

Dell Wyse 5470 Thin Client

Service Manual



Notes, cautions, and warnings

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

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

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

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Working on your thin client

Safety instructions

Prerequisite

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

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

About this task

-  **WARNING:** Disconnect all power sources before opening the thin client cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the electrical outlet.
-  **WARNING:** Before working on your thin client, read the safety information that shipped with your thin client. For additional safety best practices information, see the Regulatory Compliance home page at www.Dell.com/regulatory_compliance.
-  **CAUTION:** Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that ship with the product.
-  **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the thin client.
-  **CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.
-  **CAUTION:** When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.
-  **NOTE:** The color of your thin client and certain components may appear differently than shown in this document.

Before working on your thin client

You must perform the following steps before you work on the thin client:

About this task

-  **NOTE:** For more safety best practices, see the Regulatory Compliance home page at www.Dell.com/regulatory_compliance.

Steps

- 1 Save and close all open files and exit all open applications.
- 2 Click **Start > Power > Shut down** to shut down your thin client.
 -  **NOTE:** For shutdown instructions, see documentation of the respective operating system at www.Dell.com/support.
- 3 Disconnect your thin client and all the attached devices from their electrical outlets.
- 4 Disconnect all network cables from your thin client.
- 5 Disconnect all attached devices and peripherals, such as keyboard, mouse, and external monitor, from your thin client.

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 on thin client to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

Standby power

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

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

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 anti-static 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 anti-static wrist strap that is properly grounded. The use of wireless anti-static wrist straps is no longer allowed because 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, anti-static 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 anti-static 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.
- **Anti-static wrist strap and bonding wire**—The anti-static 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 anti-static wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with an anti-static wrist strap, mat, and bonding wire. Never use wireless anti-static wrist straps. Always be aware that the internal wires of a anti-static wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a anti-static wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the anti-static wrist strap and bonding wire at least once per week.
- **ESD wrist strap tester**—The wires inside of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements**—It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of system that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the system, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

ESD protection summary

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

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.

Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

 **CAUTION:** Do not lift greater than 50 pounds. Always obtain additional resources or use a mechanical lifting device.

- 1 Get a firm balanced footing. Keep your feet apart for a stable base, and point your toes out.
- 2 Tighten stomach muscles. Abdominal muscles support your spine when you lift, offsetting the force of the load.
- 3 Lift with your legs, not your back.
- 4 Keep the load close. The closer it is to your spine, the less force it exerts on your back.
- 5 Keep your back upright, whether lifting or setting down the load. Do not add the weight of your body to the load. Avoid twisting your body and back.
- 6 Follow the same techniques in reverse to set the load down.

After working on your thin client

About this task

 **CAUTION:** You must not leave any stray or loose screws inside your thin client. This may damage your thin client.

Steps

- 1 Replace all screws and ensure that no stray screws remain inside your thin client.
- 2 Connect any external devices, peripherals, or cables you removed before working on your thin client.
- 3 Connect your thin client and all attached devices to their electrical outlets.
- 4 Turn on your thin client.

Removing and installing components

Recommended tools

The procedures in this document require the following tools:

- Phillips head screwdrivers: #0, #1, and #2
- Plastic scribe

Screw list

This section provides the detailed information about the screws available in the thin client.

Table 1. Screw list

Components	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest and keyboard assembly	M2.5x5	9	
Solid-state drive thermal plate	Palm-rest and keyboard assembly	M2x3	1	
Solid-state drive	Palm-rest and keyboard assembly	M2x2	1	
Battery	Palm-rest and keyboard assembly	M2x3	4	
CAC reader	Palm-rest and keyboard assembly	M2x3	4	
WLAN card	System board	M2x3	1	
I/O board	Palm-rest and keyboard assembly	M2X3	2	
Touch pad bracket	Palm-rest and keyboard assembly	M2x2	3	
Touch pad	Palm-rest and keyboard assembly	M2x2	4	
VGA daughterboard	Palm-rest and keyboard assembly	M2x3	2	
Heat sink	Palm-rest and keyboard assembly and system board	M2x3	6	
Display assembly	Palm-rest and keyboard assembly and system board	M2.5x5	6	

Components	Secured to	Screw type	Quantity	Screw image
Power button board	Palm-rest and keyboard assembly	M2x3	1	
System board	Palm-rest and keyboard assembly	M2x3	3	
System board	Palm-rest and keyboard assembly	M2x2	2	
Power adapter port	System board	M2x3	1	
Display panel	Display back-cover and hinges	M2.5x5	6	
Display panel	Display back-cover and hinges	M2x2	2	

Secure Digital card

Removing the Secure Digital card

About this task

The following image indicates the location of the Secure Digital card and provides a visual representation of the removal procedure:



Steps

- 1 Push the secure digital card to release it from the thin client.
- 2 Slide the secure digital card out of the thin client.

Installing the Secure Digital card

Prerequisite

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 Secure Digital card and provides a visual representation of the installation procedure:



Step

Slide the secure digital into the slot until it clicks into place.

Base cover

Removing the base cover

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).

About this task

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

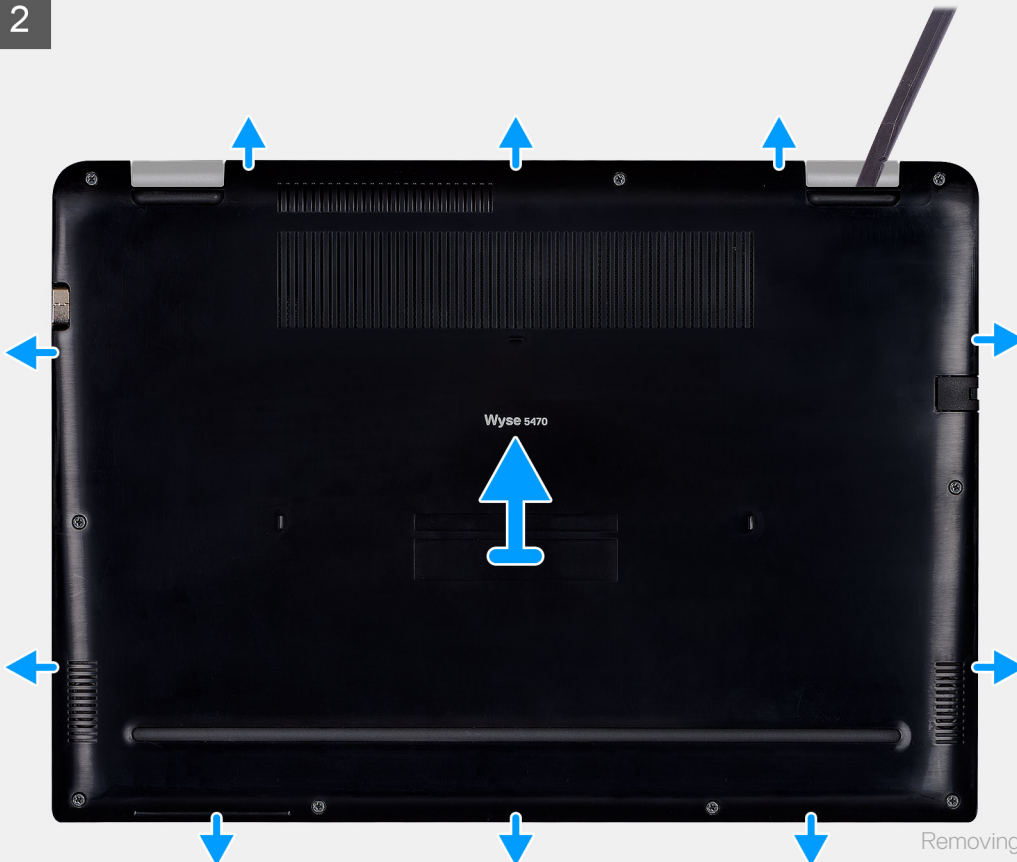


9x
M2.5x5

1



2



Steps

- 1 Loosen the nine captive screws (M2.5x5) that secure the base cover to the palm-rest and keyboard assembly.
- 2 Pry the base cover starting from the top-right corner of the palm-rest and keyboard assembly.
- 3 Lift the base cover off the palm-rest and keyboard assembly.

