the system chassis.

Installing the heat-sink

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 heat-sink and provides a visual representation of the installation procedure.

Steps

1. Align the heat-sink screw holes with the system board and place it on the system chassis.
2. Replace the three (M2x3.5) and four (M2x6) screws (in sequential order, 1->2->3->4->5->6->7) to secure the heat-sink to the system board.

Next steps

1. Install the dock I/O board.
2. Install the WLAN.
3. Install the Wi-Fi I/O board.
4. Install the base cover.
5. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
6. Install the battery.
7. Follow the procedure in after working inside your computer.

Removing the heat-sink - for computers with discrete graphics card

Prerequisites
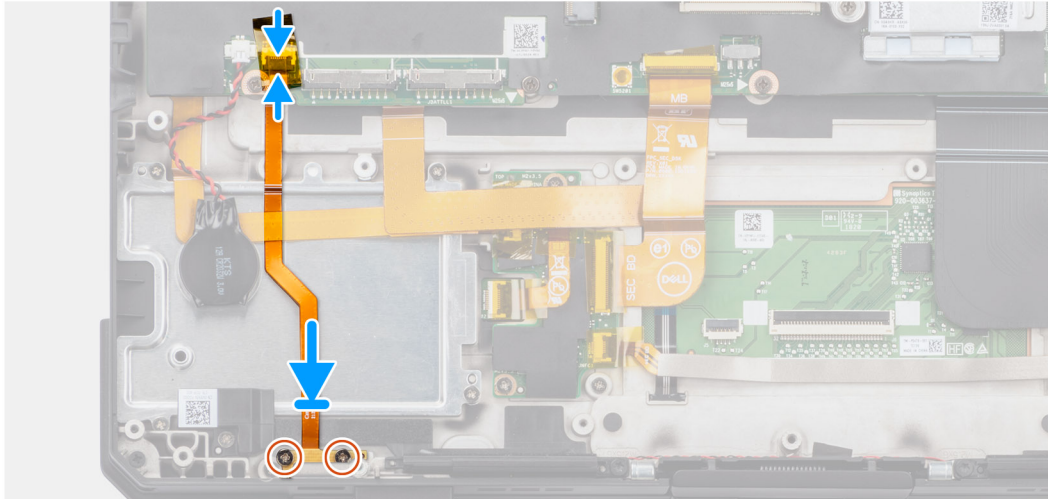
1. Follow the procedure in before working inside your computer.
2. Remove the battery.

3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.
5. Remove the Wi-Fi I/O board.
6. Remove the WLAN.
7. Remove the dock I/O board.

About this task

The following images indicate the location of the heat-sink and provide a visual representation of the removal procedure.

Steps

1. Remove the three (M2x3.5) and four (M2x6) screws (in reverse order, 7->6->5->4->3->2->1) that secure the heat-sink to the system board.
2. Lift the heat-sink from the system chassis.

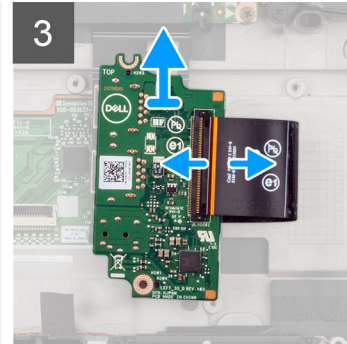# Installing the heat-sink - for computers with discrete graphics card

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 heat-sink and provides a visual representation of the installation procedure.

Steps

1. Align the heat-sink screw holes with the system board and place it on the system chassis.
2. Replace the four (M2x6) and three (M2x3.5) screws (in sequential order, 1->2->3->4->5->6->7) to secure the heat-sink to the system board.

Next steps

1. Install the dock I/O board.
2. Install the WLAN.
3. Install the Wi-Fi I/O board.
4. Install the base cover.
5. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
6. Install the battery.
7. Follow the procedure in after working inside your computer.

Rear I/O board

Removing the rear I/O board

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the base cover.

About this task

The following images indicate the location of the rear I/O board and provide a visual representation of the removal procedure.

2x
M2.5x5

1	2
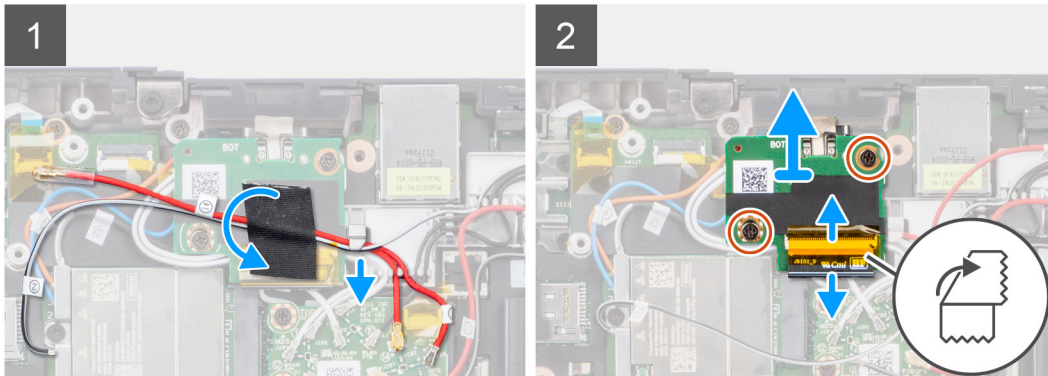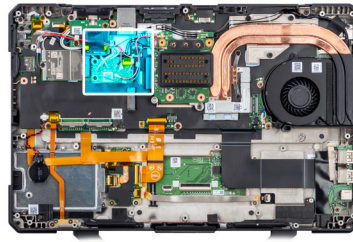
Steps

1. Peel the adhesive tape and unroute the cables from the routing channels on the system chassis.
2. Disconnect the rear I/O flat printed cable and remove the two (M2.5x5) screws that secure the rear I/O board to the system board.

   (i) **NOTE:** Disconnect the GPS cable and tilt the rear I/O board at an angle to remove it.

# Installing the rear I/O board

Prerequisites

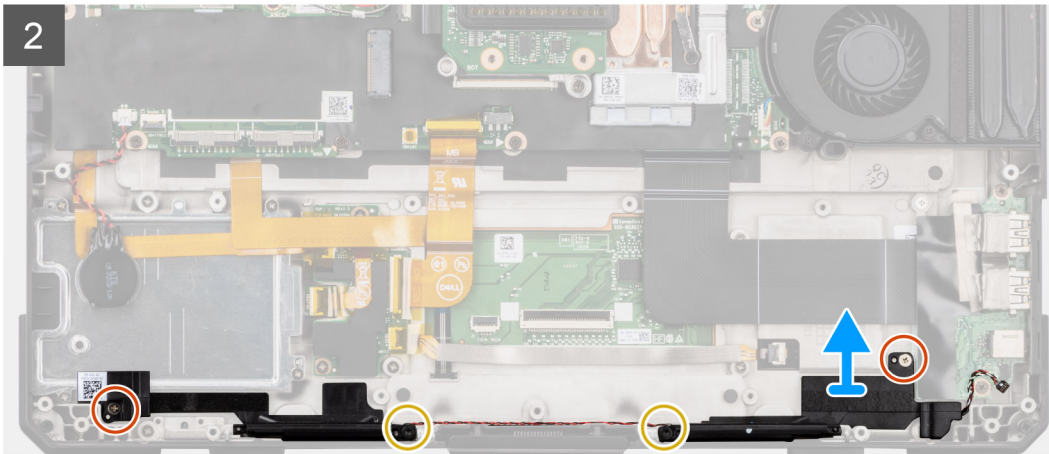If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the rear I/O board and provides a visual representation of the installation procedure.
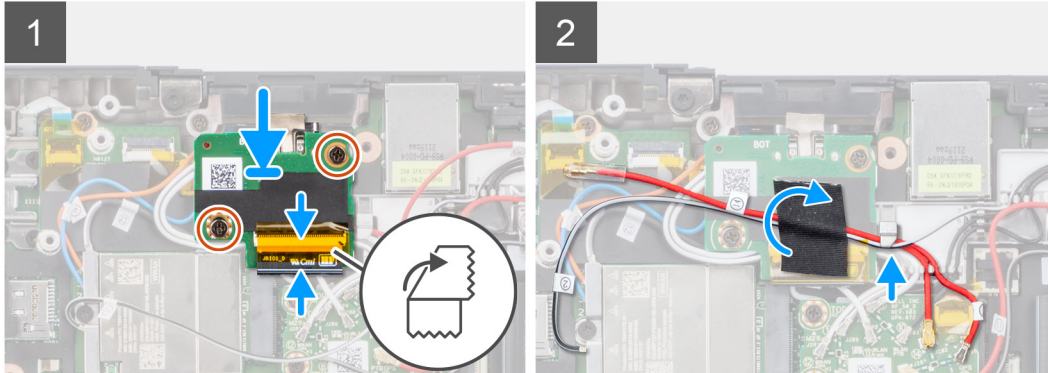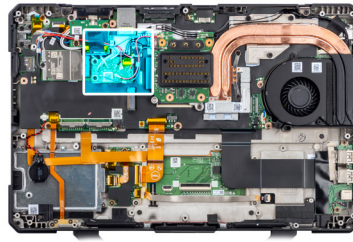
Steps

1. Replace the two (M2.5x5) screws to secure the rear I/O board to the system board and connect the rear I/O flat printed cable.

   Adhere the rear I/O flat printed cable with kapton tapes to the connector.

2. Route the cables using the routing channels on the system chassis and adhere the adhesive tape on the rear I/O board.

Next steps

1. Install the base cover.
2. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
3. Install the battery.
4. 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 battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the Wi-Fi I/O board.
7. Remove the WLAN card.
8. Remove the WWAN card.
9. Remove the dock I/O board.
10. Remove the rear I/O board.
11. Remove the fan.
12. Remove the heat-sink (UMA) or heat-sink (discrete).

About this task

The following image indicates the connectors on your system board.

1. Power button board cable connector
2. Wi-Fi I/O board connector
3. WWAN card connector
4. Rear I/O daughter board connector
5. WLAN card connector
6. eDP cable connector
7. Fan cable connector
8. Lid cable connector
9. Dock I/O flat printed cable connector
10. USH board connector
11. M.2 2230/2280 solid state drive connector
12. Right battery cable connector
13. Left battery cable connector
14. LED board cable connector
15. Coin-cell battery cable connector

1. Left Type-C cable connector
2. Right Type-C cable connector
3. Memory module connector
4. Memory module connector
5. Left Type-C flat printed cable connector
6. Right Type-C flat printed cable connector
7. Keyboard cable connector
8. Touchpad cable connector
9. Backlight flat printed cable connector
10. Left I/O flat printed cable connector

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

Steps

1. (i) **NOTE:** The following epoxy screw locations will require additional focus. These screws are difficult to remove and there may be damage during the removal process. To prevent damage to the screws and surrounding plastics, please use the correct screwdriver for each screw type.

    Remove the two epoxy cap (4-40x6.5) screws that secure the serial RS-232 port to the system chassis.

    To remove the epoxy cap screws use a 5.5 mm hex socket wrench.

2. Remove the serial RS-232 port from the system chassis.

3. Remove the four (M2x3.5) screws that secure the cable cover to the system board.
4. Remove the screw (M2x3.5) that secures the Type-C cable cover to the system board.
5. Disconnect the right and left Type-C cables from their connectors on the system board.
6. Disconnect the right Type-C, left Type-C and touchpad flat printed cables from their connectors on the system board.
7. Disconnect and remove the Wi-Fi board cable from its connector on the system board.
8. Disconnect and remove the LAN flat printed cable from its connector on the system board.
9. Disconnect the following cables from their connector on the system board (L-R): power button board, eDP, secondary daughterboard, LED board, and coin-cell battery from the system board.
10. Remove the nine (M2.5x5) screws that secure the system board to the system chassis and flip the system board.
11. Disconnect the left I/O flat printed cable connector from the system board.

# 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 image indicates the connectors on your system board.

1. Power button board cable connector
2. Wi-Fi I/O board connector
3. WWAN card connector
4. Rear I/O daughter board connector
5. WLAN card connector
6. eDP cable connector
7. Fan cable connector
8. Lid cable connector
9. Dock I/O flat printed cable connector
10. USH board connector
11. M.2 2230/2280 solid state drive connector
12. Right battery cable connector
13. Left battery cable connector
14. LED board cable connector

15. Coin-cell battery cable connector

1. Left Type-C cable connector
2. Right Type-C cable connector
3. Memory module connector
4. Memory module connector
5. Left Type-C flat printed cable connector
6. Right Type-C flat printed cable connector
7. Keyboard cable connector
8. Touchpad cable connector
9. Backlight flat printed cable connector
10. Left I/O flat printed cable connector

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

Steps

1. ⚠️ **CAUTION: Ensure I/O flat printed cable is connected to the system board before proceeding to the next step.**

   Connect the left I/O flat printed cable connector to the system board.

2. Flip the system board and replace the nine (M2.5x5) screws that secure the system board to the system chassis.

3. Connect the following cables to their connector on the system board (L-R): power button board, eDP, secondary daughterboard, LED board, and coin-cell battery from the system board.

   Adhere the LED, power button board, secondary daughterboard flat printed cables with kapton tapes to the connector.

4. Connect the LAN flat printed cable to its connector on the system board.

5. Connect the Wi-Fi board flat printed cable to its connector on the system board.

   Adhere the Wi-Fi board flat printed cable with kapton tape to the connector.

6. Connect the right Type-C, left Type-C and touchpad flat printed cables to their connectors on the system board.

   Adhere the touchpad flat printed cable with kapton tape to the connector.

7. Connect the right and left Type-C cables to their connectors on the system board.

8. Replace the screw (M2x3.5) that secures the Type-C cable cover to the system board.

9. Replace the four (M2x3.5) screws that secure the cable cover to the system board.

10. Align and insert the serial RS-232 port to the system chassis.

11. Replace the two epoxy cap (4-40x6.5) screws that secure the serial RS-232 port to the system chassis.

Next steps

1. Install the heat-sink (UMA) or heat-sink (discrete).
2. Install the fan.
3. Install the rear I/O board.
4. Install the dock I/O board.
5. Install the WWAN card.
6. Install the WLAN card.
7. Install the Wi-Fi I/O board.
8. Install the base cover.
9. Install the keyboard.
10. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
11. Install the battery.
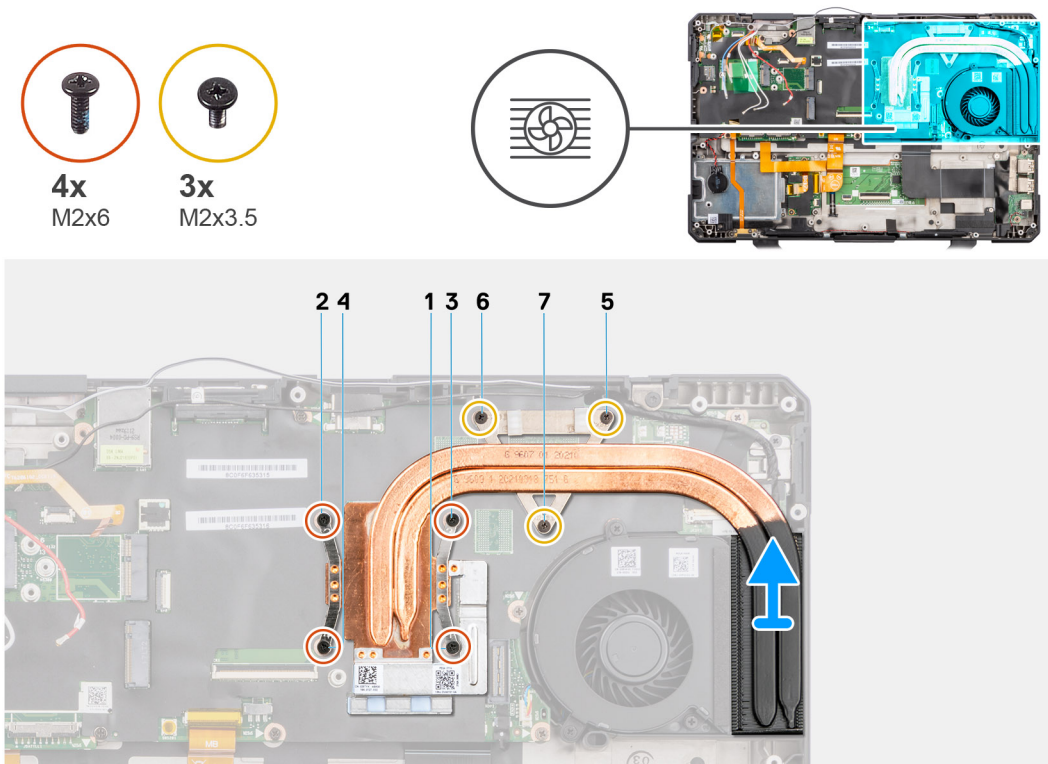12. Follow the procedure in after working inside your computer.

Memory modules

Removing the memory modules

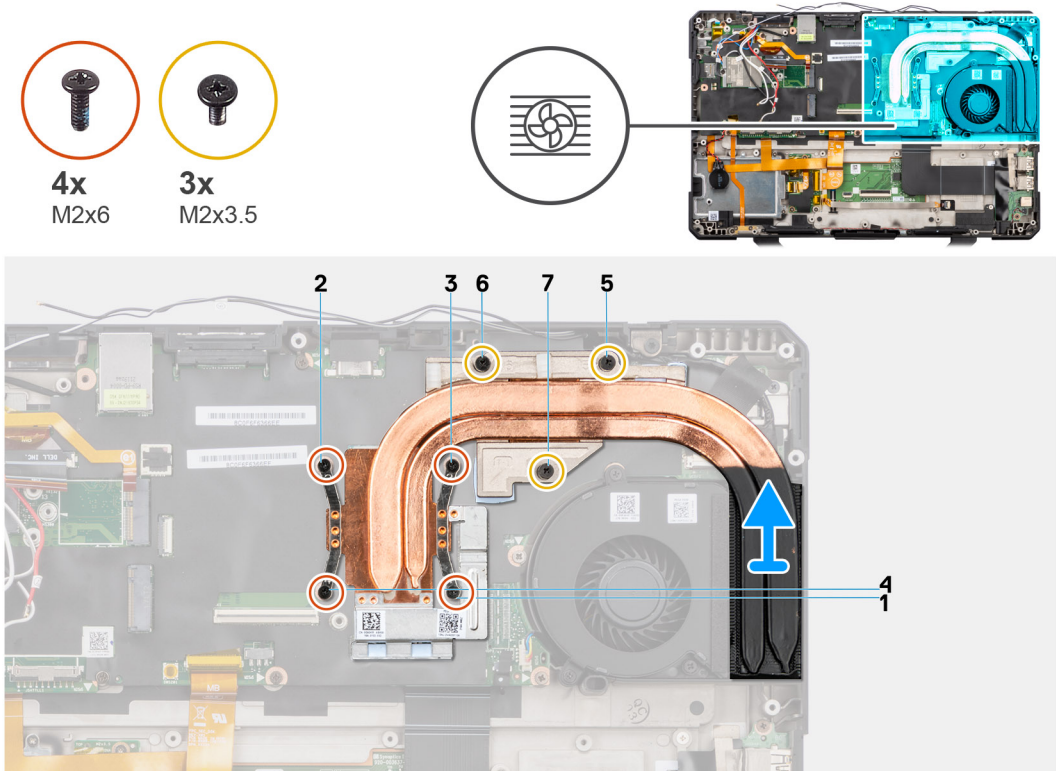**Prerequisites**

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete). .
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.

About this task

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

Steps

1. Pulling the release lever on one side and insert the pry bar into the sponge and then slightly rotate to release the sponge.

   ⓘ **NOTE:** The removal procedure for the release lever on the other side is identical.

2. Remove the memory module from the memory module slot.

   ⓘ **NOTE:** Remove the rubber sponges attached on the system board.

Installing the memory modules

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 memory modules and provides a visual representation of the installation procedure.
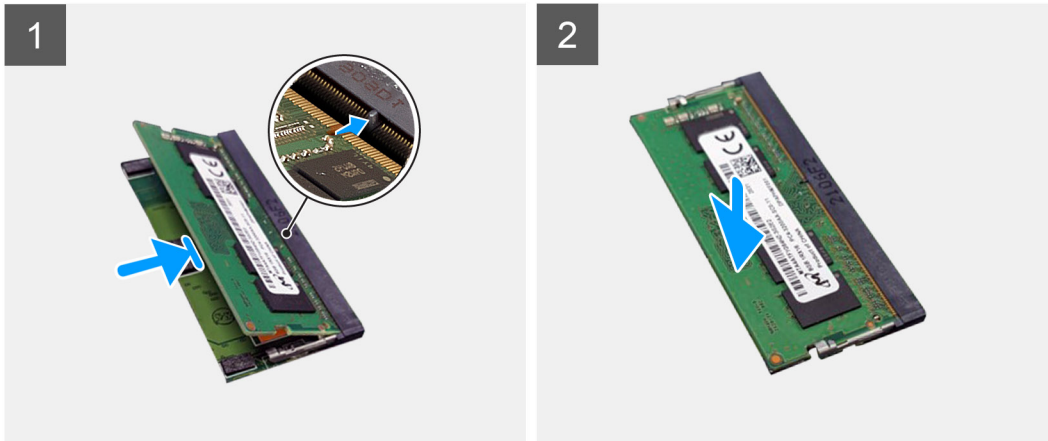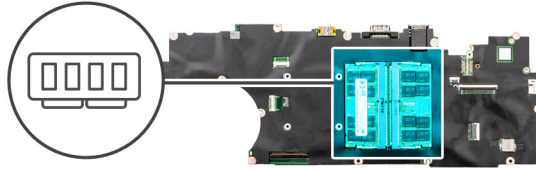
Steps

1. ⓘ **NOTE:** Replace the new rubber sponges before replacing the memory module.

    Align the notch on the memory module with the tab on the memory-module slot.
2. Slide the memory module firmly into the slot at an angle.
3. Press the memory module down until it clicks into place.

    ⓘ **NOTE:** If you do not hear the click, remove the memory module and reinstall it.

Next steps

1. Install the system board.
2. Install the rear I/O board.
3. Install the dock I/O board.
4. Install the WWAN card.
5. Install the WLAN card.
6. Install the Wi-Fi I/O board.
7. Install the heat-sink (UMA) or heat-sink (discrete).
8. Install the fan.
9. Install the base cover.
10. Install the keyboard.
11. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
12. Install the battery.
13. Follow the procedure in after working inside your computer.

Right Type-C daughterboard

Removing the right Type-C daughterboard

Prerequisites

1. Follow the procedure in before working inside your computer.

2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete).
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.

About this task

The following images indicate the location of the right Type-C daughterboard and provide a visual representation of the removal procedure.

Steps

1. Remove the (M2x3.5) screw that secures the flat printed cable holder to the right Type-C daughterboard.
2. Disconnect the flat printed cable from its connector on the right Type-C daughterboard.
3. Disconnect the flat printed cable from its connector on the right Type-C daughterboard.
4. Remove the four (M2x3.5) screws that secure the right Type-C daughterboard to the system chassis.
5. Lift the right Type-C daughterboard from the system chassis.

Installing the right Type-C daughterboard

Prerequisites

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

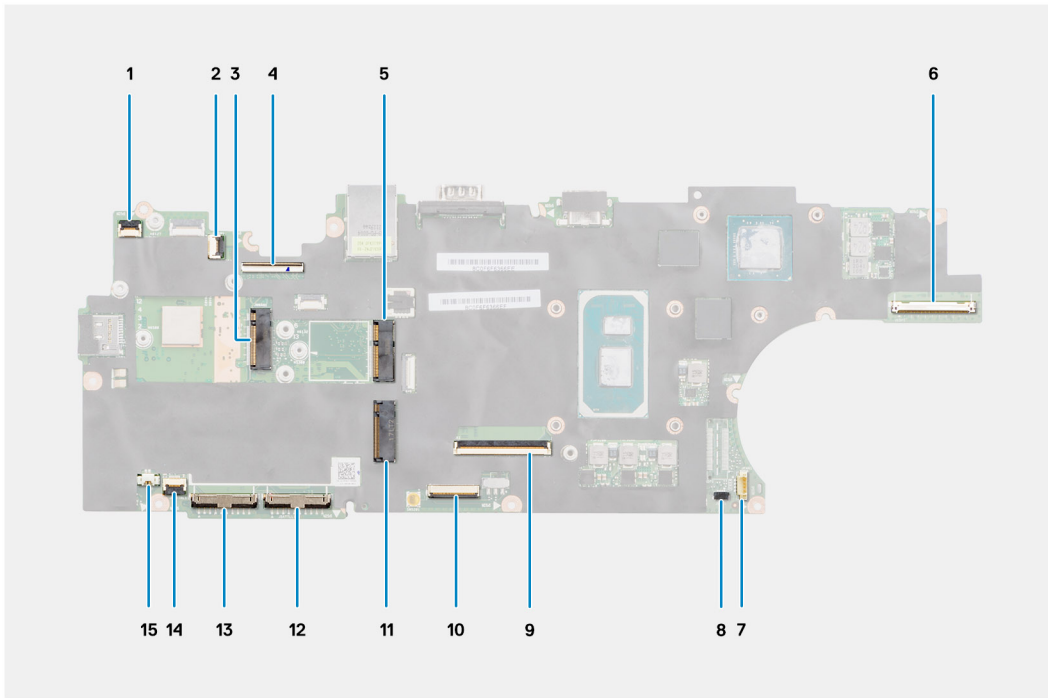**About this task**

The following image indicates the location of the right Type-C daughterboard and provides a visual representation of the installation procedure.

5x
M2x3.5
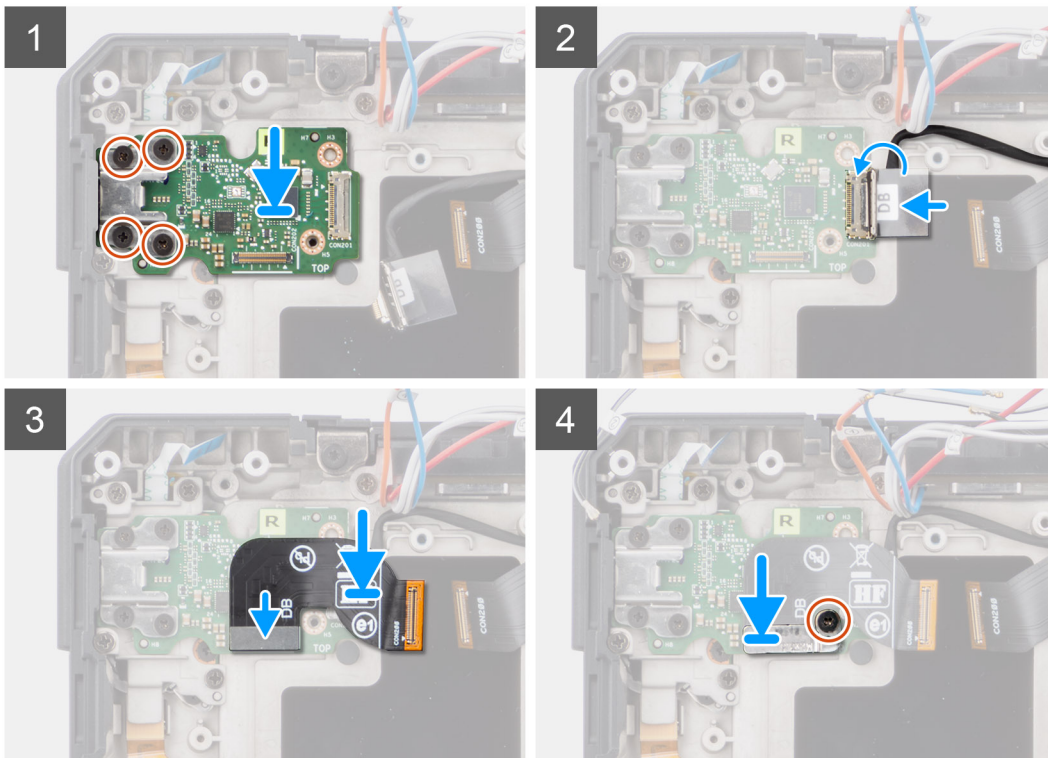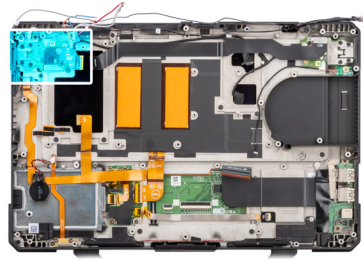
Steps

1. Place the right Type-C daughterboard on the system chassis.
2. Remove the four (M2x3.5) screws that secure the right Type-C daughterboard to the system chassis.
3. Connect the flat printed cable to its connector on the right Type-C daughterboard.
4. Connect the flat printed cable to its connector on the right Type-C daughterboard.
5. Replace the (M2x3.5) screw that secures the flat printed cable holder to the right Type-C daughterboard.

Next steps

1. Install the system board.
2. Install the rear I/O board.
3. Install the dock I/O board.
4. Install the WWAN card.
5. Install the WLAN card.

6. Install the Wi-Fi I/O board.
7. Install the heat-sink (UMA) or heat-sink (discrete).
8. Install the fan.
9. Install the base cover.
10. Install the keyboard.
11. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
12. Install the battery.
13. Follow the procedure in after working inside your computer.

Left Type-C daughterboard

Removing the left Type-C daughterboard

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete).
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.

About this task

The following images indicate the location of the left Type-C daughterboard and provide a visual representation of the removal procedure.
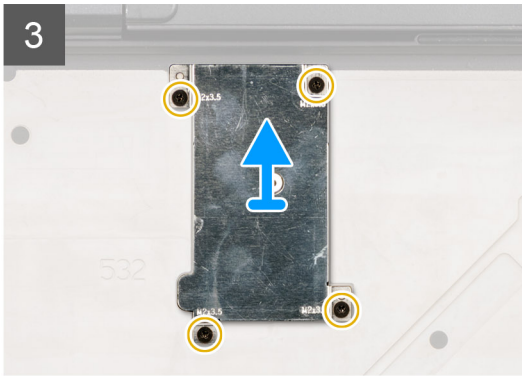
5x
M2x3.5
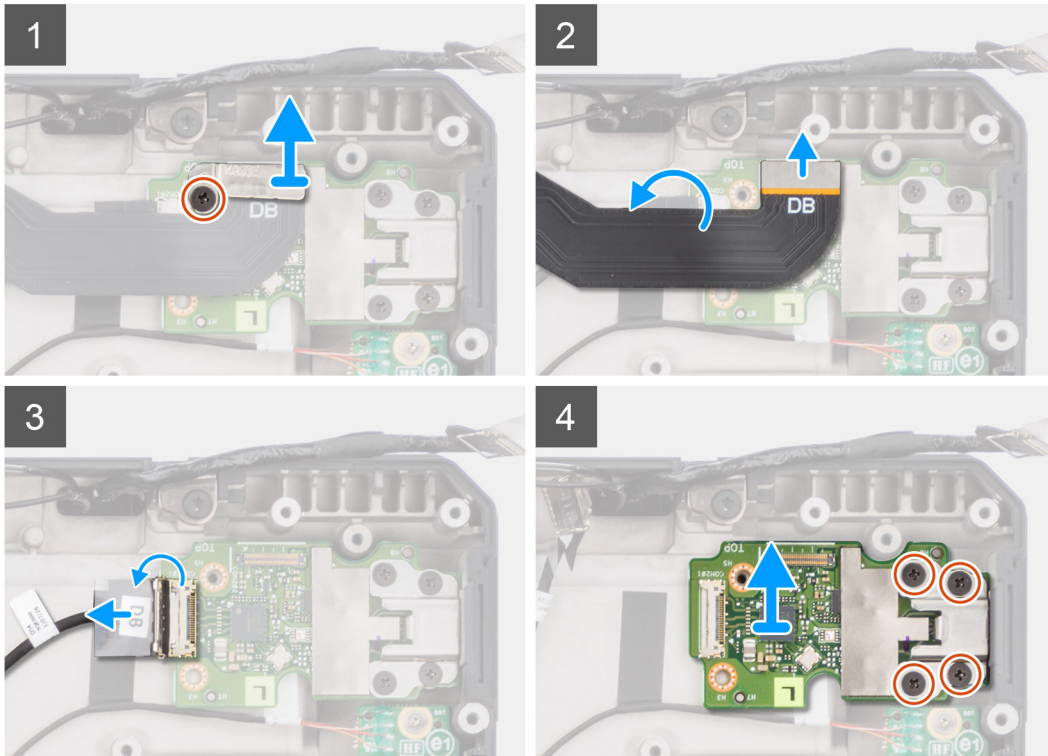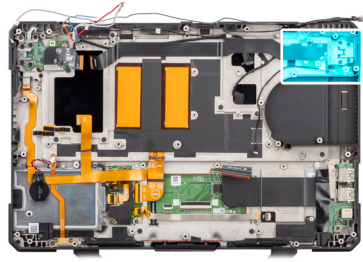
Steps

1. Remove the (M2x3.5) screw that secures the flat printed cable holder to the left Type-C daughterboard.
2. Disconnect the flat printed cable from its connector on the left Type-C daughterboard.
3. Disconnect the daughterboard cable from its connector on the left Type-C daughterboard.
4. Remove the four (M2x3.5) screws that secure the left Type-C daughterboard to the system chassis.
5. Lift the left Type-C daughterboard from the system chassis.

Installing the left Type-C daughterboard
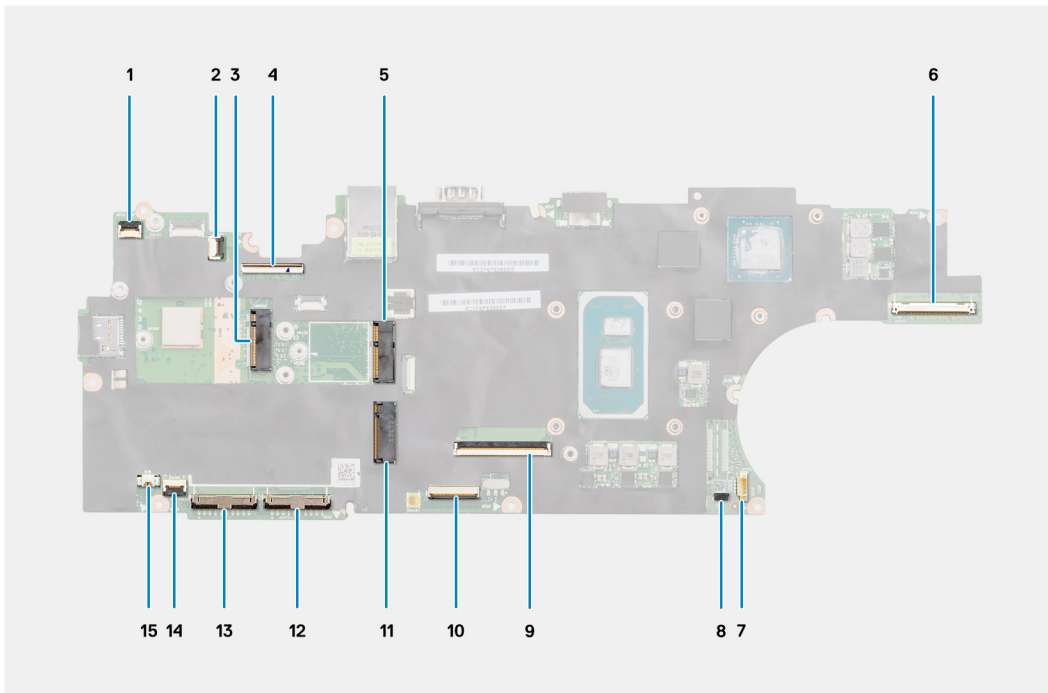
Prerequisites

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 left Type-C daughterboard and provides a visual representation of the installation procedure.