Installing the base cover

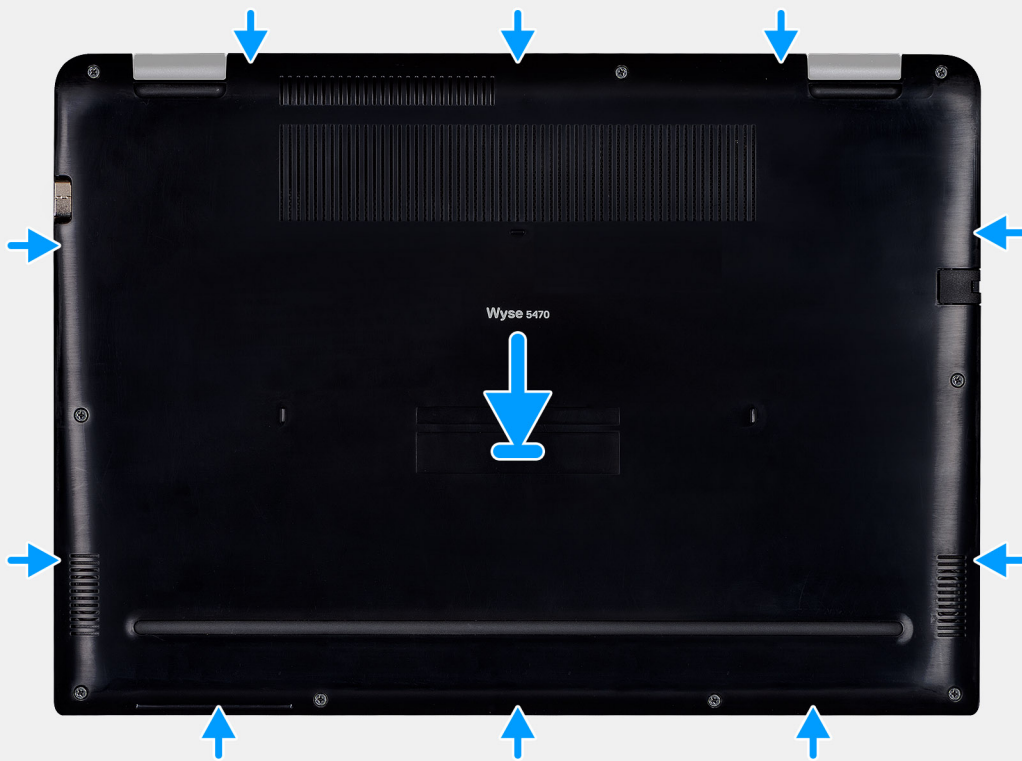
Prerequisite

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

About this task

The following images indicate the location of the base cover and provide a visual representation of the installation procedure:

1



9x
M2.5x5

2



Steps

- 1 Align the base cover on the palm-rest and keyboard assembly, and snap the base cover into place.
- 2 Tighten the nine captive screws (M2.5x5) that secure the base cover to the palm-rest and keyboard assembly.

Next steps

- 1 Installing the [SD memory card](#).
- 2 Follow the procedure in [After working on your thin client](#).

Battery

Lithium-ion battery precautions

⚠ CAUTION:

- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.
- 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.
- 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 Lithium-ion battery can be dangerous. In such an instance, contact <https://www.dell.com/support> for assistance and further instructions.
- Always purchase genuine batteries from <https://www.dell.com> or authorized Dell partners and re-sellers.

Removing the battery

Prerequisites

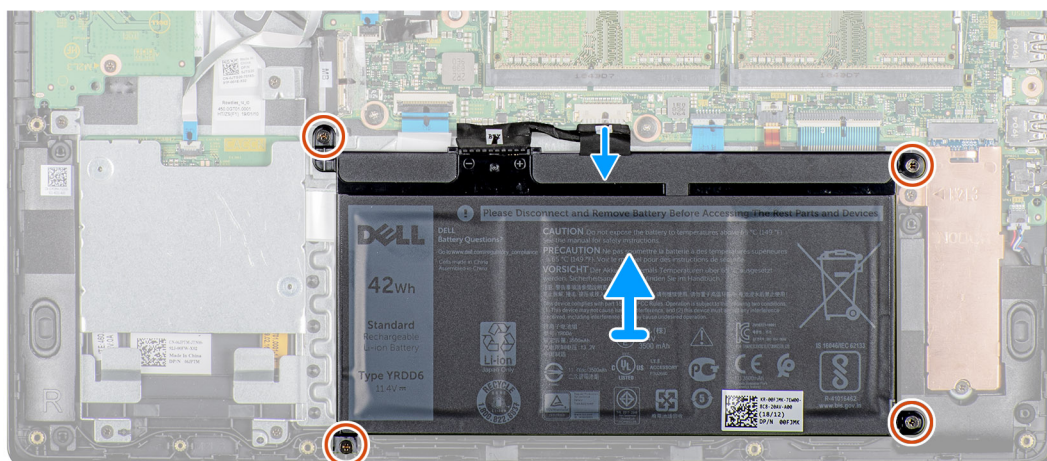
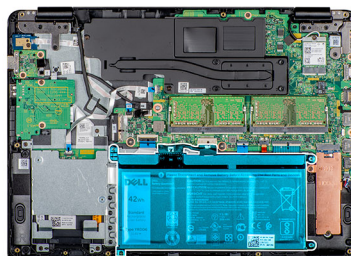
- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).

About this task

The following image indicates the location of the battery and provides a visual representation of the removal procedure:



4x
M2x3



Steps

- 1 Disconnect the battery cable from the system board.
- 2 Remove the four screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
- 3 Lift the battery off the palm-rest and keyboard assembly.

Installing the battery

Prerequisite

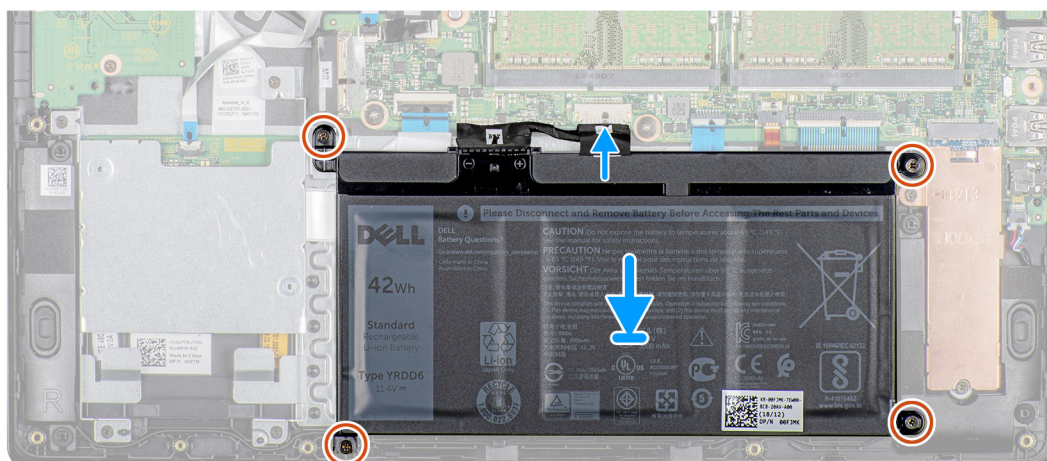
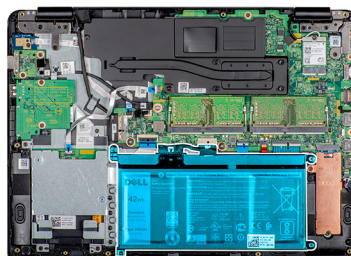
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the battery and provides a visual representation of the installation procedure:



4x
M2x3



Steps

- 1 Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
- 2 Replace the four screws (M2x4) that secure the battery to the palm-rest and keyboard assembly.
- 3 Connect the battery cable to the system board.

Next steps

- 1 Installing the [base cover](#).
- 2 Installing the [SD memory card](#).
- 3 Follow the procedure in [After working on your thin client](#).

Memory modules

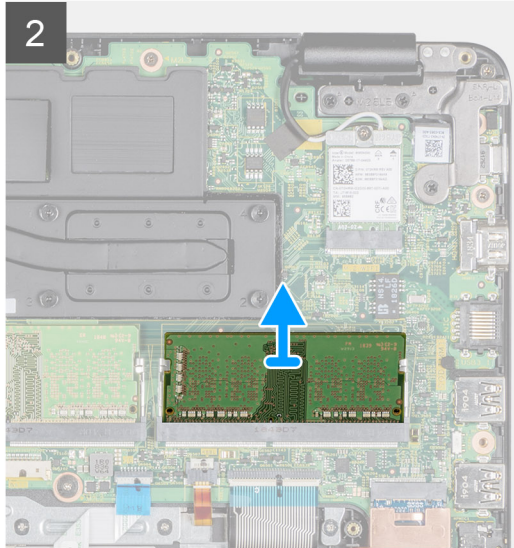
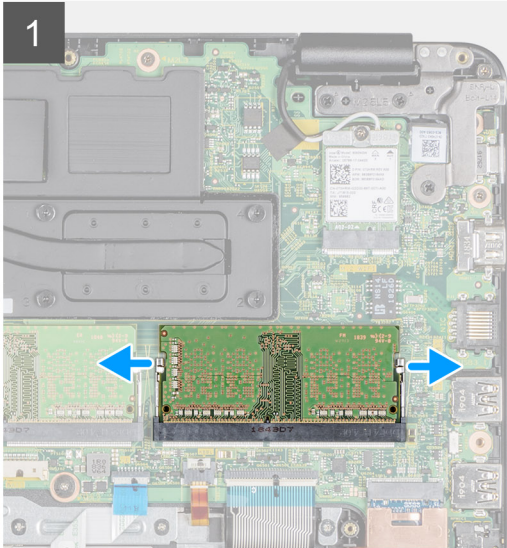
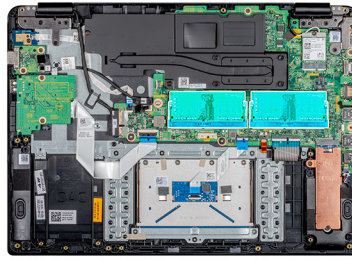
Removing the memory module

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

The following image indicates the location of the memory module and provides a visual representation of the removal procedure:



Steps

- 1 Using your finger tips gently pry the retention clips away from the memory module until the memory module pops up.
- 2 Slide and remove the memory module from the memory module slot on the system board.

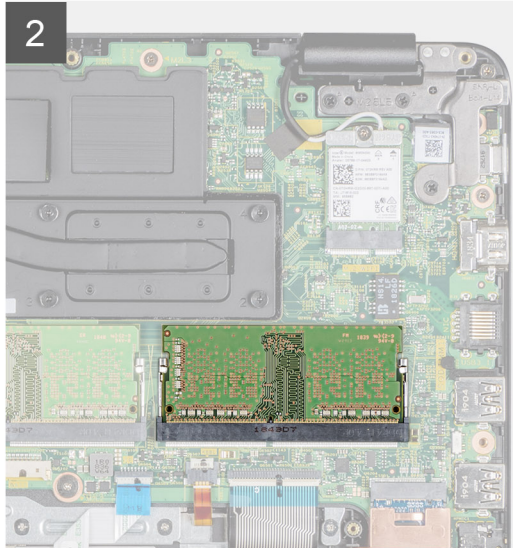
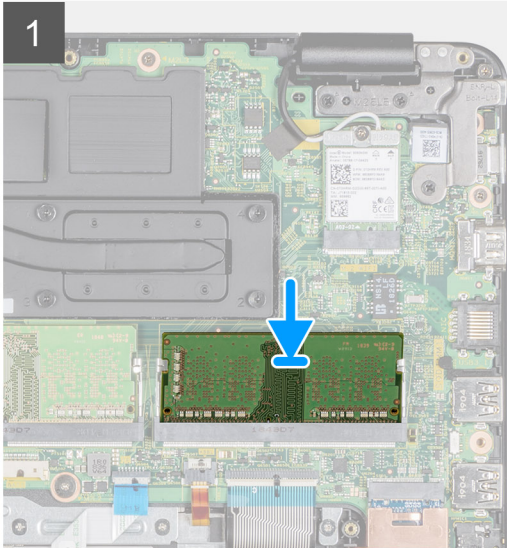
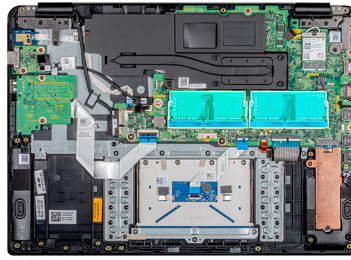
Installing the memory module

Prerequisite

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 module and provides a visual representation of the installation procedure:



Steps

- 1 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 the clips secure it.

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

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

Solid-state drive

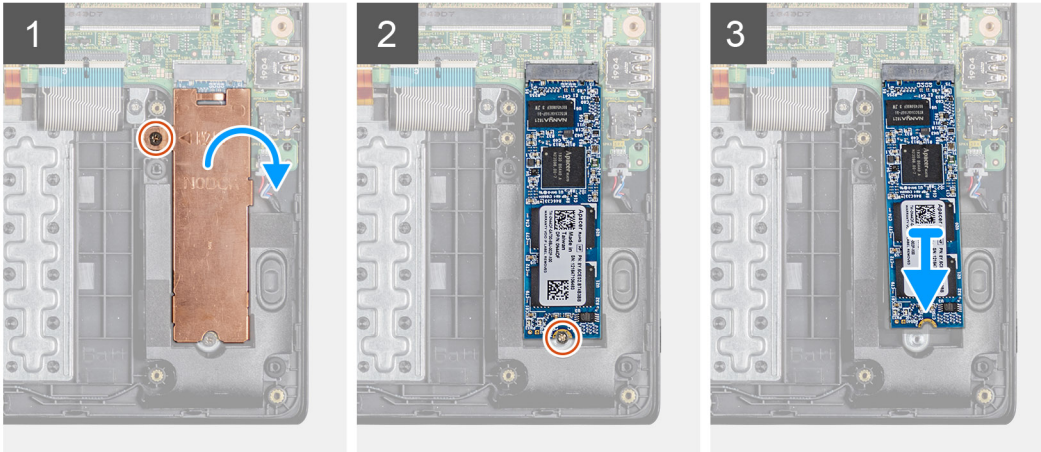
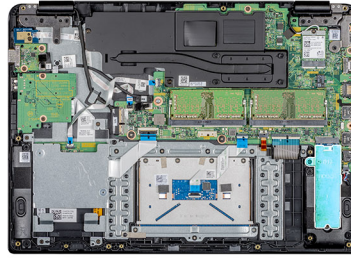
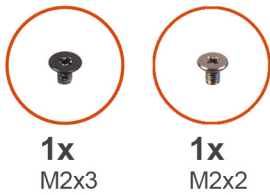
Removing the M.2 solid-state drive

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

The following image indicates the location of the M.2 solid-state drive and provides a visual representation of the removal procedure:



Steps

- 1 Remove the screw (M2x3) that secures the thermal plate to the palm-rest and keyboard assembly.
- 2 Flip the thermal plate to one side and lift it away from the thin client.
- 3 Remove the screw (M2x2) that secures the solid-state drive to the palm-rest and keyboard assembly.
- 4 Slide and remove the solid-state drive from the solid-state drive slot.

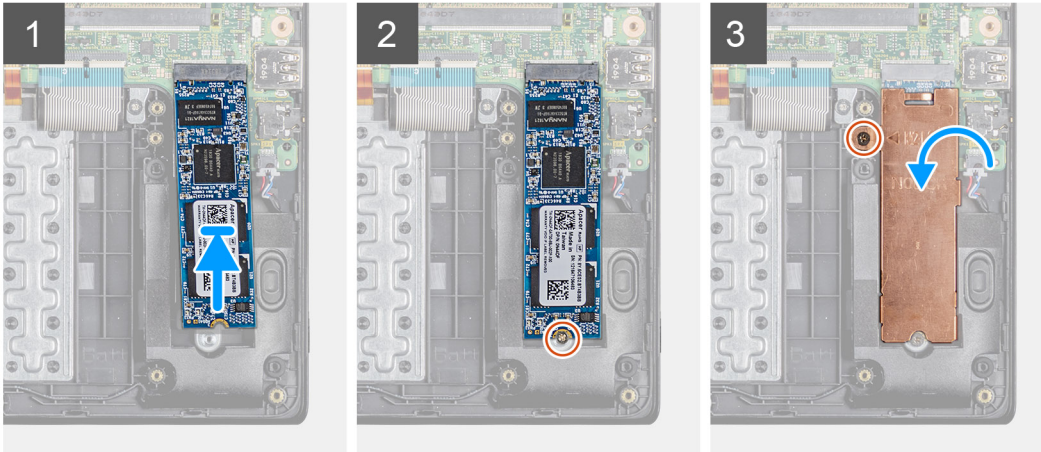
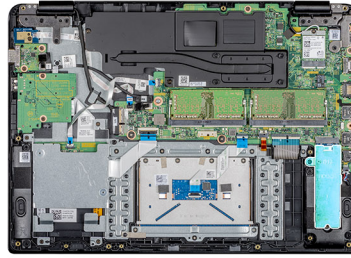
Installing the M.2 solid-state drive

Prerequisite

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 solid-state drive and provides a visual representation of the installation procedure:



Steps

- 1 Align the notch on the solid-state drive with the tab on the solid-state drive slot and insert the solid-state drive at an angle into the solid-state drive slot.
- 2 Replace the screw (M2x2) that secures the solid-state drive to the palm-rest and keyboard assembly.
- 3 Align and replace the thermal plate on the solid-state drive slot.
- 4 Replace the screw (M2x3) that secures the thermal plate to the palm-rest and keyboard assembly.