5x
M2x3.5
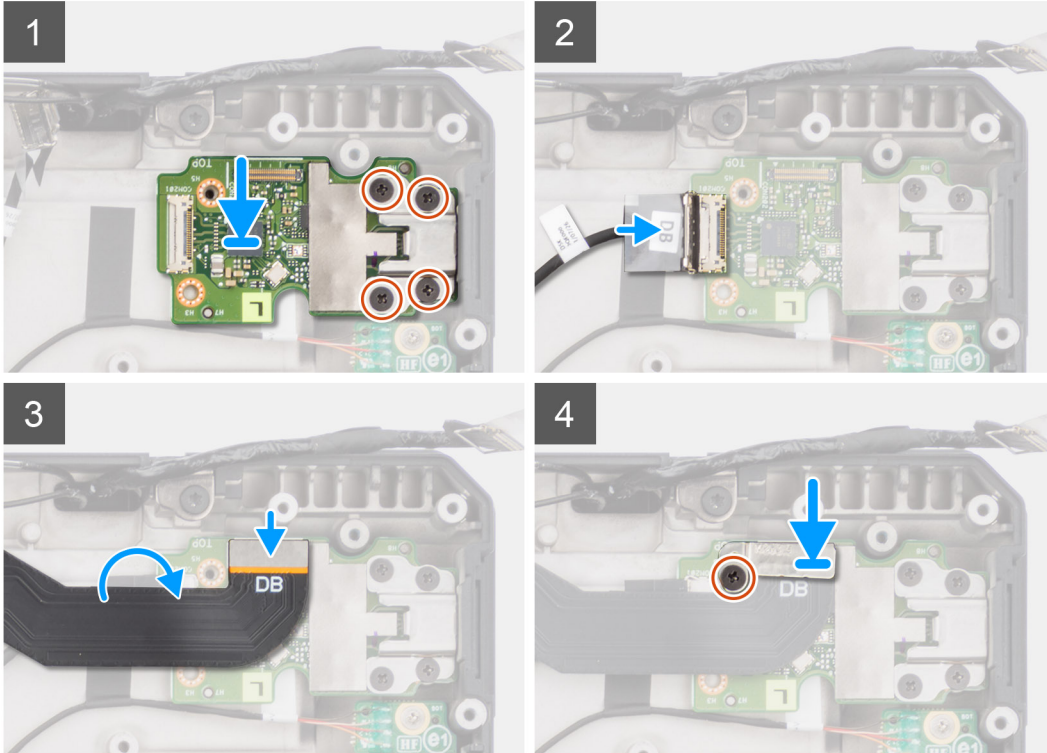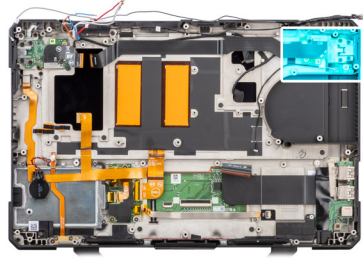
Steps

1. Place the left Type-C daughterboard on the system chassis.
2. Replace the four (M2x3.5) screws to secure the left Type-C daughterboard to the system chassis.
3. Connect the daughterboard cable to its connector on the left Type-C daughterboard.
4. Connect the flat printed cable to its connector on the left Type-C daughterboard.
5. Replace the (M2x3.5) screw that secures the flat printed cable holder to the left Type-C daughterboard.

Next steps

1. Install the system board.
2. Install the rear I/O board.
3. Install the dock I/O board.
4. Install the WWAN card.
5. Install the WLAN card.
6. Install the Wi-Fi I/O board.
7. Install the heat-sink (UMA) or heat-sink (discrete).
8. Install the fan.
9. Install the base cover.
10. Install the keyboard.
11. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
12. Install the battery.
13. Follow the procedure in after working inside your computer.

Power-button board

Removing the power button board

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete).
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.
14. Remove the right Type-C daughterboard.

About this task

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

Steps

1. Remove the four (M2.5x5) screws that secure the power button board bracket to the system chassis.
2. Lift the power button board bracket from the system chassis.
3. Remove the three (M2x3.5) screws that secure the power button board the system chassis.
4. Lift the power button board from the system chassis.

Installing the power button board

Prerequisites

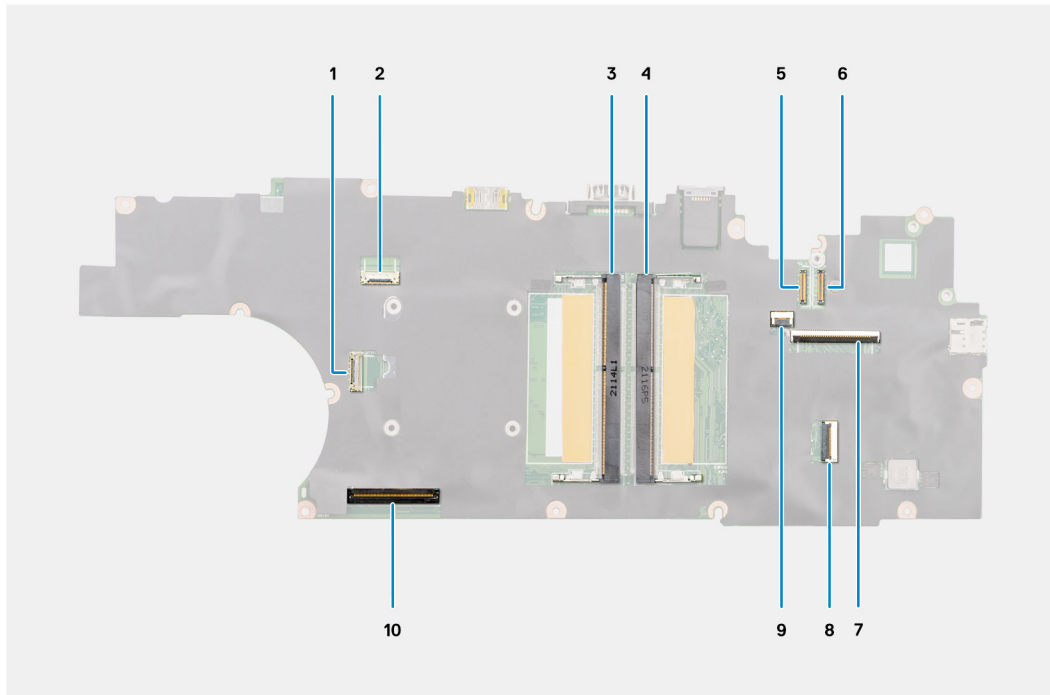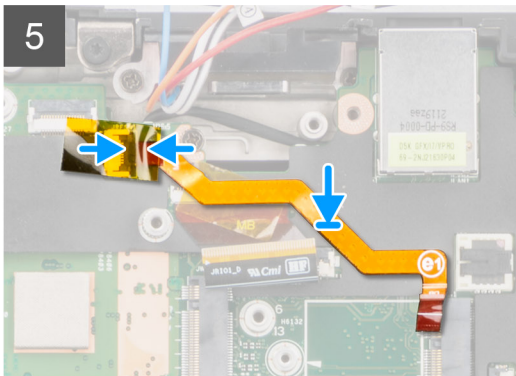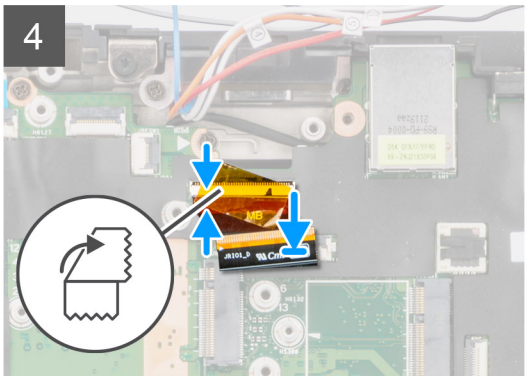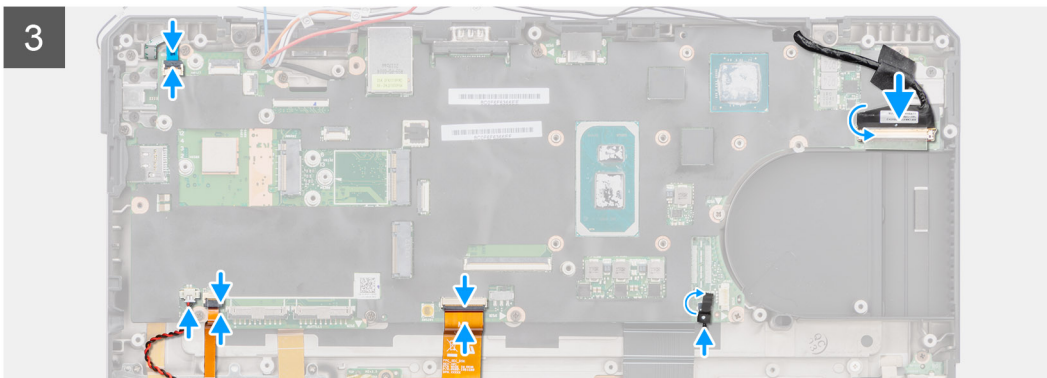If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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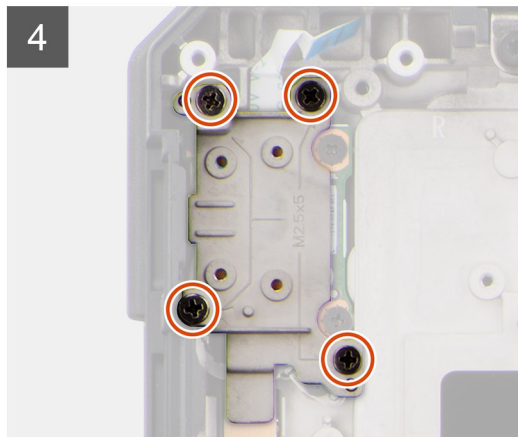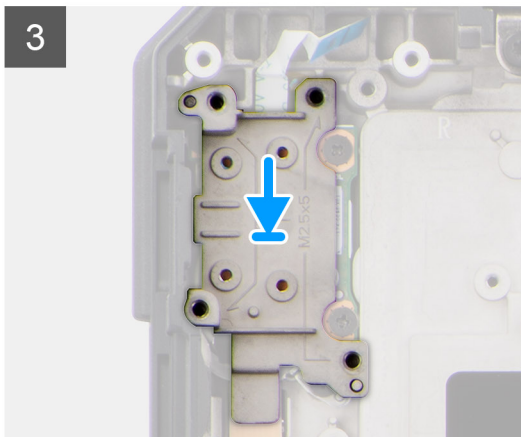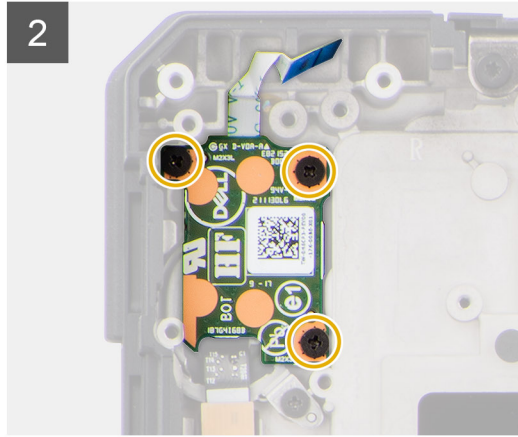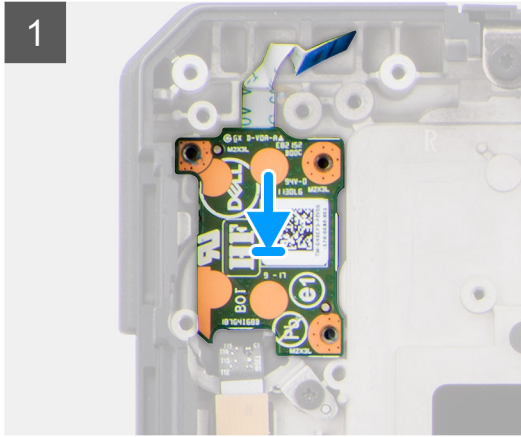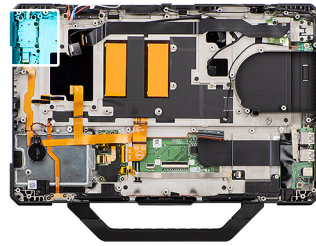
Steps

1. Place the power button board on the system chassis.

   Adhere the power-button flat printed cable with kapton tape to the connector.

2. Replace the three (M2x3.5) screws that secure the power button board the system chassis.

3. Place the power button board bracket on the system chassis.

4. Replace the four (M2.5x5) screws that secure the power button board bracket to the system chassis.

Next steps

1. Install the right Type-C daughterboard.
2. Install the system board.
3. Install the rear I/O board.
4. Install the dock I/O board.
5. Install the WWAN card.
6. Install the WLAN card.
7. Install the Wi-Fi I/O board.
8. Install the heat-sink (UMA) or heat-sink (discrete).
9. Install the fan.
10. Install the base cover.
11. Install the keyboard.

12. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
13. Install the battery.
14. Follow the procedure in after working inside your computer.

Power button with fingerprint reader

Removing the power button board with fingerprint reader

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete).
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.
14. Remove the right Type-C daughterboard.

About this task

The following images indicate the location of the power button board with fingerprint reader and provide a visual representation of the removal procedure.

Steps

1. Disconnect the fingerprint reader cable from its connector on the power button board.
2. Remove the three (M2x3.5) screws that secure the power button with fingerprint reader bracket to the system chassis.
3. Lift the power button with fingerprint reader bracket off the power button with fingerprint-reader board.
4. Lift the power button with fingerprint-reader board from the system chassis.

Installing the power button board with fingerprint reader

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 button board with fingerprint reader and provides a visual representation of the installation procedure.
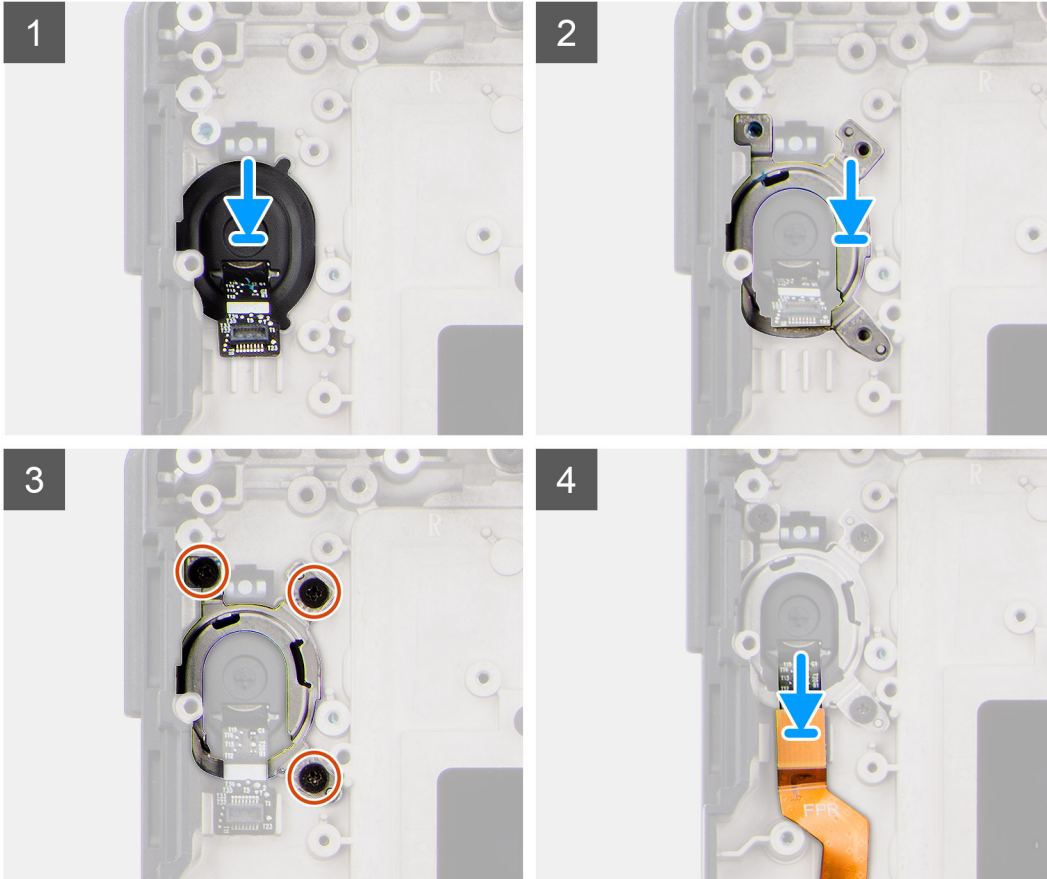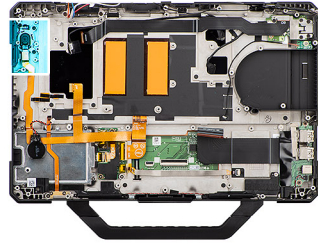
Steps

1. Place the power button with fingerprint-reader board on the system chassis.
2. Place the power button with fingerprint reader bracket on the fingerprint-reader board.
3. Replace the three (M2x3.5) screws that secure the power button with fingerprint reader bracket to the system chassis.
4. Connect the fingerprint reader cable to its connector on the power button board.

Next steps

1. Install the right Type-C daughterboard.
2. Install the system board.
3. Install the rear I/O board.
4. Install the dock I/O board.
5. Install the WWAN card.
6. Install the WLAN card.
7. Install the Wi-Fi I/O board.
8. Install the heat-sink (UMA) or heat-sink (discrete).
9. Install the fan.
10. Install the base cover.
11. Install the keyboard.
12. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.

13. Install the battery.
14. 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 battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the Wi-Fi I/O board.
7. Remove the WLAN card.
8. Remove the WWAN card.
9. Remove the dock I/O board.
10. Remove the rear I/O board.
11. Remove the fan.
12. Remove the heat-sink (UMA) or heat-sink (discrete).
13. Remove the system board.