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

Speakers

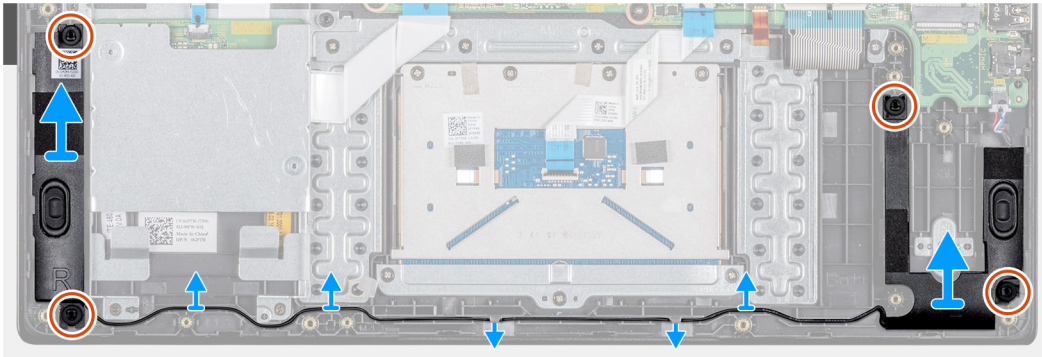
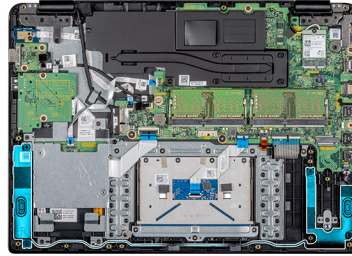
Removing the speakers

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

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



Steps

- 1 Disconnect the speaker cable from the system board.
- 2 Note the routing of the speaker cable and remove the speaker cable from the routing guides on the palm-rest and keyboard assembly.
- 3 Lift the speakers with the cable from the palm-rest and keyboard assembly.

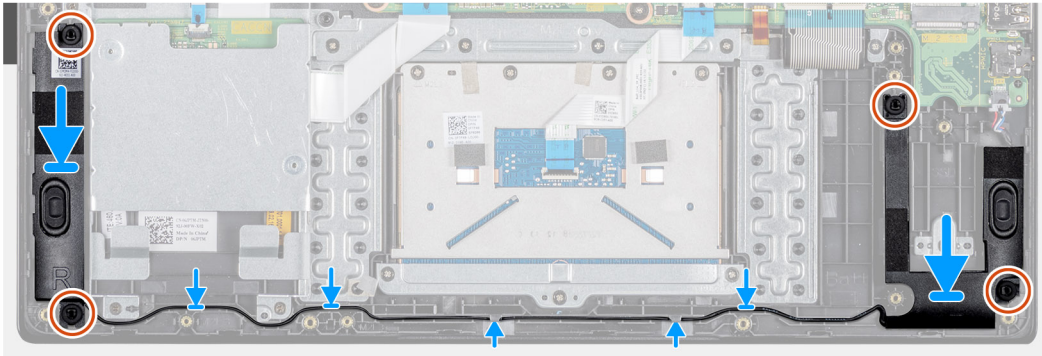
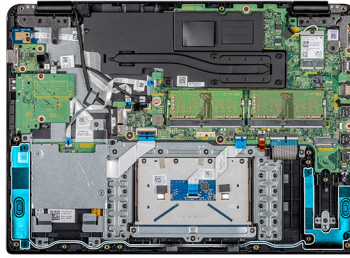
Installing the speakers

Prerequisite

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 Using the alignment posts and rubber grommets, place the speakers in the slots on the palm-rest and keyboard assembly.
- 2 Route the speaker cable through the routing guides on the palm-rest and keyboard assembly.
- 3 Connect the speaker cable to the system board.

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

CAC reader

Removing the CAC reader

Prerequisites

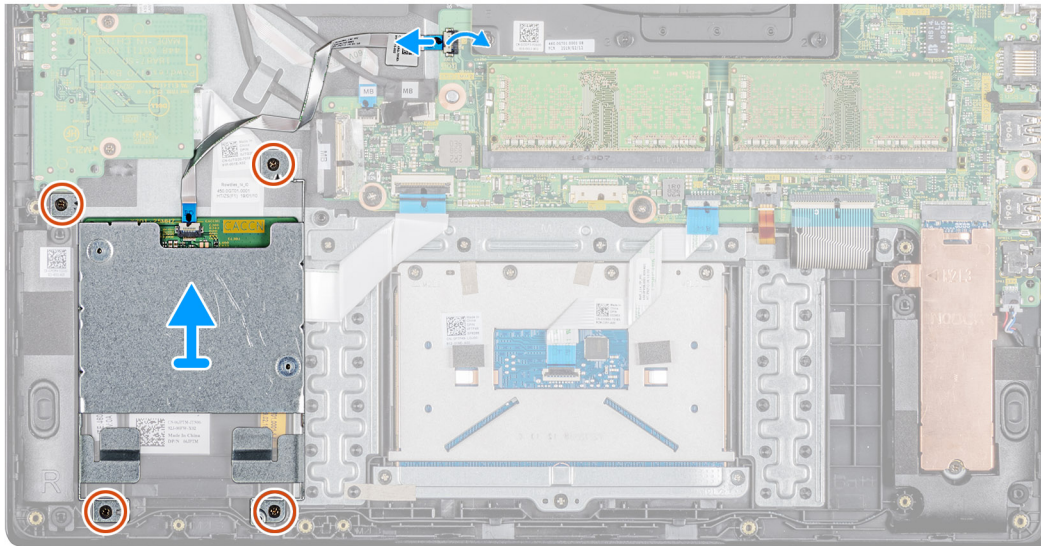
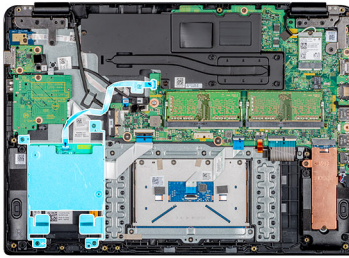
- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

The following image indicates the location of the Secure Digital card and provides a visual representation of the removal procedure:



4x
M2x3



Steps

- 1 Open the latch and disconnect the CAC reader cable from the system board.
- 2 Remove the four screws (M2x3) that secure the CAC reader to the palm-rest and keyboard assembly.
- 3 Lift the CAC reader from the palm-rest and keyboard assembly.

Installing the CAC reader

Prerequisite

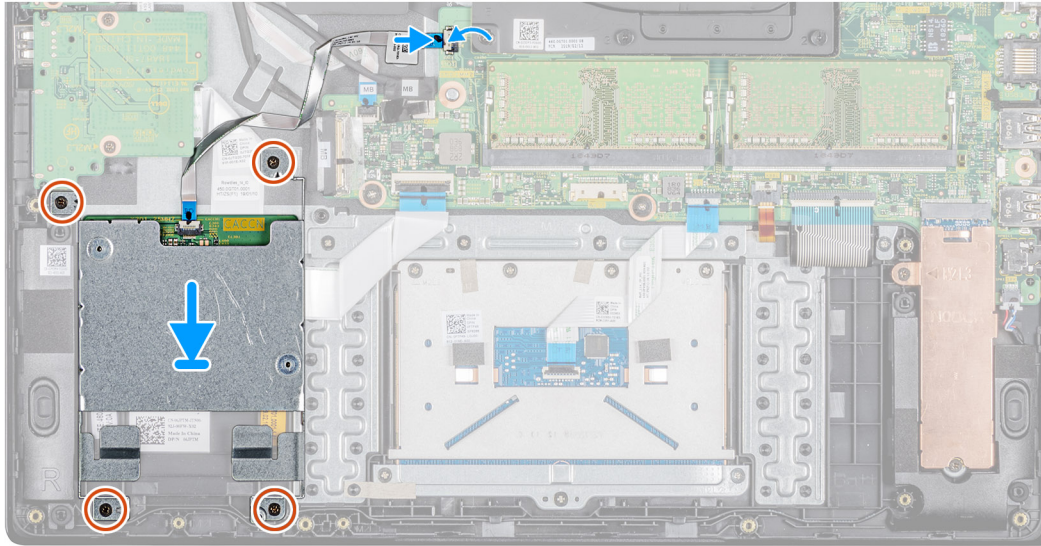
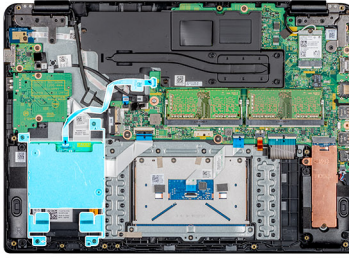
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the CAC reader and provides a visual representation of the installation procedure:



4x
M2x3



Steps

- 1 Align the screw holes on the CAC reader with the screw holes on the palm-rest and keyboard assembly.
- 2 Replace the four screws (M2x4) that secure the CAC reader to the palm-rest and keyboard assembly.
- 3 Slide the CAC reader cable to the respective port on the system board and close the latch to secure the cable.

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

WLAN card

Removing the WLAN card

Prerequisites

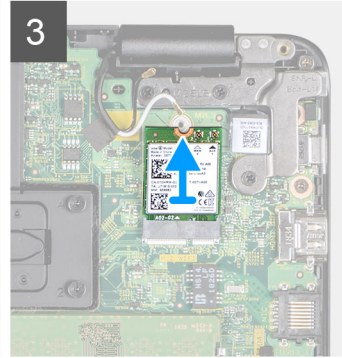
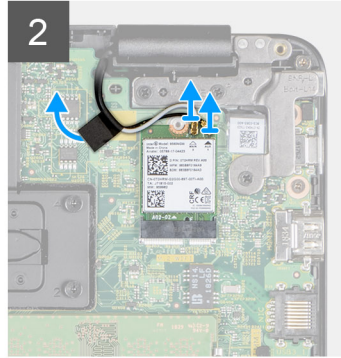
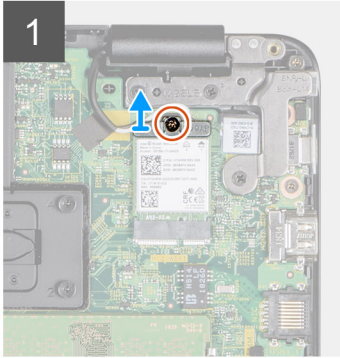
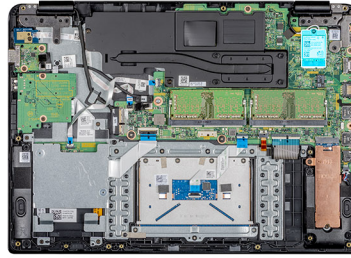
- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

The following image indicates the location of the WLAN card and provides a visual representation of the removal procedure:



1x
M2x3



Steps

- 1 Remove the screw (M2x3) that secures the WLAN card bracket to the system board.
- 2 Disconnect the antenna cables from the connectors on the WLAN card.
- 3 Peel off the tape that secures the antenna cables to the system board.
- 4 Lift and remove the WLAN card bracket that secures the antenna cables.
- 5 Slide and remove the WLAN card from the WLAN slot.

Installing the WLAN card

Prerequisite

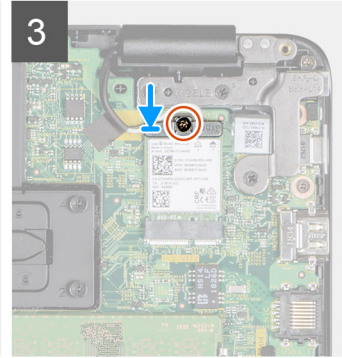
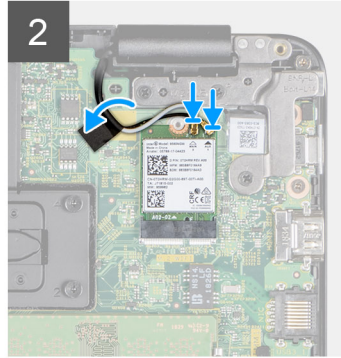
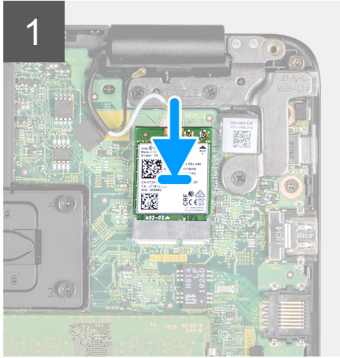
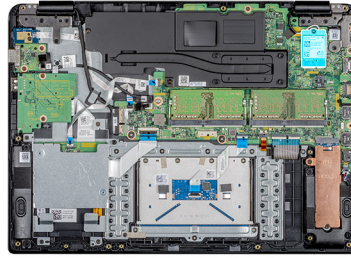
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the WLAN card and provides a visual representation of the installation procedure:



1x
M2x3



Steps

- 1 Align the notch on the WLAN card with the tab on the WLAN card slot and insert the WLAN card at an angle into the WLAN card slot.
- 2 Connect the antenna cables to the WLAN card.
- 3 Adhere the tape that secures the antenna cables to the system board.
- 4 Align and place the WLAN card bracket on the WLAN card.
- 5 Replace the screw (M2x3) to secure the WLAN card bracket to the WLAN card

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

IO board

Removing the IO board

Prerequisites

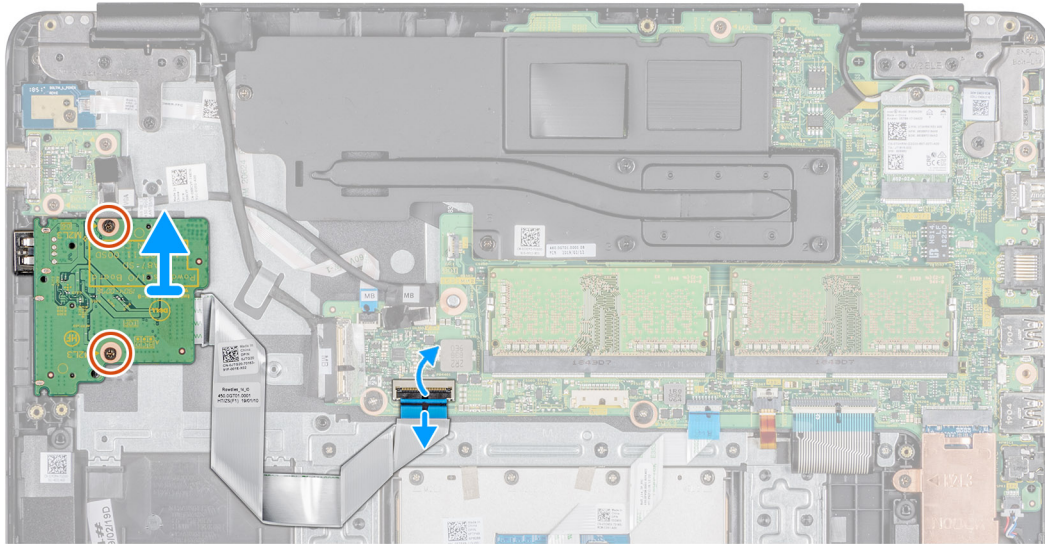
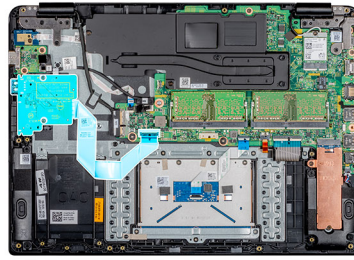
- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [CAC reader](#).

About this task

The following image indicates the location of the I/O board and provides a visual representation of the removal procedure:



2x
M2x3



Steps

- 1 Open the latch and disconnect the I/O board cable from the system board.
- 2 Peel the I/O-board cable from the palm-rest and keyboard assembly.
- 3 Remove the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
- 4 Lift the I/O board with the cable from the palm-rest and keyboard assembly.