About this task

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

6x M3x7, T8   **2x** M2.5x7   **2x** M2.5x5
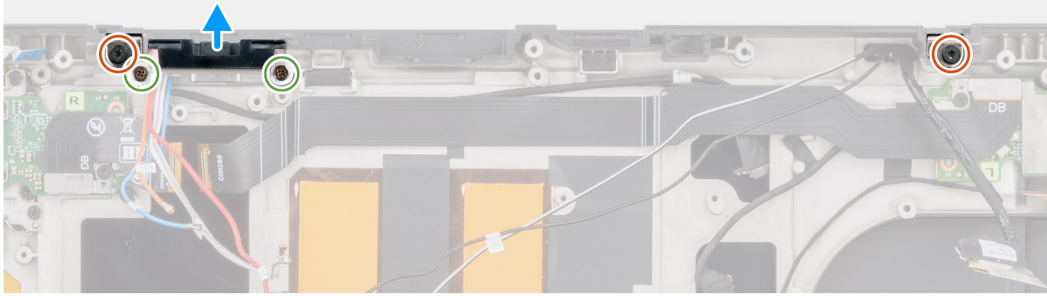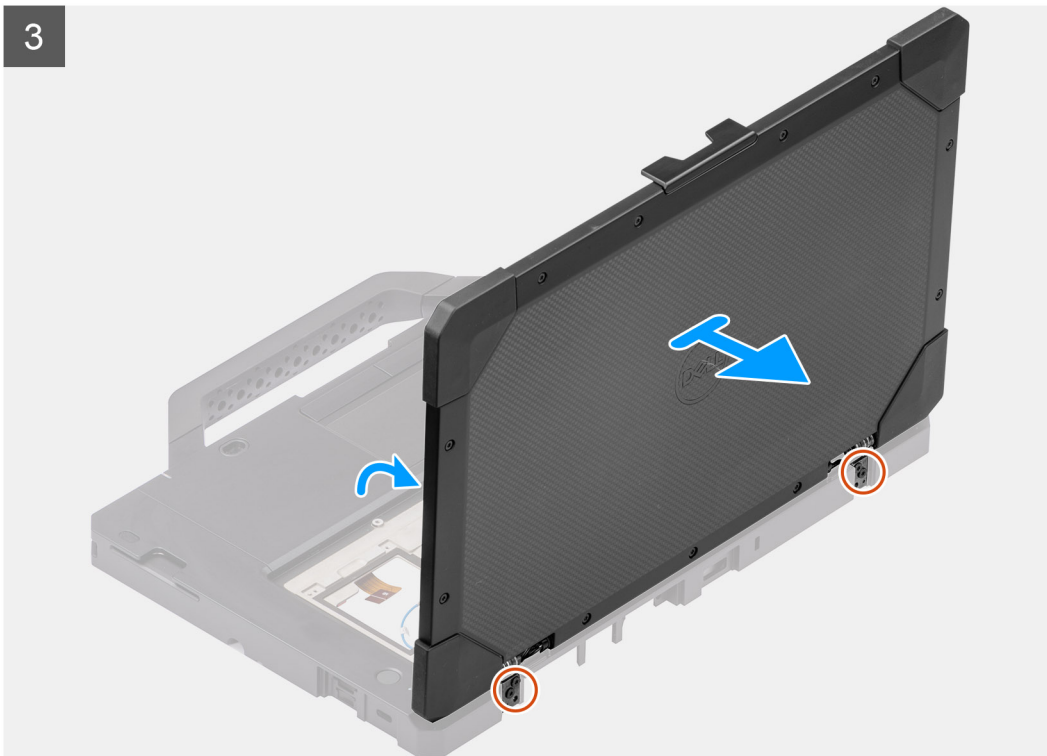
Steps

1. Remove the two (M3x7, T8) epoxy screws and two (M2.5x5) screws that secure the hinge covers to the system chassis and open the display.
2. Remove the two (M2.5x7) screws that secure the left/right hinge covers to the system chassis.
3. Remove the four (M3x7, T8) epoxy screws that secure the display assembly to the system chassis.
4. Lift and remove the display assembly from the system 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 M3x7, T8   **2x** M2.5x7   **2x** M2.5x5
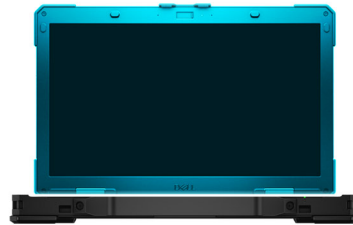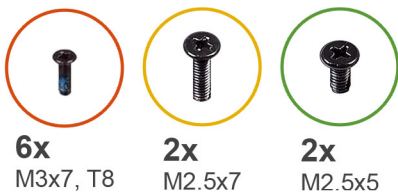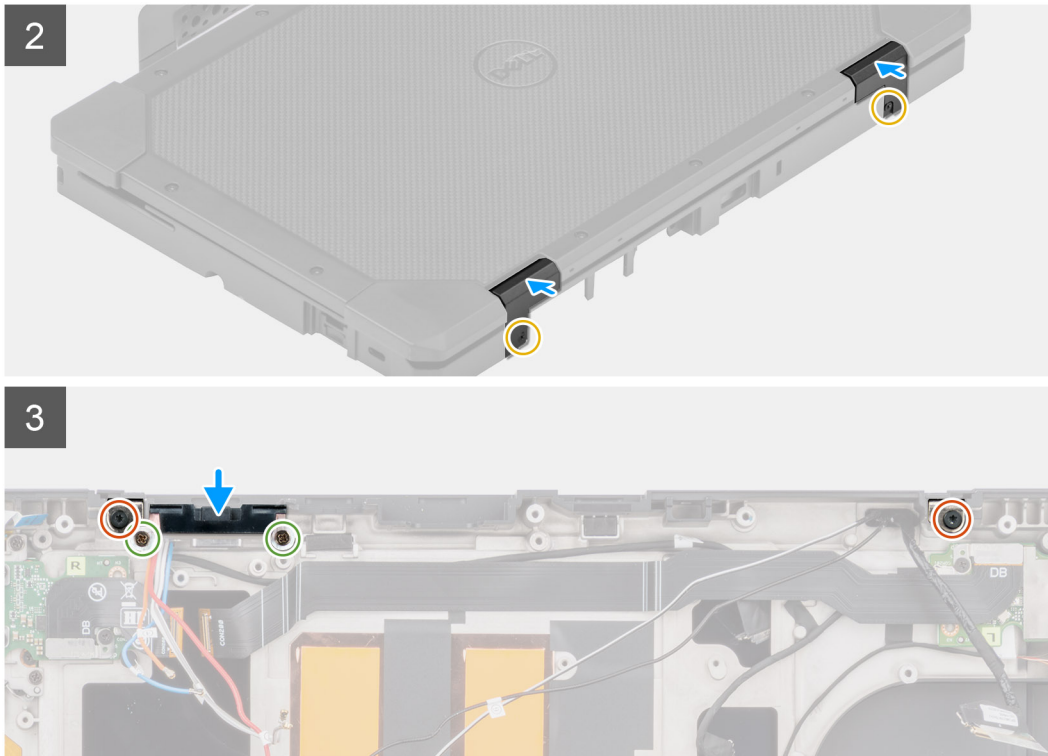
Steps

1. Replace the four (M3x7, T8) epoxy screws that secure the display assembly to the system chassis and close the lid.
2. Replace the two (M2.5x7) screws that secure the left/right hinge covers to the system chassis.
3. Replace the two (M3x7, T8) epoxy screws and two (M2.5x5) screws that secure the hinge covers to the system chassis.

Next steps

1. Install the system board.
2. Install the heat-sink (UMA) or heat-sink (discrete).
3. Install the fan.
4. Install the rear I/O board.
5. Install the dock I/O board.
6. Install the WWAN card.
7. Install the WLAN card.
8. Install the Wi-Fi I/O board.
9. Install the base cover.
10. Install the keyboard.
11. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
12. Install the battery.
13. Follow the procedure in after working inside your computer.

Display bezel

Removing the display bezel

Prerequisites

1. Follow the procedure in before working inside your computer.
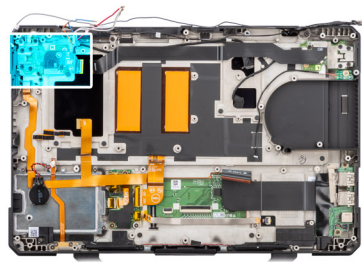2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.

5. Remove the base cover.
6. Remove the Wi-Fi I/O board.
7. Remove the WLAN card.
8. Remove the WWAN card.
9. Remove the dock I/O board.
10. Remove the rear I/O board.
11. Remove the fan.
12. Remove the heat-sink (UMA) or heat-sink (discrete).
13. Remove the system board.
14. 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.
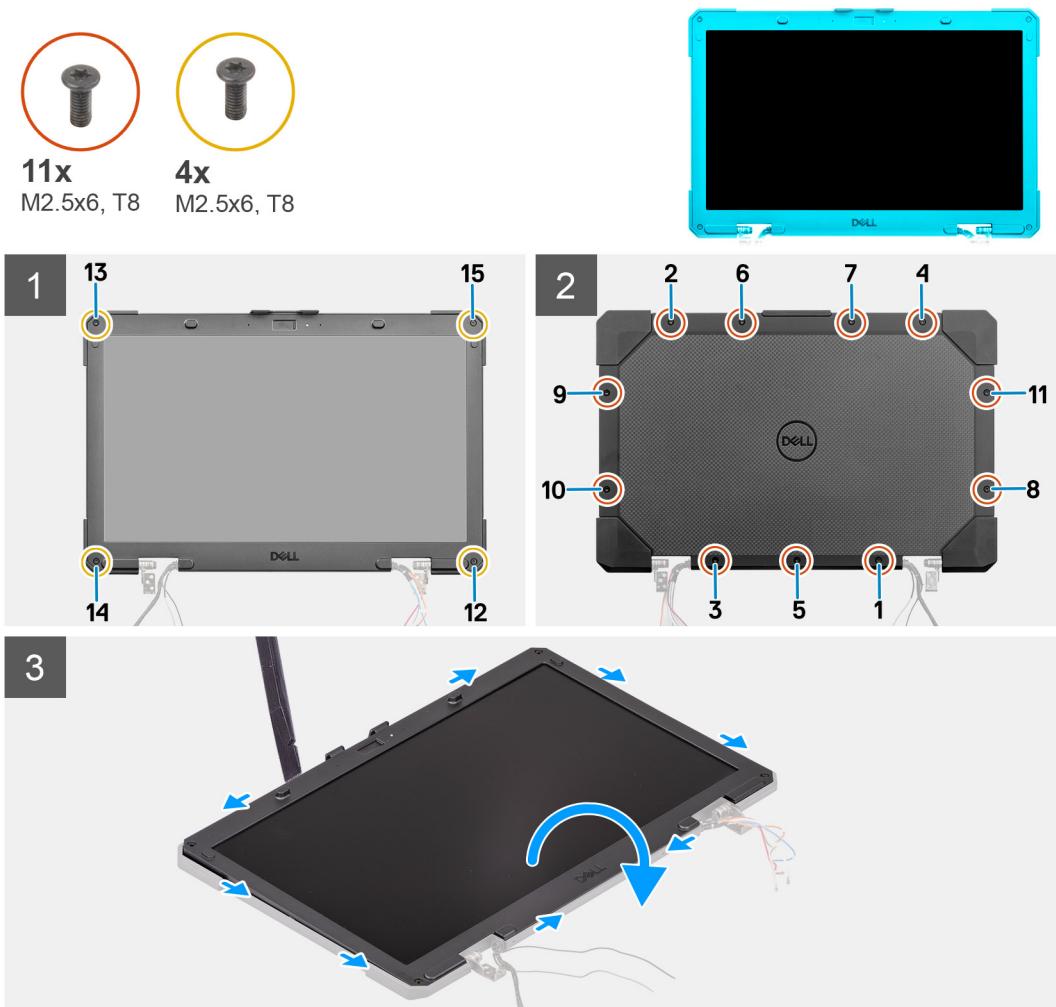
Steps

1. Remove the 4 (M2.5x6, T8) epoxy yellow screws that secure the display bezel to the display assembly.
2. Close the lid and in sequential order, remove the 11 (M2.5x6, T8) blue screws that secure the display bezel to the display assembly.
3. Use a plastic scribe to carefully pry open the top, left, and right sides of the display bezel.

   (i) **NOTE:** When prying open the display bezel, ensure to pry along the outside edge of the display bezel using your hand or a plastic scribe. Using a screw driver or any sharp object may damage the display cover.

4. Flip the display bezel and disconnect the eDP cable from its connector on the LCD module.
5. Disconnect the touch cable from its connector on the touch screen board.

Installing the display bezel

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 bezel and provides a visual representation of the installation procedure.

11x
M2.5x6, T8

4x
M2.5x6, T8

Steps

1. Connect the touch cable to its connector on the touch screen board.
2. Connect the eDP cable to its connector on the LCD module and flip the display bezel on the display assembly.
3. Align the display bezel with the display assembly. Gently snap the display bezel into place.
4. In sequential order, replace the 11 (M2.5x6, T8) blue screws that secure the display bezel to the display assembly.

   ⓘ **NOTE:** Ensure that the display assembly is placed on a flat surface when replacing the screws to avoid light leakage from LCD. This must be done when part twisting assembly screw torque: 3 kgf-cm.

5. Replace the 4 (M2.5x6, T8)yellow epoxy screws to secure the display bezel to the display assembly.

Next steps

1. Install the display assembly.
2. Install the system board.
3. Install the heat-sink (UMA) or heat-sink (discrete).
4. Install the fan.
5. Install the rear I/O board.
6. Install the dock I/O board.
7. Install the WWAN card.
8. Install the WLAN card.
9. Install the Wi-Fi I/O board.
10. Install the base cover.
11. Install the keyboard.
12. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
13. Install the battery.
14. Follow the procedure in after working inside your computer.

Camera

Removing the camera

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete).
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.
14. Remove the display assembly.
15. Remove the display bezel.

About this task

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

Steps

1. Peel the tape and disconnect the eDP cable on the camera module.
2. Lift and remove the camera module from the display panel.

Installing the 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 camera and provides a visual representation of the installation procedure.
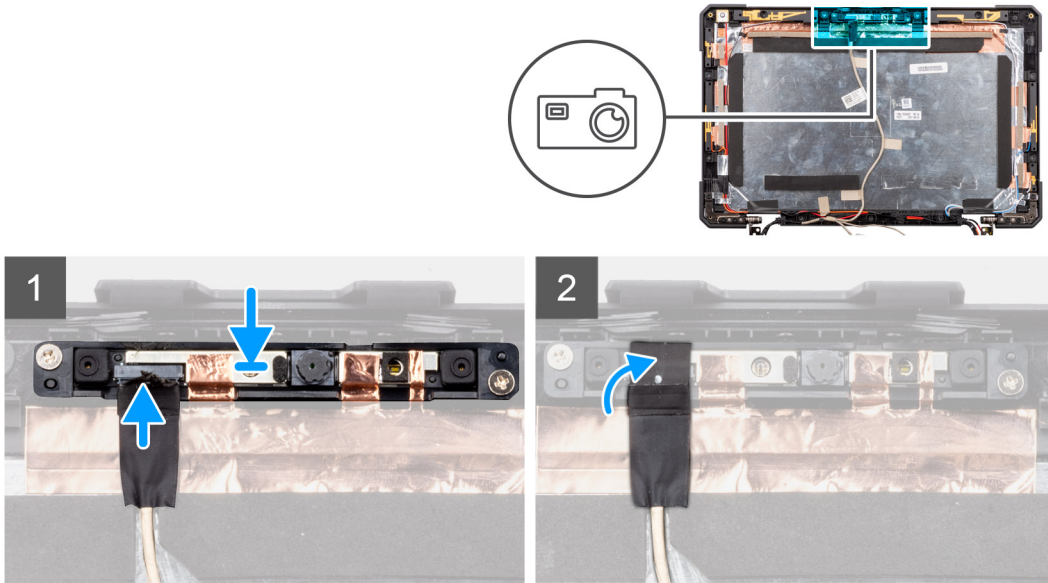
Steps

1. Place the camera module on the display panel and connect the eDP cable on the camera module.
2. Adhere the adhesive tape on the camera module.

Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the system board.
4. Install the rear I/O board.
5. Install the dock I/O board.
6. Install the WWAN card.
7. Install the WLAN card.
8. Install the Wi-Fi I/O board.
9. Install the heat-sink (UMA) or heat-sink (discrete).
10. Install the fan.
11. Install the base cover.
12. Install the keyboard.
13. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
14. Install the battery.
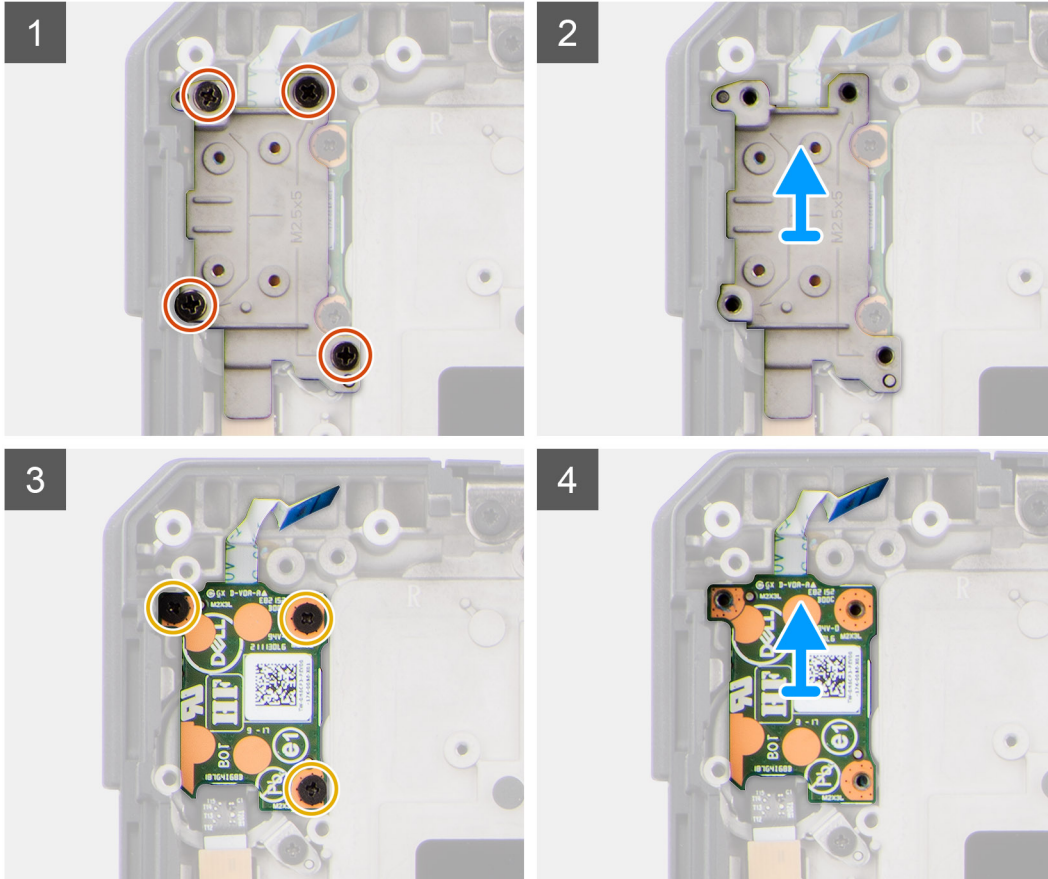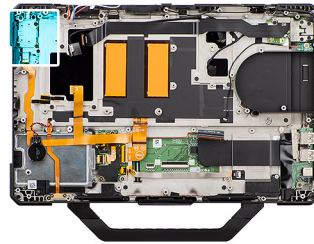15. Follow the procedure in after working inside your computer.

Display hinges

Removing the display hinges

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.

6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete).
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.
14. Remove the display assembly.
15. Remove the display bezel.

About this task

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

Steps

1. Remove the two (M3x7, T8) and (M3x5, T8) epoxy screws that secure the left hinge to the display assembly.
2. Remove the two (M3x7, T8) and (M3x5, T8) epoxy screws that secure the right hinge to the display assembly.
3. Lift to remove the left and right hinges from the display assembly.