Installing the IO board

Prerequisite

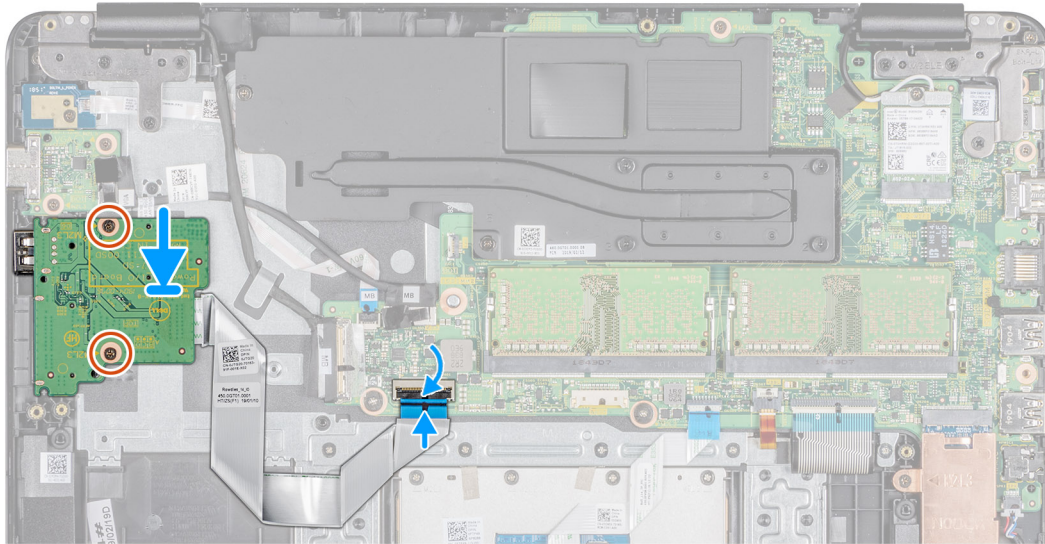
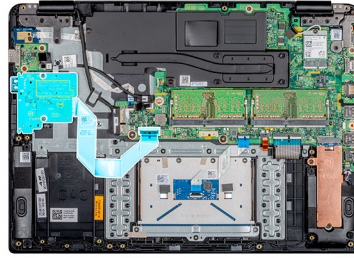
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



2x
M2x3



Steps

- 1 Using the alignment posts, place the I/O board on the palm-rest and keyboard assembly.
- 2 Replace the two screws (M2x3) that secure the I/O board to the palm-rest and keyboard assembly.
- 3 Adhere the I/O board cable to the palm-rest and keyboard assembly.
- 4 Connect the I/O board cable to the system board and close the latch to secure the cable.

Next steps

- 1 Installing the [CAC reader](#).
- 2 Installing the [battery](#).
- 3 Installing the [base cover](#).
- 4 Installing the [SD memory card](#).
- 5 Follow the procedure in [After working on your thin client](#).

Coin-cell battery

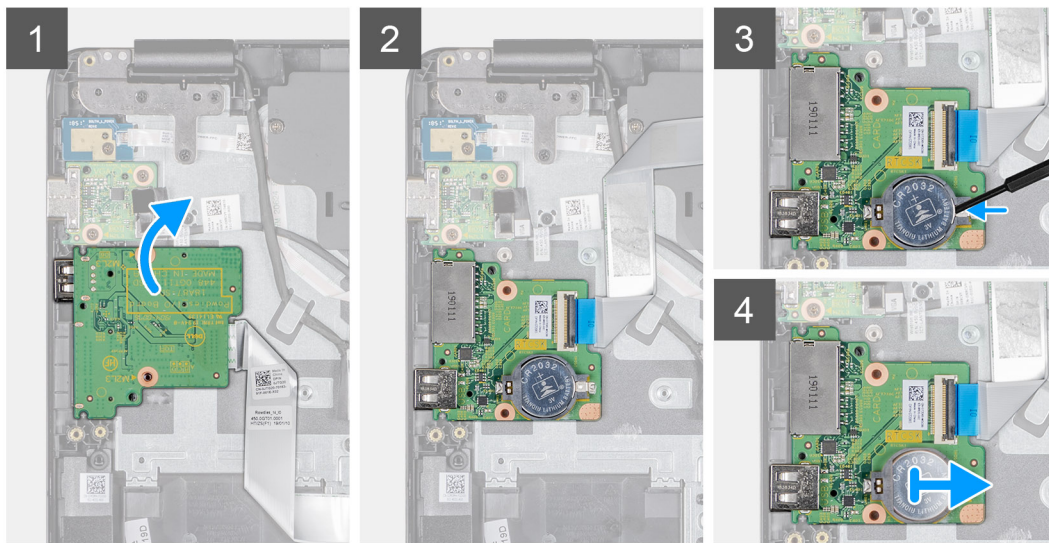
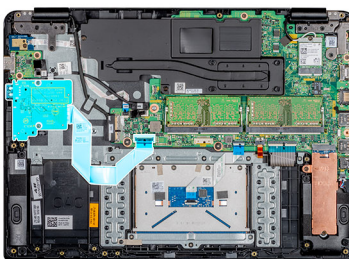
Removing the coin-cell battery

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Replacing the [SD memory card](#).
- 3 Replacing the [base cover](#).
- 4 Replacing the [battery](#).
- 5 Replacing the [CAC reader](#).
- 6 Replacing the [I/O board](#).

About this task

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



Steps

- 1 Flip the I/O board.
- 2 Using a plastic scribe, gently pry the coin-cell battery out of the slot on the I/O board.
- 3 Remove the coin-cell battery from the thin client.

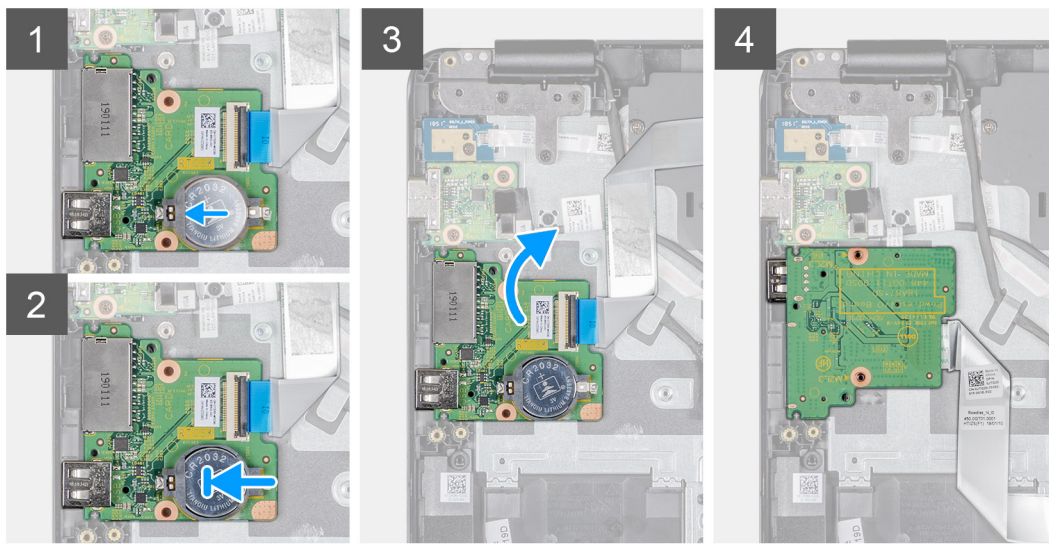
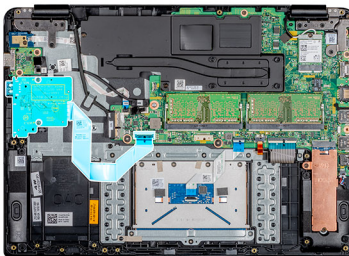
Installing the coin-cell battery

Prerequisite

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 With the positive-side facing up, insert the coin-cell battery into the battery socket on the I/O board.
- 2 Press the battery until it clicks into place.

Next steps

- 1 Installing the [I/O board](#).
- 2 Installing the [CAC reader](#).
- 3 Installing the [battery](#).
- 4 Installing the [base cover](#).
- 5 Installing the [SD memory card](#).
- 6 Follow the procedure in [After working on your thin client](#).

Touch pad

Removing the touch pad assembly

Prerequisites

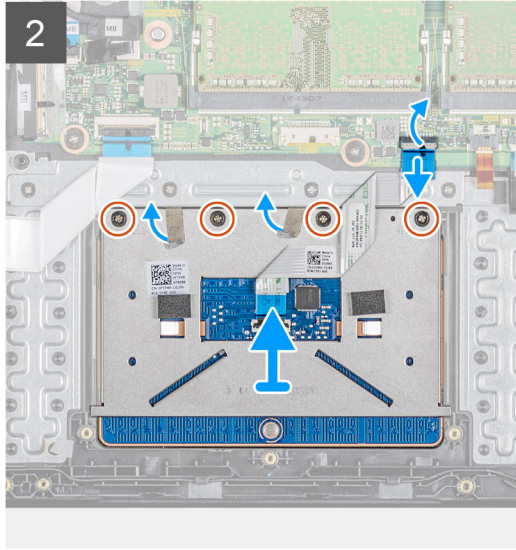
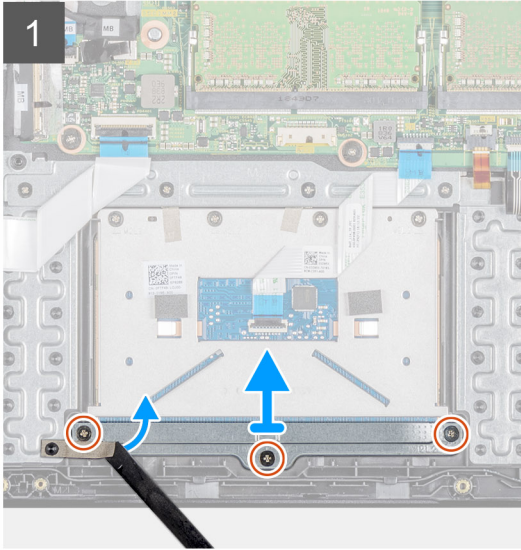
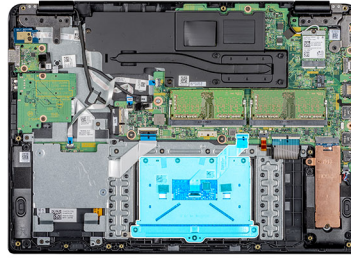
- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