Installing the display hinges

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 hinges and provides a visual representation of the installation procedure.
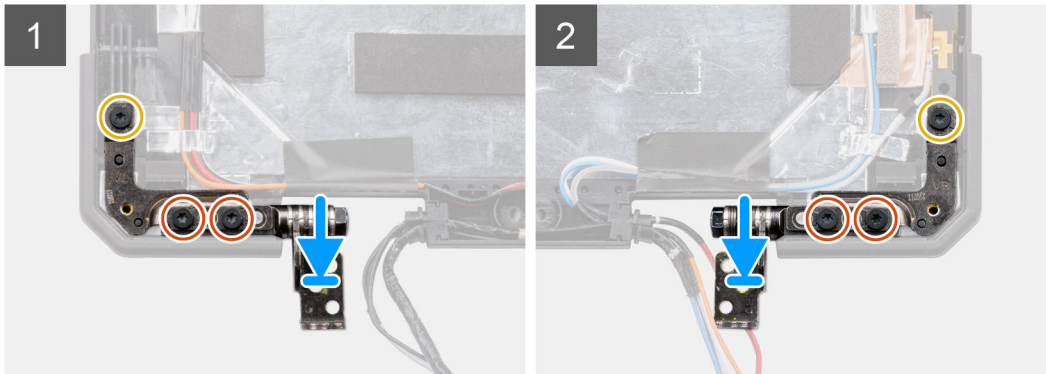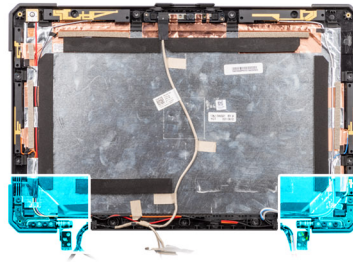
Steps

1. Align the left hinge and replace the two (M3x7, T8) and (M3x5, T8) epoxy screws to secure the left hinge to the display assembly.
2. Align the right hinge and replace the two (M3x7, T8) and (M3x5, T8) epoxy screws to secure the right hinge to the display assembly.

Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the system board.
4. Install the rear I/O board.
5. Install the dock I/O board.
6. Install the WWAN card.
7. Install the WLAN card.
8. Install the Wi-Fi I/O board.
9. Install the heat-sink (UMA) or heat-sink (discrete).
10. Install the fan.
11. Install the base cover.
12. Install the keyboard.
13. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
14. Install the battery.
15. Follow the procedure in after working inside your computer.
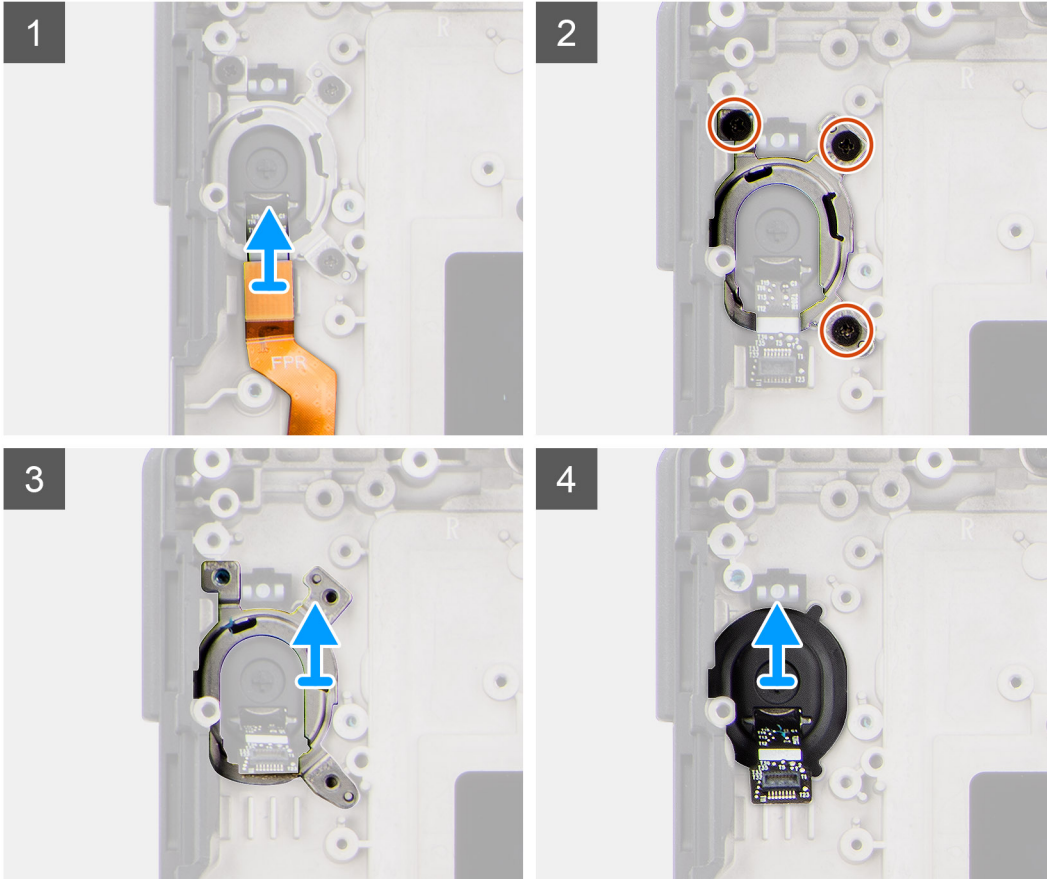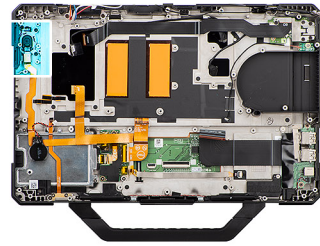
Display cable

Removing the display cable

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.

5. Remove the base cover.
6. Remove the fan.
7. Remove the heat-sink (UMA) or heat-sink (discrete).
8. Remove the Wi-Fi I/O board.
9. Remove the WLAN card.
10. Remove the WWAN card.
11. Remove the dock I/O board.
12. Remove the rear I/O board.
13. Remove the system board.
14. Remove the display assembly.
15. Remove the display bezel.
16. Remove the camera.
17. Remove the display hinges.

About this task

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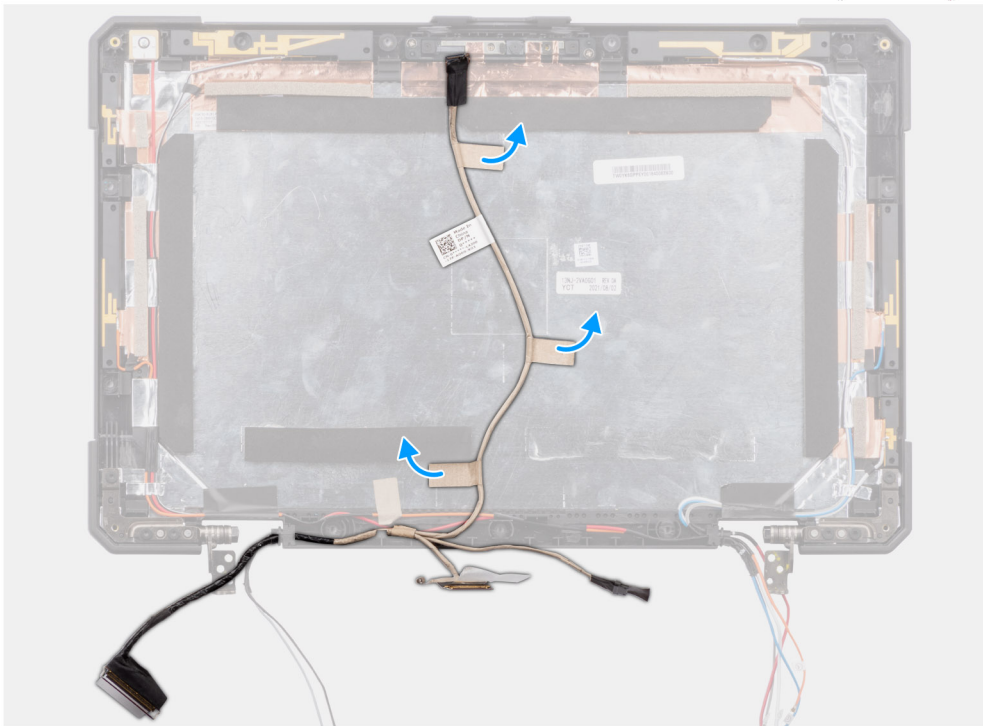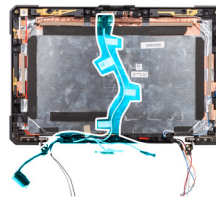
Steps

Peel the adhesive tape off the eDP cable adhered to 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.
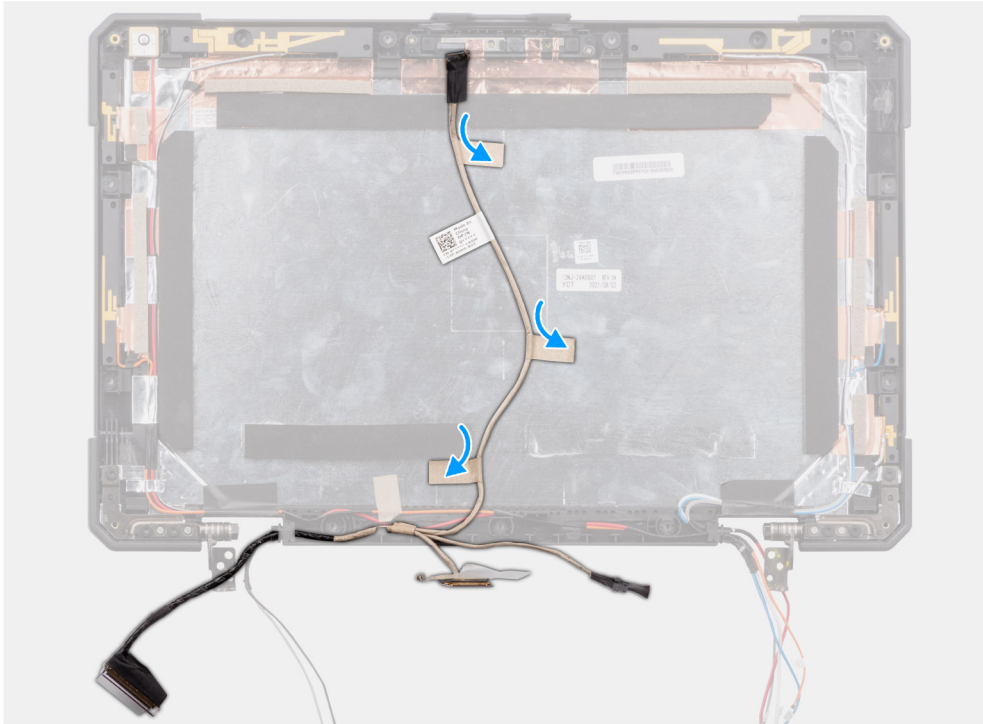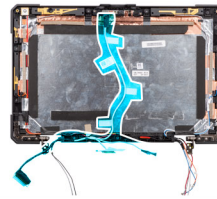
Steps

Adhere the adhesive tape to the eDP cable and to the display cover.

Next steps

1. Install the display hinges.
2. Install the camera.
3. Install the display bezel.
4. Install the display assembly.
5. Install the system board.
6. Install the rear I/O board.
7. Install the dock I/O board.
8. Install the WWAN card.
9. Install the WLAN card.
10. Install the Wi-Fi I/O board.
11. Install the heat-sink (UMA) or heat-sink (discrete).
12. Install the fan.
13. Install the base cover.
14. Install the keyboard.
15. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
16. Install the battery.
17. Follow the procedure in after working inside your computer.

Display panel

Removing the display panel

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the Wi-Fi I/O board.
7. Remove the WLAN card.
8. Remove the WWAN card.
9. Remove the dock I/O board.
10. Remove the rear I/O board.
11. Remove the fan.
12. Remove the heat-sink (UMA) or heat-sink (discrete).
13. Remove the system board.
14. Remove the display bezel.
15. Remove the camera.
16. Remove the display hinges.
17. Remove the display cable.

About this task

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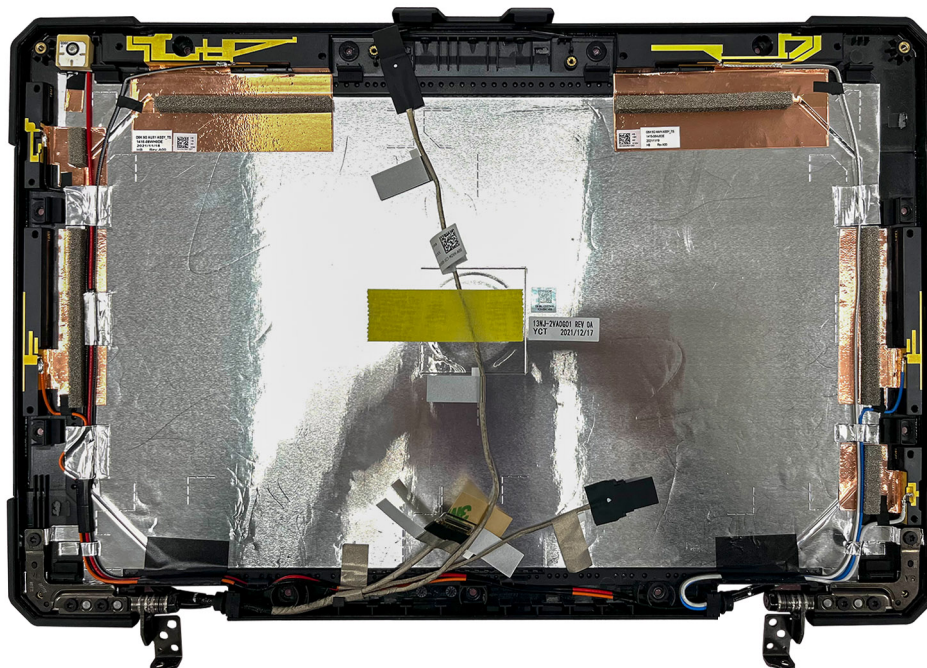

Figure 1. Touch screen - Full antenna
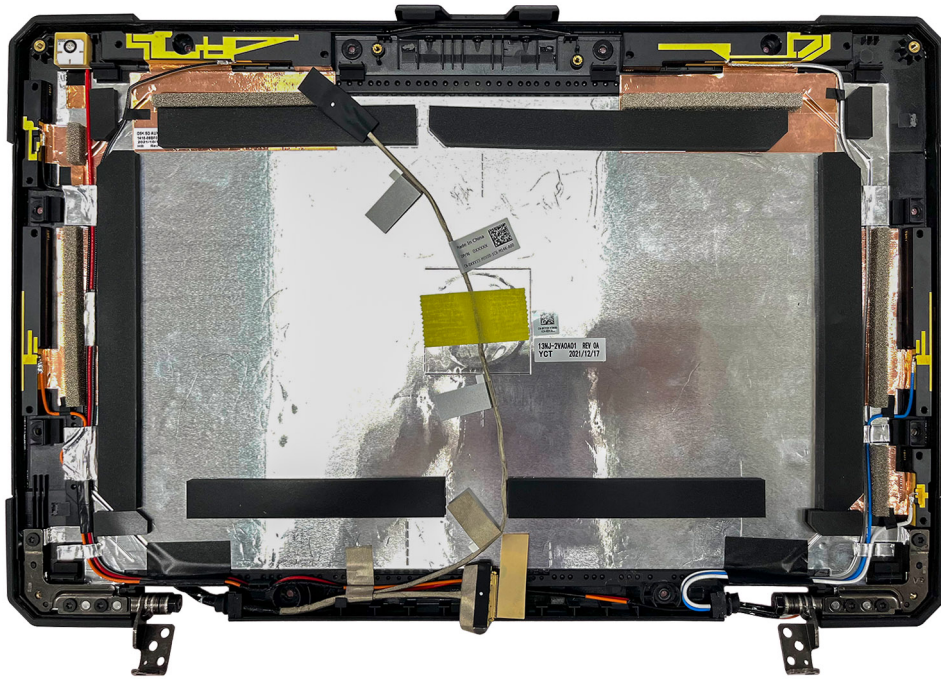
Figure 2. Non-Touch screen - Full antenna
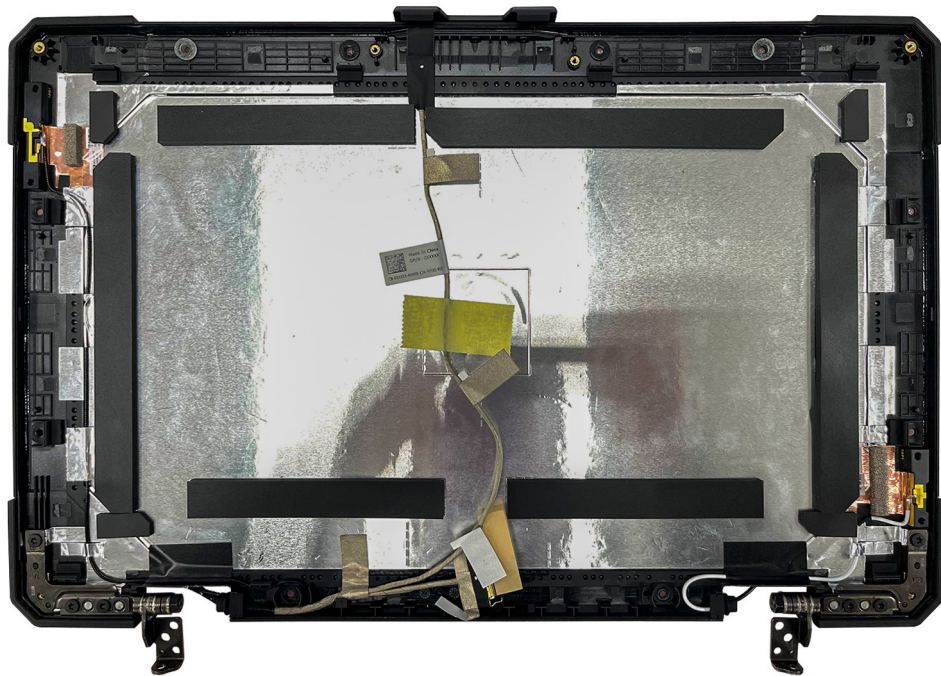
Figure 3. Non-Touch screen - WLAN

Steps

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

Installing the display panel

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 panel and provides a visual representation of the installation procedure.
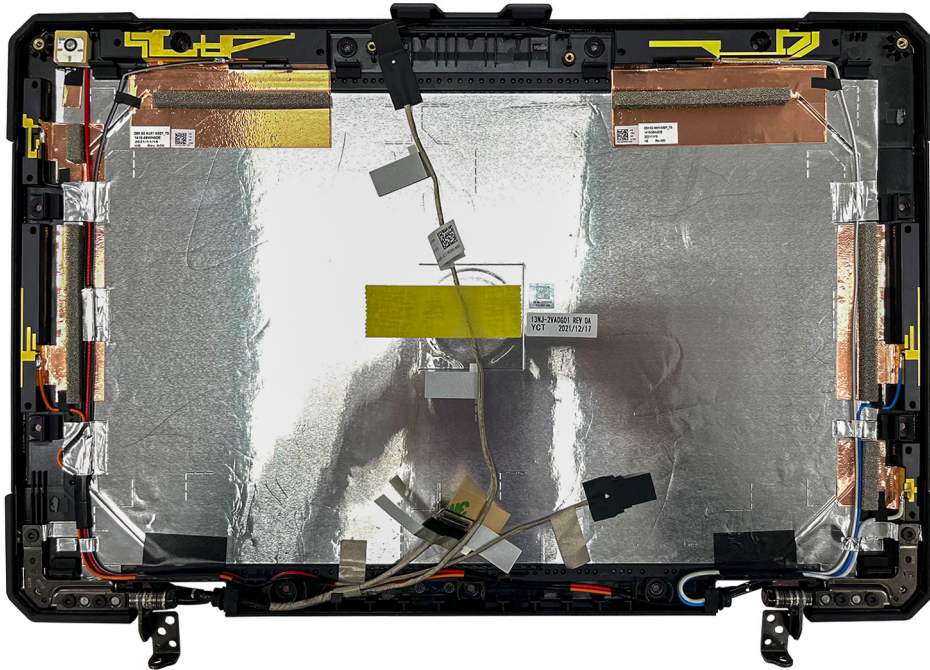
Figure 4. Touch screen - Full antenna
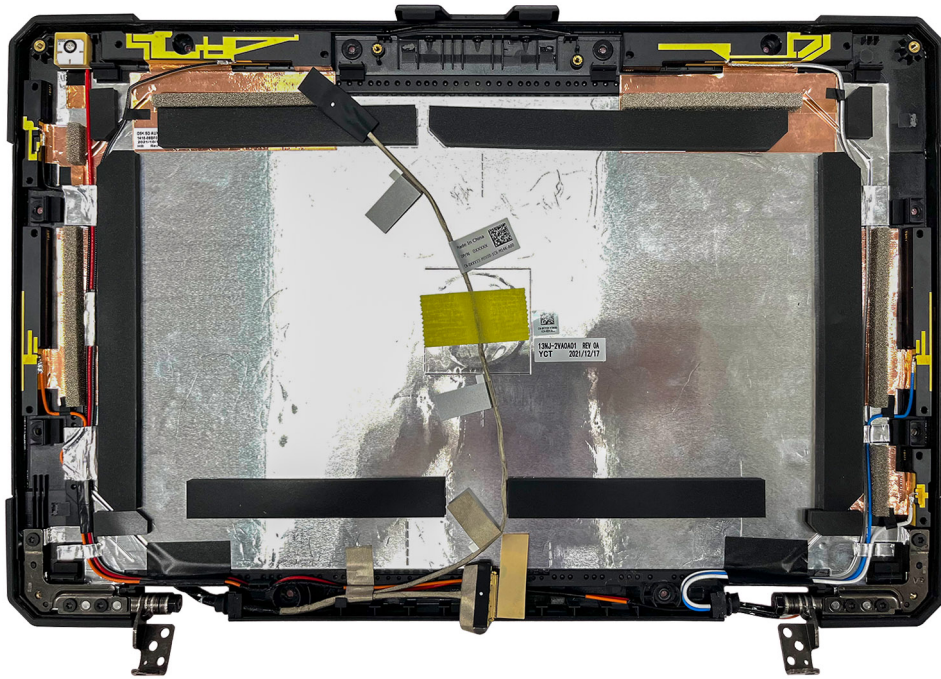
Figure 5. Non-Touch screen - Full antenna
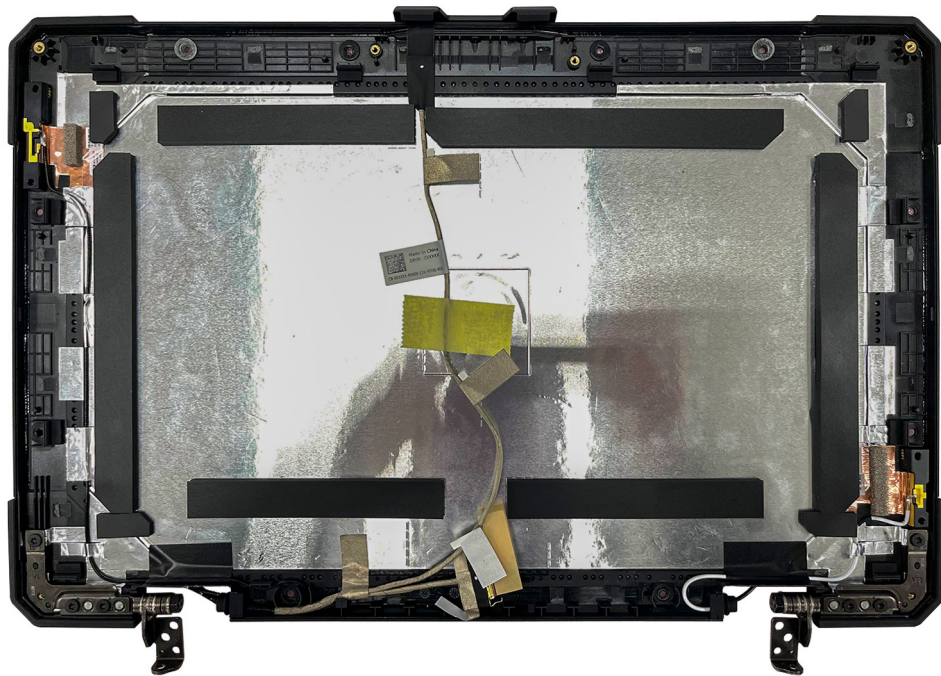
Figure 6. Non-Touch screen - WLAN

Steps

After performing the succeeding steps, you are left with the display panel.

Next steps

1. Install the display cable.
2. Install the display hinges.
3. Install the camera.
4. Install the display bezel.
5. Install the display assembly.
6. Install the system board.
7. Install the heat-sink (UMA) or heat-sink (discrete).
8. Install the fan.
9. Install the rear I/O board.
10. Install the dock I/O board.
11. Install the WWAN card.
12. Install the WLAN card.
13. Install the Wi-Fi I/O board.
14. Install the base cover.
15. Install the keyboard.
16. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
17. Install the battery.
18. Follow the procedure in after working inside your computer.

Display back-cover

Removing the display back cover

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the battery.
3. Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
4. Remove the keyboard.
5. Remove the base cover.
6. Remove the Wi-Fi I/O board.
7. Remove the WLAN card.
8. Remove the WWAN card.
9. Remove the dock I/O board.
10. Remove the rear I/O board.
11. Remove the fan.
12. Remove the heat-sink (UMA) or heat-sink (discrete).
13. Remove the system board.
14. Remove the display assembly.
15. Remove the display bezel.
16. Remove the camera.
17. Remove the display hinges.
18. Remove the display cable.

About this task

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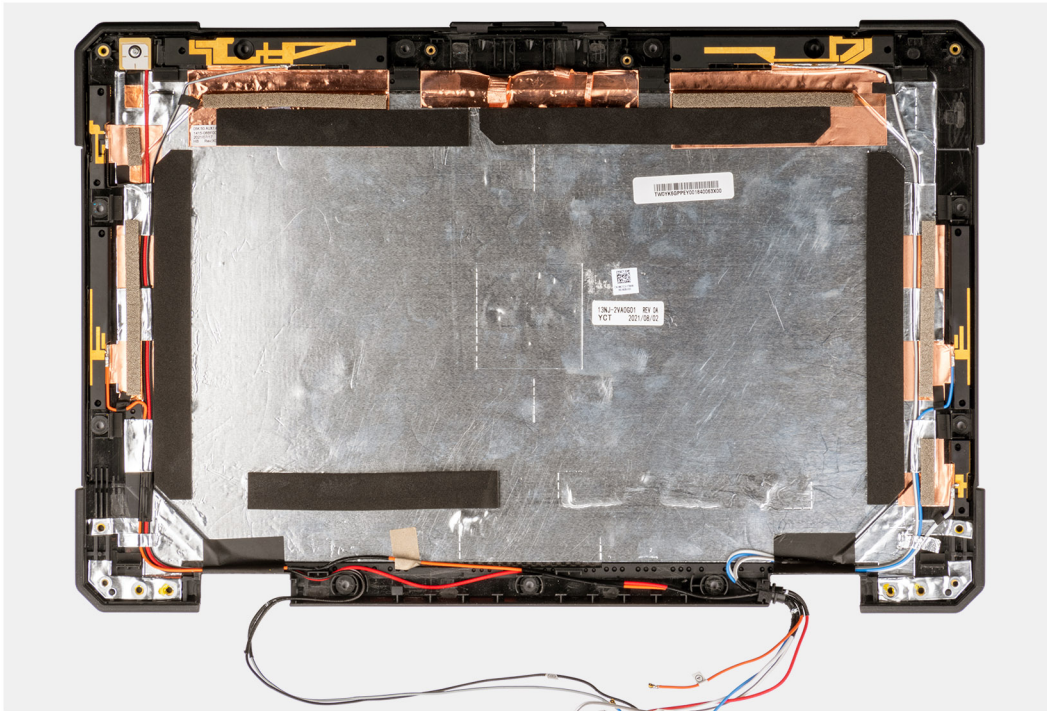
Steps

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

Installing the display back cover

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 back cover and provides a visual representation of the installation procedure.
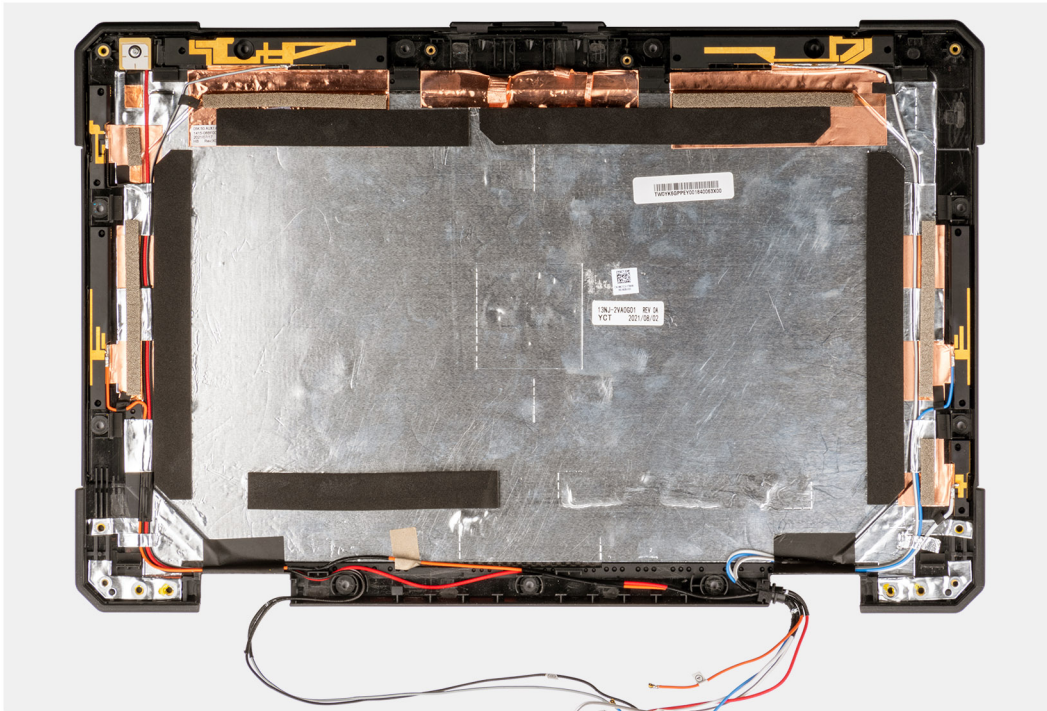
Steps

After performing the succeeding steps, you are left with the display back cover.

Next steps

1. Install the display cable.
2. Install the display hinges.
3. Install the camera.
4. Install the display bezel.
5. Install the display assembly.
6. Install the system board.
7. Install the heat-sink (UMA) or heat-sink (discrete).
8. Install the fan.
9. Install the rear I/O board.
10. Install the dock I/O board.
11. Install the WWAN card.
12. Install the WLAN card.
13. Install the Wi-Fi I/O board.
14. Install the base cover.
15. Install the keyboard.
16. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
17. Install the battery.
18. Follow the procedure in after working inside your computer.

Palmrest assembly

Removing the palmrest assembly

Prerequisites

- Follow the procedure in before working inside your computer.
- Remove the battery.

- Remove the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
- Remove the keyboard.
- Remove the base cover.
- Remove the Wi-Fi I/O board.
- Remove the WLAN card.
- Remove the WWAN card.
- Remove the dock I/O board.
- Remove the rear I/O board.
- Remove the fan.
- Remove the heat-sink (UMA) or heat-sink (discrete).
- Remove the system board.
- Remove the display assembly.
- Remove the power button board.
- Remove the power button board with finger print reader.

About this task

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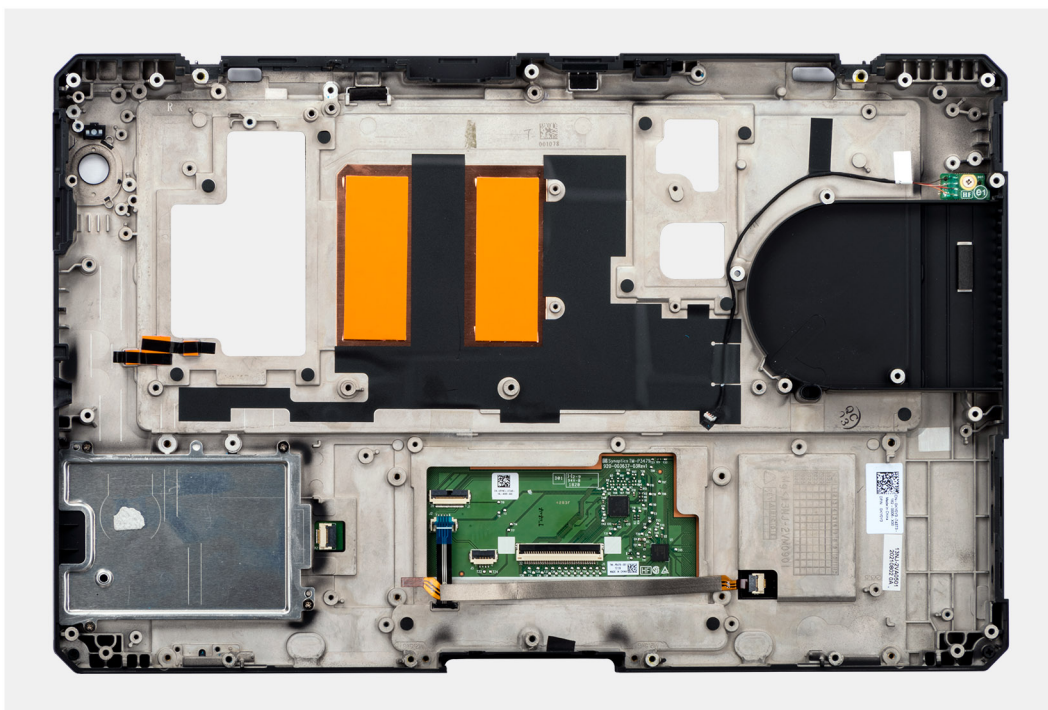
Steps

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

ⓘ **NOTE:** The touchpad is part of the palmrest assembly.

Installing the palmrest 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 palmrest assembly and provides a visual representation of the installation procedure.
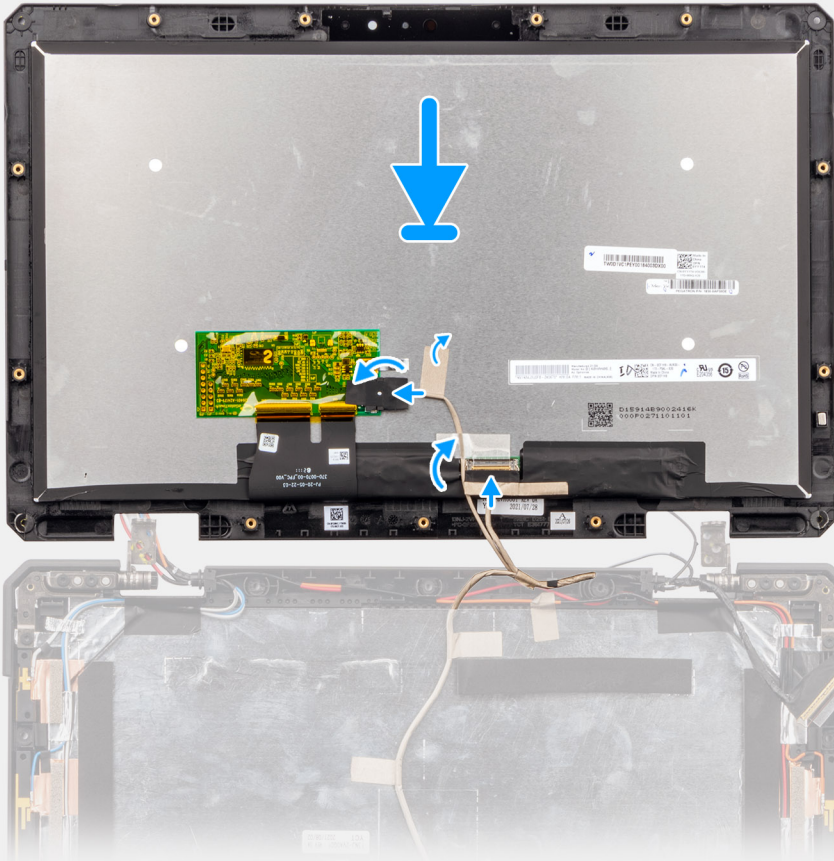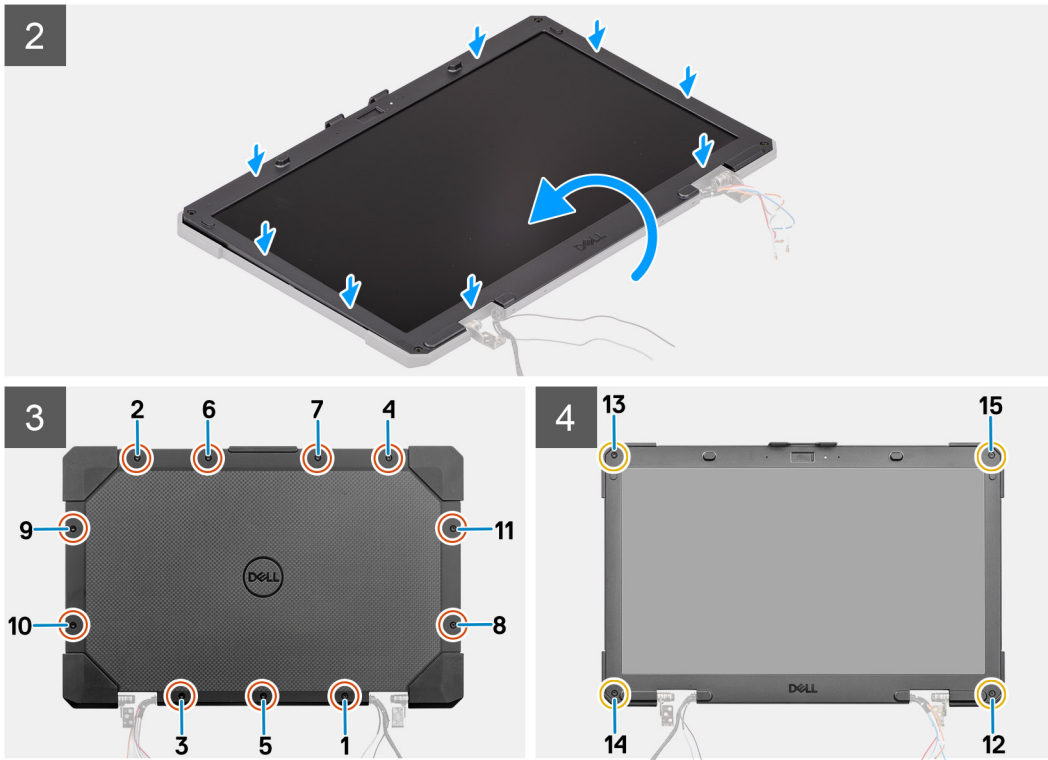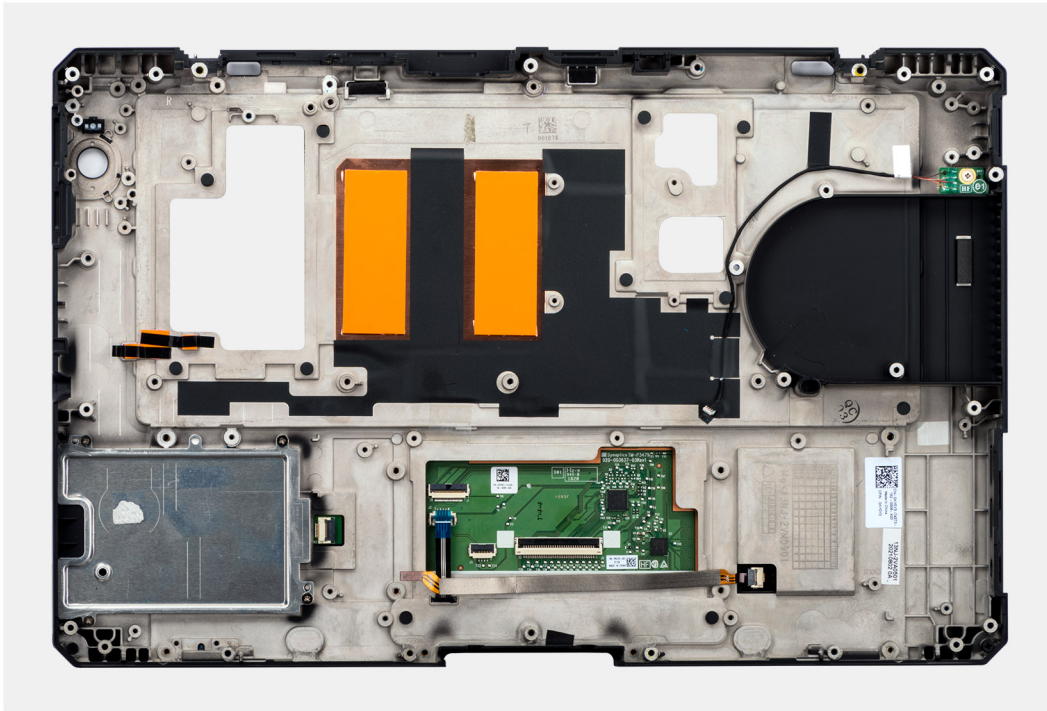
Steps

After performing the succeeding steps, you are left with the palmrest assembly.

ⓘ **NOTE:** The touchpad is part of the palmrest assembly.

Next steps

1. Install the power button board with finger print reader.
2. Install the power button board.
3. Install the display assembly.
4. Install the system board.
5. Install the heat-sink (UMA) or heat-sink (discrete).
6. Install the fan.
7. Install the rear I/O board.
8. Install the dock I/O board.
9. Install the WWAN card.
10. Install the WLAN card.
11. Install the Wi-Fi I/O board.
12. Install the base cover.
13. Install the keyboard.
14. Install the primary M.2 2280 solid state drive or primary M.2 2230 solid state drive.
15. Install the battery.
16. Follow the procedure in after working inside your computer.

3

Drivers and downloads
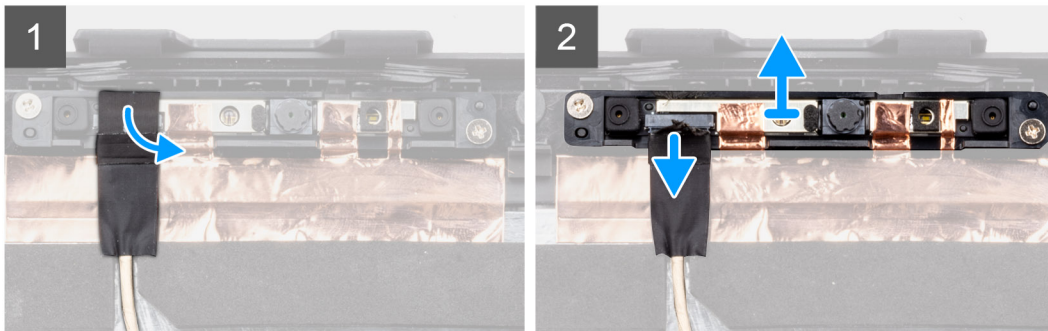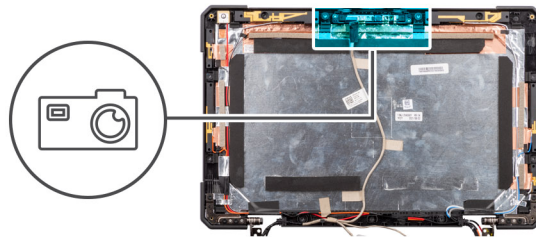
When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Base article, Drivers and Downloads FAQs 000123347.

4

BIOS Setup

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

ⓘ **NOTE:** Depending on the computer and its installed devices, the items that are listed in this section may or may not be displayed.

ⓘ **NOTE:** Before you change the settings in BIOS Setup, it is recommended that you note down the original settings for future reference.

Use BIOS Setup 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.

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.

Table 10. Navigation keys

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. ⓘ **NOTE:** For the standard graphics browser only.
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.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

ⓘ **NOTE:** It is recommended to shutdown the computer if it is on.

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 (if available)
  - (i) **NOTE:** XXX denotes the SATA drive number.
- Optical Drive (if available)
- Solid-state drive only
- Diagnostics

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

System setup options

(i) **NOTE:** Depending on your system and its installed devices, the items that are listed in this section may or may not appear.

Table 11. System setup options—System information menu

Overview	
Latitude 5430 Rugged	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the system.
Asset Tag	Displays the Asset Tag of the system.
Manufacture Date	Displays the manufacture date of the system.
Ownership Date	Displays the ownership date of the system.
Express Service Code	Displays the express service code of the system.
Ownership Tag	Displays the Ownership Tag of the system.
Signed Firmware Update	Displays whether the Signed Firmware Update is enabled on your system.
Battery Information	
Battery 1 Type	Displays that battery 1 is primary.
Battery 1 Level	Displays the battery 1 level of the system.
Battery 1 State	Displays the battery 1 state of the system.
Battery 1 Health	Displays the battery 1 health of the system.
Battery 2 Type	Displays that battery 2 is primary.
Battery 2 Level	Displays the battery 2 level of the system.
Battery 2 State	Displays the battery 2 state of the system.
Battery 2 Health	Displays the battery 2 health of the system.
AC Adapter	Displays whether the AC adapter is connected or not.
Processor Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 Cache size.

Table 11. System setup options—System information menu (continued)

Overview	
Processor L3 Cache	Displays the processor L3 Cache size.
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
Memory Information	
Memory Installed	Displays the total system memory installed.
Memory Available	Displays the total system memory available.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
Memory Technology	Displays the technology that is used for the memory.
DIMM_SLOT 1	Displays the memory installed in slot 1.
DIMM_SLOT 2	Displays the memory installed in slot 2.
Devices Information	
Panel Type	Displays the Panel Type of the system.
Video Controller	Displays the video controller type of the system.
Video Memory	Displays the video memory information of the system.
Wi-Fi Device	Displays the wireless device information of the system.
Native Resolution	Displays the native resolution of the system.
Video BIOS Version	Displays the video BIOS version of the system.
Audio Controller	Displays the audio controller information of the system.
Bluetooth Device	Displays the Bluetooth device information of the system.
LOM MAC Address	Displays the LAN On Motherboard (LOM) MAC address of the system.
Pass Through MAC Address	Displays the pass through MAC address of the system.
Cellular Device	Displays the cellular device information of the system.

Table 12. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot mode	Displays the boot mode.
Boot Sequence	Displays the boot sequence.
Secure Digital (SD) Card Boot	Enable or disable the SD card read-only boot.
	By default, the **Secure Digital (SD) Card Boot** option is not enabled.
Secure Boot	
Enable Secure Boot	Enable or disable the secure boot feature.
	By default, the option is not enabled.
Secure Boot Mode	Enable or disable to change the secure boot mode options.
	By default, the **Deployed Mode** is enabled.
Expert Key Management	
Enable Custom Mode	Enable or disable custom mode.

Table 12. System setup options—Boot Configuration menu (continued)

Boot Configuration	
	By default, the **custom mode** option is not enabled.
Custom Mode Key Management	Select the custom values for expert key management.

Table 13. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	Displays the current date in MM/DD/YYYY format and current time in HH:MM:SS AM/PM format.
Camera	Enables or disable the camera.
	By default, the **Enable Camera** option is selected
Audio	
Enable Audio	Enable or disable the integrated audio controller.
	By default, all the options are enabled.
Serial port	
Serial Port 1 Configuration	By default, the **COM1: Port is configured at 3F8h with IRQ 4** option is selected
USB/Thunderbolt Configuration	● Enable or disable booting from USB mass storage devices that are connected to external USB ports. By default, the **Enable External USB Ports** option is enabled. ● Enable or disable booting from USB mass storage devices such as external hard drive, optical drive, and USB drive. By default, the **Enable USB Boot Support** option is enabled.
Enable Thunderbolt Technology Support	Enable or disable the associated ports and adapters. By default, the **Enable Thunderbolt Technology Support** option is selected.
Enable Thunderbolt Boot Support	Enable or disable the Thunderbolt adapter peripheral device and USB devices that are connected to the Thunderbolt adapter to be used during BIOS Pre-boot. By default, the **Enable Thunderbolt Boot Support** option is disabled.
Enable Thunderbolt (and PCIe behind TBT) pre-boot modules	Enable or disable the PCIe devices that are connected through a Thunderbolt adapter to execute the PCIe devices UEFI Option ROM (if present) during pre-boot. By default, the **Enable Thunderbolt (and PCIe behind TBT) pre-boot modules** option is disabled.
Disable USB4 PCIE Tunneling	Disable the USB4 PCIE Tunneling option. By default, the option is disabled.
Video/Power only on Type-C Ports	Enable or disable the Type-C port functionality to video or only power. By default, the **Video/Power only on Type-C Ports** option is disabled.
Type-C Dock Override	Enables to use connected Type-C Dell Dock to provide data stream with external USB ports disabled. When Type-C Dock override is enabled, the Video/Audio/Lan submenu is activated. By default, the **Type-C Dock Override** option is enabled.
Type-C Dock Audio	Enable or disable the usage of audio on Dell Dock external ports. By default, the **Audio** option is enabled.

Table 13. System setup options—Integrated Devices menu (continued)

Integrated Devices	
Type-C Dock Lan	Enable or disable the usage of LAN on Dell Dock external ports.
	By default, the **Lan** option is enabled.
Miscellaneous Devices	Enable or disable Fingerprint Reader device.
	By default, the **Enable Fingerprint Reader Device** option is enabled.
Stealth Mode	Enable or disable the Stealth Mode features.
	By default, the all options are enabled.

Table 14. System setup options—Storage menu

Storage	
SATA/NVMe Operation	
SATA/NVMe Operation	Set the operating mode of the integrated storage device controller.
	By default, the **RAID On** option is enabled.
Storage interface	
Port Enablement	This page allows you to enable the onboard drives.
	By default, the **M.2 SATA** and **M.2 PCIe SSD-0** options are enabled.
SMART Reporting	
Enable SMART Reporting	Enable or disable Self-Monitoring, Analysis, and Reporting Technology (SMART) during system startup.
	By default, the **Enable SMART Reporting** option is not enabled.
Drive Information	
M.2 SATA	
Type	Displays the M.2 SATA type information of the system.
Device	Displays the M.2 SATA device information of the system.
M.2 PCIe SSD-0	
Type	Displays the M.2 PCIe SSD-0 type information of the system.
Device	Displays the M.2 PCIe SSD-0 device information of the system.
Enable MediaCard	
Secure Digital (SD) Card	Enable or disable the SD card.
	By default, the **Secure Digital (SD) Card** option is enabled.
Secure Digital (SD) Card Read-Only Mode	Enable or disable the SD card read-only mode.
	By default, the **Secure Digital (SD) Card Read-Only Mode** option is not enabled.

Table 15. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Enable to set screen brightness when the system is running on battery power.
Brightness on AC power	Enable to set screen brightness when the system is running on AC power.
Touchscreen	
Touchscreen	Enable or disable the touchscreen for the OS.

Table 15. System setup options—Display menu (continued)

Display		
Full Screen Logo	By default, the option is enabled.	
	Enable or disable full screen logo.	
	By default, the option is not enabled.	
Limit Panel Brightness to 50%	Enable or disable the panel brightness limit to 50%.	
	By default, the option is not enabled.	

Table 16. System setup options—Connection menu

Connection		
Network Controller Configuration		
Integrated NIC	This option controls the on-board LAN controller.	
	By default, the **Enabled with PXE** option is enabled.	
Onboard Unmanaged NIC	This option controls the on-board USB LAN controller.	
	By default, the **Enabled** option is selected.	
Wireless Device Enable		
WWAN/GPS	Enable or disable the internal WWAN/GPS device	
	By default, the option enabled.	
WWAN Bus Mode	Set the interface type of the Wireless Wan (WWAN) card.	
	By default, the **Bus Mode USB** option is enabled.	
WLAN	Enable or disable the internal WLAN device.	
	By default, the option enabled.	
Bluetooth	Enable or disable the internal Bluetooth device	
	By default, the option enabled.	
Contactless smartcard/NFC	Enable or disable the internal Contactless smartcard/NFC device	
	By default, the option enabled.	
Enable UEFI Network Stack	Enable or disable UEFI Network Stack and controls the on-board LAN Controller.	
	By default, the **Auto Enabled** option is selected.	
Wireless Radio Control		
Control WLAN radio	Sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN).	
	By default, the option is disabled.	
Control WWAN radio	Sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WWAN).	
	By default, the option is disabled.	
HTTPs Boot Feature		
HTTPs Boot	Enable or disable the HTTPs Boot feature.	
	By default, the **Auto Mode** option is enabled.	
HTTPs Boot Mode	With Auto Mode, the HTTPs Boot extracts Boot URL from the DHCP. With Manual Mode, the HTTPs Boot reads Boot URL from the user-provided data.	
	By default, the **Auto Mode** option is enabled.	

Table 16. System setup options—Connection menu (continued)

Connection	
Antenna Switch	
WLAN Antenna	Enable or disable the Dock Antenna or System Antenna option.
	By default, the **Dock Antenna** option is enabled.
WWAN Antenna	Enable or disable the Dock Antenna or System Antenna option.
	By default, the **Dock Antenna** option is enabled.
GPS Antenna	Enable or disable the Dock Antenna or System Antenna option.
	By default, the **Dock Antenna** option is enabled.

Table 17. System setup options—Power menu

Power	
Battery 1 configuration	Enables the system to run on battery during peak power usage hours. Use the table **Custom Charge Start** and **Custom Charge Stop**, to prevent AC power usage between certain times of each day.
	By default, the **Adaptive** option is enabled.
Battery 2 configuration	Enables the system to run on battery during peak power usage hours. Use the table **Custom Charge Start** and **Custom Charge Stop**, to prevent AC power usage between certain times of each day.
	By default, the **Adaptive** option is enabled.
Advanced Configuration	
Enable Advanced Battery Charge Configuration	Enable or disable the advanced battery charge configuration.
	By default, the **Enable Advanced Battery Charge Configuration** option is disabled.
Peak Shift	Enables the system to run on battery during peak power usage hours.
Enable Peak Shift	By default, the **Enable Peak Shift** option is disabled.
USB PowerShare	
Enable USB PowerShare	Enable or disable the USB PowerShare.
	By default, the **Enable USB PowerShare** option is disabled
Thermal Management	Enables to cool the fan and processor heat management to adjust the system performance, noise, and temperature.
	By default, the **Optimized** option is enabled.
USB Wake Support	
Wake on Dell USB-C Dock	When enabled, connecting a Dell USB-C Dock will wake the system from Standby, Hibernate, and Power Off.
	By default, the **Wake on Dell USB-C Dock** option is enabled.
Block Sleep	Enables to block entering sleep (S3) mode in the operating system.
	By default, the **Block Sleep** option is disabled.
Lid Switch	
Enabled Lid Switch	Enable or disable the lid switch.
	By default, the **Enable Lid Switch** option is enabled.
Intel Speed Shift Technology	Enable or disable the Intel speed shift technology support.
	By default, the **Intel Speed Shift Technology** option is enabled.

Table 18. System setup options—Security menu

Security	
TPM 2.0 Security	
TPM 2.0 Security On	Allows you to enable or disable TPM visibility to operating system.
	By default, the **TPM 2.0 Security On** option is enabled.
Attestation Enable	Enables to control whether the Trusted Platform Module (TPM) Endorsement Hierarchy is available to the operating system.
	By default, the **Attestation Enable** option is enabled.
Key Storage Enable	Enables to control whether the Trusted Platform Module (TPM) Storage Hierarchy is available to the operating system.
	By default, the **Key Storage Enable** option is enabled.
SHA-256	When enabled, the BIOS and TPM will use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot.
	By default, the **SHA-256** option is enabled.
Clear	Enables to clear the TPM owner information and returns the TPM to the default state.
	By default, the **Clear** option is disabled.
PPI Bypass for Clear Commands	Controls the TPM Physical Presence Interface (PPI).
	By default, the **PPI ByPass for clear Commands** option is disabled.
Intel Total Memory Encryption	
Total Memory Encryption	Enable or disable you to protect memory from physical attacks including freeze spray, probing DDR to read the cycles, and others.
	By default, the **Total Memory Encryption** option is disabled.
Chassis intrusion	Controls the chassis intrusion feature.
	By default, the **On-Silent** option is enabled.
Clear Intrusion Warning	By default, the option is disabled.
SMM Security Mitigation	Enable or disable additional UEFI SMM Security Mitigation protections.
	By default, the option is enabled.
Data Wipe on Next Boot	
Start Data Wipe	Enable or disable the data wipe on next boot.
	By default, the **Start Data Wipe** option is disabled.
Absolute	Enable or disable or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute software.
	By default, the option is enabled.
	⚠ **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 Enable/Disable states are allowed.**
	ⓘ **NOTE:** The Enable/Disable options will be unavailable while Computrace is in the activated state.
UEFI Boot Path Security	Controls whether the system will prompt the user to enter the admin password (if set) when booting to a UEFI boot path device from the F12 boot menu.
	By default, the **Always Except Internal HDD** option is enabled.

Table 18. System setup options—Security menu (continued)

Security	
Authenticated BIOS Interface	
Enable Authenticated BIOS Interface	By default, the option is disabled.
Legacy Manageability Interface Access	By default, the option is disabled.

Table 19. System setup options—Passwords menu

Passwords	
Admin Password	Set, change, or delete the administrator password.
System Password	Set, change, or delete the system password.
M.2 PCIe SSD-0	Set, change, or delete the NVMe SSD0 password.
Password Configuration	
Upper Case Letter	Reinforces password must have at least one upper case letter.
	By default, the option is disabled.
Lower Case Letter	Reinforces password must have at least one lower case letter.
	By default, the option is disabled.
Digit	Reinforces password must have at least one digit number.
	By default, the option is disabled.
Special Character	Reinforces password must have at least one special character.
	By default, the option is disabled.
Minimum Characters	Set the minimum characters allowed for password.
Password Bypass	When enabled, this always prompts for system and internal hard drive passwords when powered on from the off state.
	By default, the **Disabled** option is selected.
Password Changes	
Enable Non-Admin Password Changes	Enable or disable to change system and hard drive password without the need for admin password.
	By default, the option is enabled.
Admin Setup Lockout	
Enable Admin Setup Lockout	Enables administrators control over how their users can or cannot access BIOS setup.
	By default, the option is disabled.
Master Password Lockout	
Enable Master Password Lockout	When enabled, this disables the master password support.
	By default, the option is disabled.
Allow Non-Admin PSID Revert	
Enable Allow Non-Admin PSID Revert	Controls access to the Physical Security ID (PSID) revert of NVMe hard-drives from the Dell Security Manager prompt.
	By default, the option is disabled.

Table 20. System setup options—Update, Recovery menu

Update, Recovery	
UEFI Capsule Firmware Updates	Enable or disable BIOS updates through UEFI capsule update packages.
	(i) **NOTE:** Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS).
	By default, the option is enabled.
BIOS Recovery from Hard Drive	Enables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key.
	By default, the option is enabled.
	(i) **NOTE:** BIOS Recovery from Hard Drive is not available for self-encrypting drives (SED).
BIOS Downgrade	
Allow BIOS Downgrade	This field controls the flashing of the system firmware to previous revisions.
	By default, the option is enabled.
SupportAssist OS Recovery	Enable or disable the boot flow for SupportAssist OS Recovery tool in the event of certain system errors.
	By default, the option is enabled.
BIOSConnect	Enable or disable cloud Service operating system recovery if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto operating system Recovery Threshold setup option and local Service operating system does not boot or is not installed.
	By default, the option is enabled.
Dell Auto operating system Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery Tool.
	By default, the threshold value is set to 2.

Table 21. System setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the system.
Asset Tag	Create a system Asset Tag.
AC Behavior	
Wake on AC	Enable or disable the wake on AC option.
	By default, the option is disabled.
Wake on LAN	
Wake on LAN	Enable or disable the system to power on by special LAN signals when it receives a wakeup signal from the WLAN.
	By default, the **Disabled** option is selected.
Auto on Time	Enable to set the system to turn on automatically every day or on a preselected date and time. This option can be configured only if the Auto On Time is set to Everyday, Weekdays, or Selected Days.
	By default, the option is disabled.
Intel AMT Capability	
Enable Intel AMT Capability	By default **Restrict MEBx Access** option is enabled.
MEBx Hotkey	
Enable MEBx Hotkey	When enabled, this allows the use of Ctrl+P hotkey to access MEBx.

Table 21. System setup options—System Management menu (continued)

System Management	
	By default **OFF** option is disabled.
USB Provision	
Enable USB Provision	Intel AMT can be provisioned using the local provisioning file using a USB storage device.
	By default **OFF** option is disabled.

Table 22. System setup options—Keyboard menu

Keyboard	
Fn Lock Options	By default, the Fn lock option is enabled.
Lock Mode	By default, the **Lock Mode Secondary** option is enabled. With this option, the F1-F2 keys scan the code for their secondary functions.
Keyboard Illumination	Enables to change the keyboard illumination settings.
	By default, the **Level is 100%** option is enabled.
Keyboard Backlight Timeout on AC	Set the timeout value for the keyboard backlight when an AC adapter is connected to the system.
	By default, the **10 seconds** option is enabled.
Keyboard Backlight Timeout on Battery	Set the timeout value for the keyboard backlight when the is running only on battery power.
	By default, the **10 seconds** option is enabled.
Device Configuration Hotkey Access	Manages whether you can access device configuration screens through hotkeys during system startup.
	By default, the option is enabled.
RGB Keyboard Backlight	Configures the RGB keyboard backlight feature.
	By default, the **White**, **Red**, **Green**, **Blue** are enabled.

Table 23. System setup options—Pre-boot Behavior menu

Pre-boot Behavior	
Adapter Warnings	
Enable Adapter Warnings	Enable or disable the warning messages during boot when the adapters with less power capacity are detected.
	By default, the option is enabled.
Warning and Errors	Enable or disable the action to be done when a warning or error is encountered.
	By default, the **Prompt on Warnings and Errors** option is enabled.
USB-C Warnings	
Enable Dock Warning Messages	By default, the option is enabled.
Fastboot	Allows you to configure the speed of the UEFI boot process.
	By default, the **Minimal** option is enabled.
Extend BIOS POST Time	Set the BIOS POST load time.
	By default, the **0 seconds** option is enabled.
MAC Address Pass-Through	Replaces the external NIC MAC address with the selected MAC address from the system.

Table 23. System setup options—Pre-boot Behavior menu (continued)

Pre-boot Behavior	
	By default, the **Passthrough MAC Address** option is enabled.

Table 24. System setup options—Virtualization menu

Virtualization	
Intel Virtualization Technology	
Enable Intel Virtualization Technology (VT)	When enabled, the system will be able to run a Virtual Machine Monitor (VMM).
	By default, the option is enabled.
VT for Direct I/O	When enabled, the system will be able to perform Virtualization Technology for Direct I/O (VT-d).
	By default, the option is enabled.
Intel Trusted Execution Technology (TXT)	
Enable Intel Trusted Execution Technology (TXT)	Specifies whether a measured Virtual Machine Monitor (MVMM) can use the additional hardware capabilities that are provided by Intel Trusted Execution Technology. The following must be enabled in order to enable Intel TXT. ● Trusted Platform Module (TPM) ● Intel Hyper-Threading ● All CPU cores (Multi-Core Support) ● Intel Virtualization Technology ● Intel VT for Direct I/O
	By default, the option is disabled.

Table 25. System setup options—Performance menu

Performance	
Multi Core Support	
Active Cores	Enables to change the number of CPU cores available to the operating system.
	By default, the **All Cores** option is enabled.
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables the system to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production.
	By default, the option is enabled.
C-States Control	
Enable C-State Control	Enable the ability of the CPU to enter and exit low power state. When disabled, it disabled all C-states. When enabled, it enabled all C-states that the chipset or platform allows.
	By default, the option is enabled.
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enable or disable the Intel TurboBoost mode of the processor.
	By default, the option is enabled.
Intel Hyper-Threading Technology	
Enable Intel Hyper-Threading Technology	Enable or disable Hyper-Threading in the processor.
	By default, the option is enabled.

Table 25. System setup options—Performance menu (continued)

Performance	
Dynamic Tuning:Machine Learning	
Enable Dynamic Tuning:Machine Learning	Enables the operating system capability to enhance dynamic power tuning capabilities based on detected workloads.
	By default, the option is disabled.
Intel GNA Accelerator	When on, the Gaussian and Neural Accelerator will free CPU resources and improve performance during certain noise reduction functions.
	By default, the option is disabled.

Table 26. System setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear Bios Event Log	Displays BIOS events.
	By default, the **Keep Log** option is enabled.
Thermal Event Log	
Clear Thermal Event Log	Displays Thermal events.
	By default, the **Keep Log** option is enabled.
Power Event Log	
Clear Power Event Log	Displays power events.
	By default, the **Keep Log** option is enabled.
License Information	Displays the license information of the system.

Updating the BIOS

Updating the BIOS in Windows

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https:// www.dell.com/support/kbdoc/000134415.**

Steps

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

   ⓘ **NOTE:** If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.

8. Double-click the BIOS update file icon and follow the on-screen instructions.
   For more information, see knowledge base article 000124211 at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article 000131486 at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/kbdoc/000134415.**

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article 000145519 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** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

About this task

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress, and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information about this subject, see Knowledge Article: Updating the BIOS on Dell Systems With BitLocker Enabled**

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

ⓘ **NOTE:** Only computers with the BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

● USB drive formatted to the FAT32 file system (key does not have to be bootable)

- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

⚠ **CAUTION: Do not turn off the computer during the BIOS update process. The computer may not boot if you turn off your computer.**

Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
   The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password

Table 27. System and setup password

Password type	Description
System password	Password that you must enter to log in 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 that is 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 BIOS 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 visible.
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.
   - At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
   - Numbers 0 through 9.
   - Upper case letters from A to Z.

- Lower case letters from a to z.

3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
   The computer restarts.

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/or 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**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.

   (i) **NOTE:** If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or 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.

Clearing BIOS (System Setup) and System passwords

About this task

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.
(i) **NOTE:** For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

Clearing CMOS settings

About this task

⚠ **CAUTION: Clearing CMOS settings reset the BIOS settings on your computer.**

Steps

1. Remove the base cover.
2. Disconnect the battery cable from the system board.
3. Remove the coin-cell battery.
4. Wait for one minute.
5. Replace the coin-cell battery.
6. Connect the battery cable to the system board.
7. Replace the base cover.

Troubleshooting

Handling swollen rechargeable Li-ion batteries

Like most laptops, Dell laptops use Lithium-ion batteries. One type of Lithium-ion battery is the rechargeable Li-ion battery. Rechargeable Li-ion batteries have increased in popularity in recent years and have become standard in the electronics industry due to customer preferences for a slim form factor (especially with newer ultra-thin laptops) and long battery life. Inherent to rechargeable Li-ion battery technology is the potential for swelling of the battery cells.

Swollen battery may impact the performance of the laptop. To prevent possible further damage to the device enclosure or internal components leading to malfunction, discontinue the use of the laptop and discharge it by disconnecting the AC adapter and letting the battery drain.

Swollen batteries should not be used and should be replaced and disposed of properly. We recommend contacting Dell product support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

The guidelines for handling and replacing rechargeable Li-ion batteries are as follows:
- Exercise caution when handling rechargeable Li-ion batteries.
- Discharge the battery before removing it from the system. To discharge the battery, unplug the AC adapter from the system and operate the system only on battery power. When the system will no longer power on when the power button is pressed, the battery is fully discharged.
- 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 type to pry on or against the battery.
- If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a battery can be dangerous.
- Do not attempt to reassemble a damaged or swollen battery into a laptop.
- Swollen batteries that are covered under warranty should be returned to Dell in an approved shipping container (provided by Dell)—this is to comply with transportation regulations. Swollen batteries that are not covered under warranty should be disposed of at an approved recycling center. Contact Dell product support at https://www.dell.com/support for assistance and further instructions.
- Using a non-Dell or incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your Dell computer. Do not use a battery from other computers with your computer. Always purchase genuine batteries from https://www.dell.com or otherwise directly from Dell.

Rechargeable Li-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information on how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, search Dell Laptop Battery in the Knowledge Base Resource at www.dell.com/support.

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 launched by the BIOS internally. The embedded system diagnostics provides options for particular devices or device groups allowing you to:
- Run tests automatically or in an interactive mode.
- Repeat the tests.
- Display or save test results.

- Run thorough tests to introduce additional test options to provide extra information about one or more failed devices.
- View status messages that inform you the 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 the knowledge base article 000180971.

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.

Built-in self-test (BIST)

M-BIST

M-BIST (Built In Self-Test) is the system board's built-in self-test diagnostics tool that improves the diagnostics accuracy of system board embedded controller (EC) 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
3. If there is a failure with the system board, the battery status LED will flash one of the following error codes for 30 seconds:

Table 28. LED error codes

Blinking Pattern		Possible Problem
Amber	Green	
2	1	CPU Failure
2	8	LCD Power Rail Failure
1	1	TPM Detection Failure
2	4	Unrecoverable SPI Failure

4. If there is no failure with the system board, the LCD will cycle through the solid color screens described in the LCD-BIST section for 30 seconds and then power off.

LCD Power rail test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (that is if the L-BIST circuit fails), the battery status LED will flash either an error code [2,8] or an error code [2,7].

> (i) **NOTE:** If L-BIST fails, LCD-BIST cannot function as no power will be supplied to the LCD.

How to invoke L-BIST Test:

1. Press the power button to start the system.
2. If the system does not start up normally, look at the battery status LED:
   - If the battery status LED flashes an error code [2,7], the display cable may not be connected properly.
   - If the battery status LED flashes an error code [2,8], there is a failure on the LCD power rail of the system board, hence there is no power supplied to the LCD.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
4. For cases when a [2,8] error code is shown, replace 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 computer settings.

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

How to invoke the 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 the **D** key and **Power on** the laptop to enter LCD built-in self-test (BIST) mode. Continue to hold the D key until the computer boots up.
5. The screen displays solid colors and change colors on the entire screen to white, black, red, green, and blue twice.
6. Then it displays the colors white, black, and red.
7. Carefully inspect the screen for abnormalities (any lines, fuzzy color, or distortion on the screen).
8. At the end of the last solid color (red), the computer shuts down.

> (i) **NOTE:** Dell SupportAssist Preboot diagnostics upon launch initiates an LCD BIST first, expecting a user intervention to confirm functionality of the LCD.

System-diagnostic lights

This section lists the system-diagnostic lights of your Latitude 5430 Rugged.

Table 29. System-diagnostic lights

Blinking pattern		Problem description	Suggested resolution
Amber	Green		
1	1	TPM detection failure	Replace the system board.
1	2	Unrecoverable SPI flash failure	Replace the system board.
1	3	Short in hinge cable tripped OCP1	Check if the display cable (EDP) is seated properly or pinched at the hinges.

Table 29. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	Green		
			If problem persists, replace either display cable (EDP) or display assembly (LCD).
1	4	Short in hinge cable tripped OCP2	Check if the display cable (EDP) is seated properly or pinched at the hinges. If problem persists, replace either display cable (EDP) or display assembly (LCD).
1	5	EC unable to program i-Fuse	Replace the system board.
1	6	EC internal failure	Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button for 3~5 seconds.
2	1	Processor failure	Replace the processor. If the processor is onboard, replace the system board.
2	2	System board: BIOS or ROM (Read-Only Memory) failure	Replace the system board.
2	3	No memory or RAM (Random-Access Memory) detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2	4	Memory or RAM (Random-Access Memory) failure	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2	5	Invalid memory module installed	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
2	6	System-board or chipset error	Replace the system board.
2	7	Display failure - SBIOS message	Replace display cable (EDP) if possible, otherwise replace the display assembly (LCD).
2	8	Display failure - EC detection of power rail failure	Replace the system board.
3	1	CMOS battery failure	Reset the CMOS battery connection. If problem persists, replace the coin-cell battery.
3	2	PCI of video card/chip failure	Replace the system board.
3	3	BIOS recovery image not found	Flash latest BIOS version. If problem persists, replace the system board.
3	4	BIOS recovery image found but invalid	Flash latest BIOS version. If problem persists, replace the system board.

Table 29. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	**Green**		
3	5	Power-rail failure	EC ran into power sequencing failure. If problem persists, replace the system board.
3	6	System BIOS Flash corruption.	Flash corruption detected by SBIOS. If problem persists, replace the system board.
3	7	Management Engine (ME) error	Timeout waiting on ME to reply to HECI message. If problem persists, replace the system board.

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 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/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Real-Time Clock (RTC Reset)

The Real Time Clock (RTC) reset function allows you or the service technician to recover Dell 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.

(i) **NOTE:** If the power button is not held for at least 25 seconds or is held more than 40 seconds, the RTC reset process is canceled.

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.

Wi-Fi power cycle

About this task

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

(i) **NOTE:** Some Internet Service Providers (ISPs) provide a modem or 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.

Drain residual flea power (perform hard reset)

About this task

Flea power is the residual static electricity that remains in the computer even after it has been powered off and the battery is removed.

For your safety, and to protect the sensitive electronic components in your computer, you are requested to drain residual flea power before removing or replacing any components in your computer.

Draining residual flea power, also known as a performing a "hard reset", is also a common troubleshooting step if your computer does not power on or boot into the operating system.

To drain residual flea power (perform a hard reset)

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Remove the base cover.
4. Remove the battery.
5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to your computer.
9. Turn on your computer.

   (i) **NOTE:** For more information about performing a hard reset, see the knowledge base article https://www.dell.com/support/kbdoc/000130881 at www.dell.com/support.

Using Non-Latitude 5430 Rugged batteries

Use Latitude 5430 Rugged batteries. Non-Latitude 5430 Rugged batteries are not supported, and the following BIOS error is displayed.
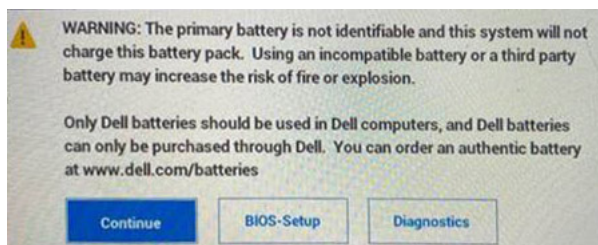
Getting help and contacting Dell

Self-help resources

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

Table 30. 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 www.dell.com/support/linux
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents.	Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support. For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles for a variety of computer concerns	1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

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

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

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