The following image indicates the location of the touch pad assembly and provides a visual representation of the removal procedure:



7x
M2x2



Steps

- 1 Remove the three screws (M2x2) that secure the touch pad bracket to the palm-rest and keyboard assembly.
- 2 Peel the tape that secures the bracket.
- 3 Lift the touch pad bracket off the palm-rest and keyboard assembly.
- 4 Open the latch and disconnect the touch pad cable from the system board.
- 5 Peel the touch pad cable off the palm-rest and keyboard assembly
- 6 Remove the four screws (M2x2) that secure the touch pad to the palm-rest and keyboard assembly.
- 7 Peel the two tapes that secure the touch pad.
- 8 Lift the touch pad off the palm-rest and keyboard assembly.

Installing the touch pad assembly

Prerequisite

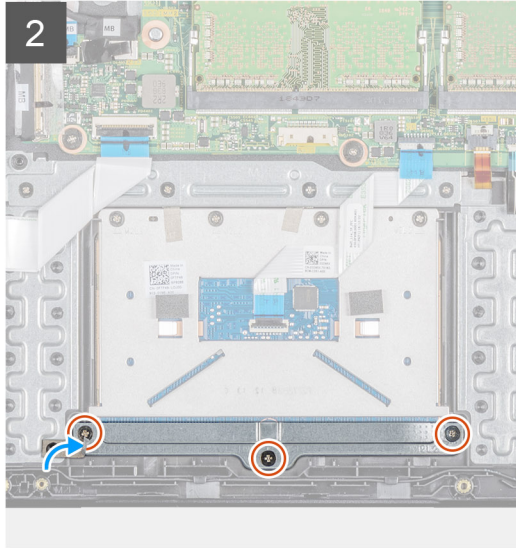
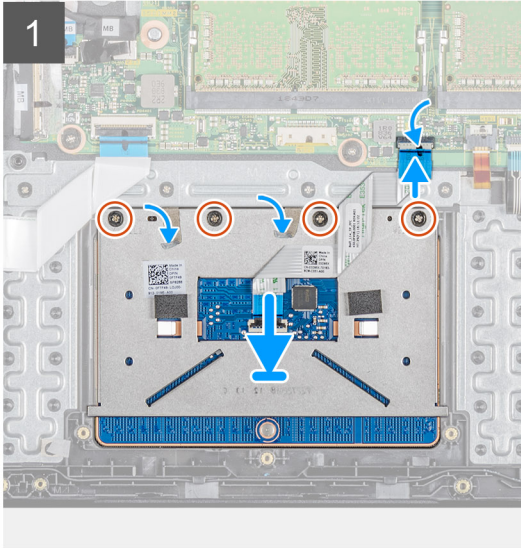
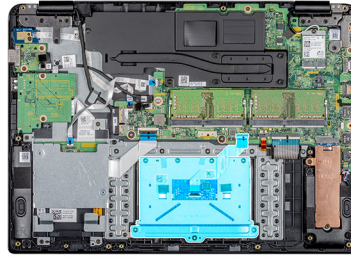
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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



7x
M2x2



Steps

- 1 Place the touch pad into the slot on the palm-rest and keyboard assembly.
- 2 Replace the four screws (M2x2) that secure the touch pad to the palm-rest and keyboard assembly.
- 3 Adhere the two tapes that secure the touch pad.
- 4 Adhere the touch pad cable on to the palm-rest and keyboard assembly.
- 5 Slide the touch pad cable into its connector on the system board and close the latch to secure the cable.
- 6 Place the touch pad bracket into the slot on the palm-rest and keyboard assembly.
- 7 Replace the three screws (M2x2) that secure the touch pad bracket to the palm-rest and keyboard assembly.
- 8 Adhere the tape that secures the bracket to the palm-rest and keyboard assembly.

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

VGA daughterboard

Removing the VGA daughterboard

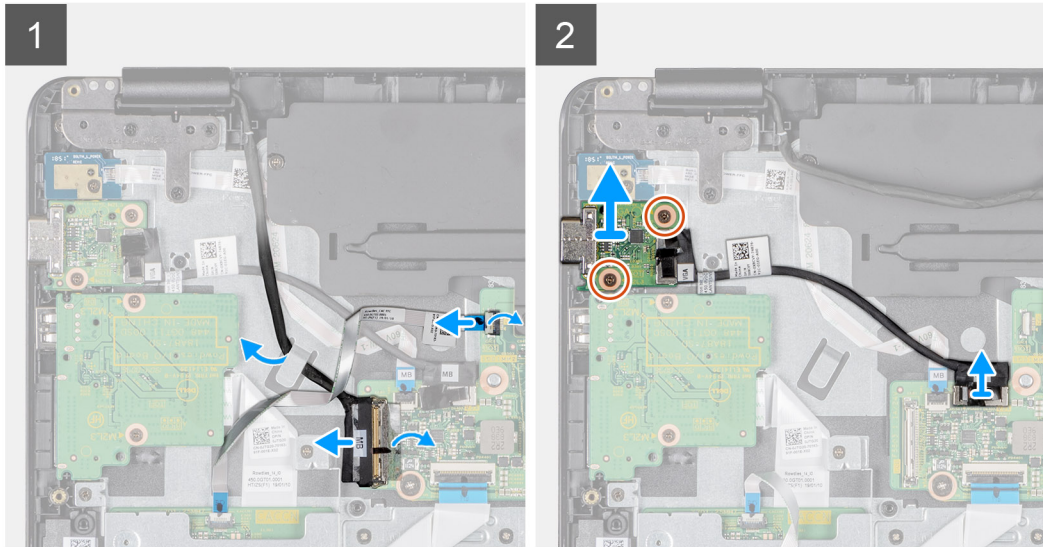
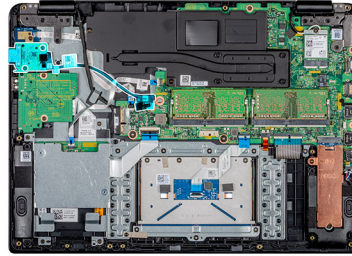
Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).

- 4 Removing the [battery](#).

About this task

The following image indicates the location of the VGA daughterboard and provides a visual representation of the removal procedure:



Steps

- 1 Open the latch and disconnect the CAC reader cable from the system board.
- 2 Disconnect the display cable from the system board.
- 3 Disconnect the VGA daughterboard cable from the system board.
- 4 Remove the two screws (M2x3) that secure the VGA daughterboard to the palm-rest and keyboard assembly.
- 5 Lift the VGA daughterboard away from the system.

Installing the VGA daughterboard

Prerequisite

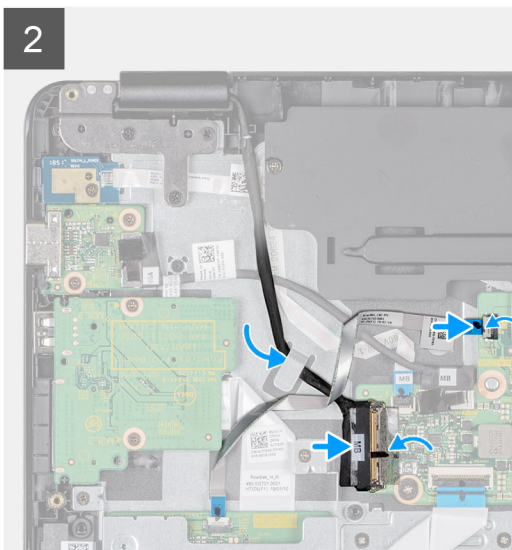
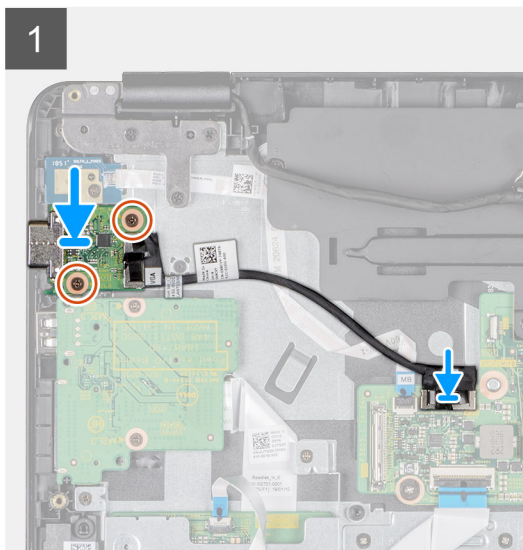
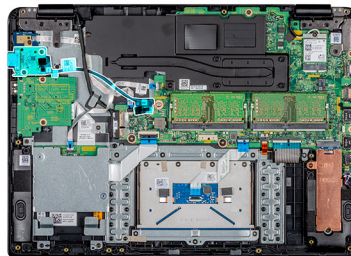
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the VGA daughterboard and provides a visual representation of the installation procedure:



2x
M2x3



Steps

- 1 Align the screw holes on the VGA daughterboard with the screw holes on the palm-rest and keyboard assembly.
- 2 Replace the two screws (M2x3) that secure the VGA daughterboard on the palm-rest and keyboard assembly.
- 3 Connect the VGA board cable to the system board.
- 4 Route the display cable through the routing guide.
- 5 Connect the display cable to the system board.
- 6 Slide the CAC reader cable to the respective port on the system board and close the latch to secure the cable.

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

Display assembly

Removing the display assembly

Prerequisites

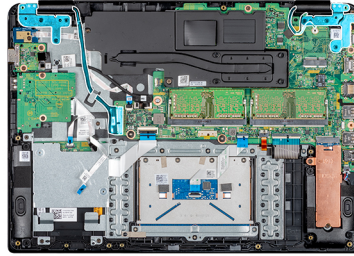
- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [WLAN](#).

About this task

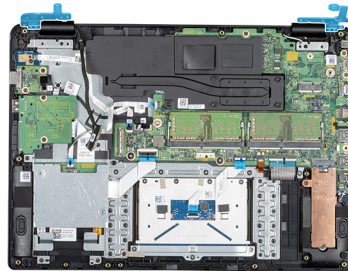
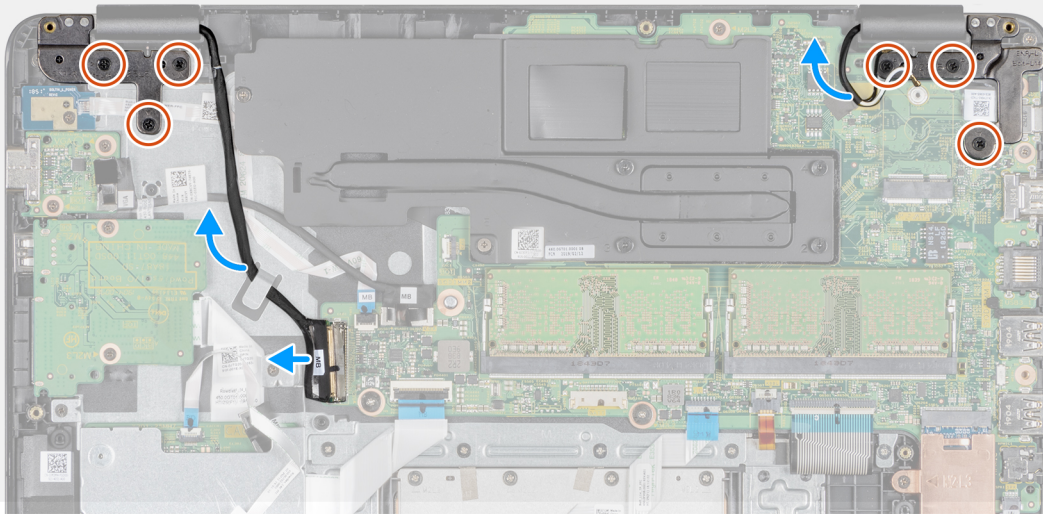
The following images indicate the location of the display assembly and provide a visual representation of the removal procedure:



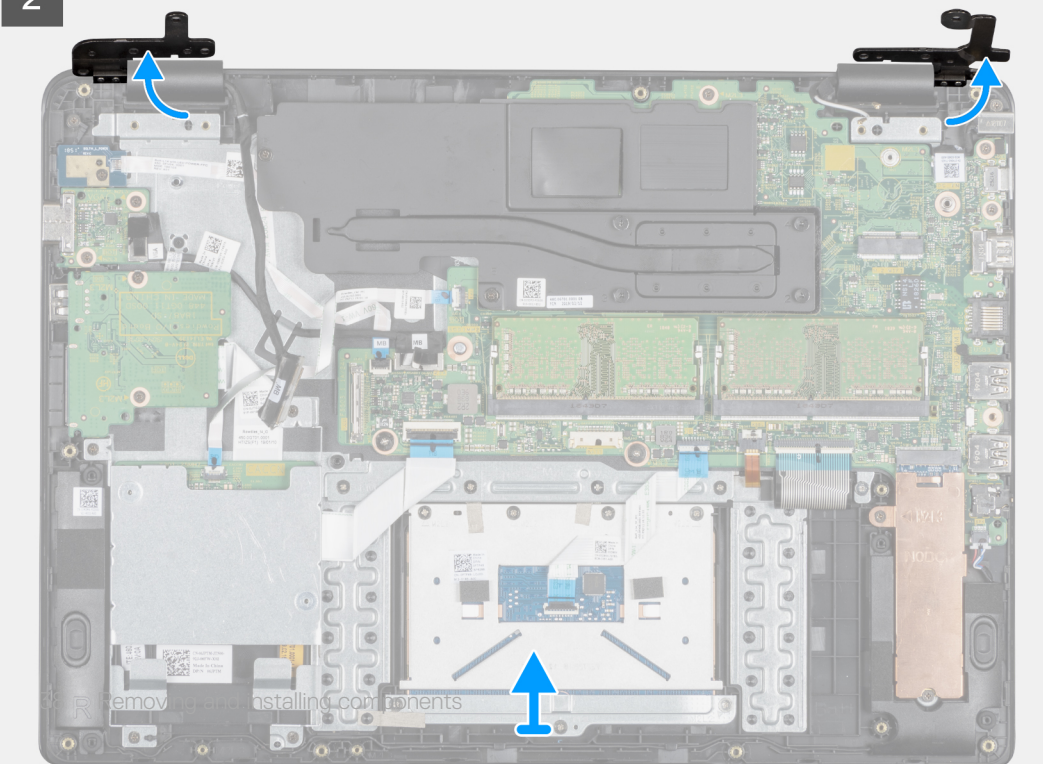
6x
M2.5x5

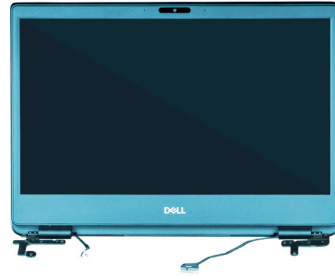


1



2





3



Steps

- 1 Peel the tape that secures the display cable.
 - 2 Open the latch and disconnect the display cable.
 - 3 Remove the display cable from the routing guides on the palm-rest and keyboard assembly.
 - 4 Peel the tape that secures the antenna cables to the palm-rest and keyboard assembly.
 - 5 Remove the six screws (M2.5x5) that secure the left and right hinges to the system board, and the palm-rest and keyboard assembly.
 - 6 Peel off the tape securing the wireless antenna, and disconnect the antennas from the system board.
 - 7 Disconnect the display cable from the connector on the system board.
 - 8 Lift the palm-rest and keyboard assembly at an angle.
 - 9 Lift the hinges to release the palm-rest and keyboard assembly off the display assembly.
 - 10 Slide and remove the palm-rest and keyboard assembly off the display assembly.
- After performing all the preceding steps, you are left with display assembly.

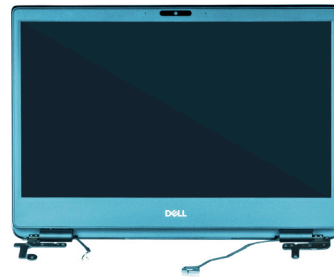
Installing the display assembly

Prerequisite

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

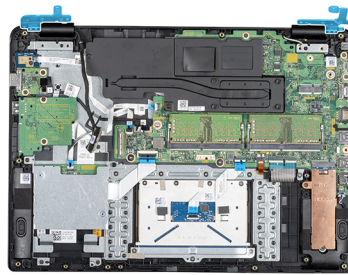
About this task

The following images indicate the location of the display assembly and provide a visual representation of the installation: procedure:

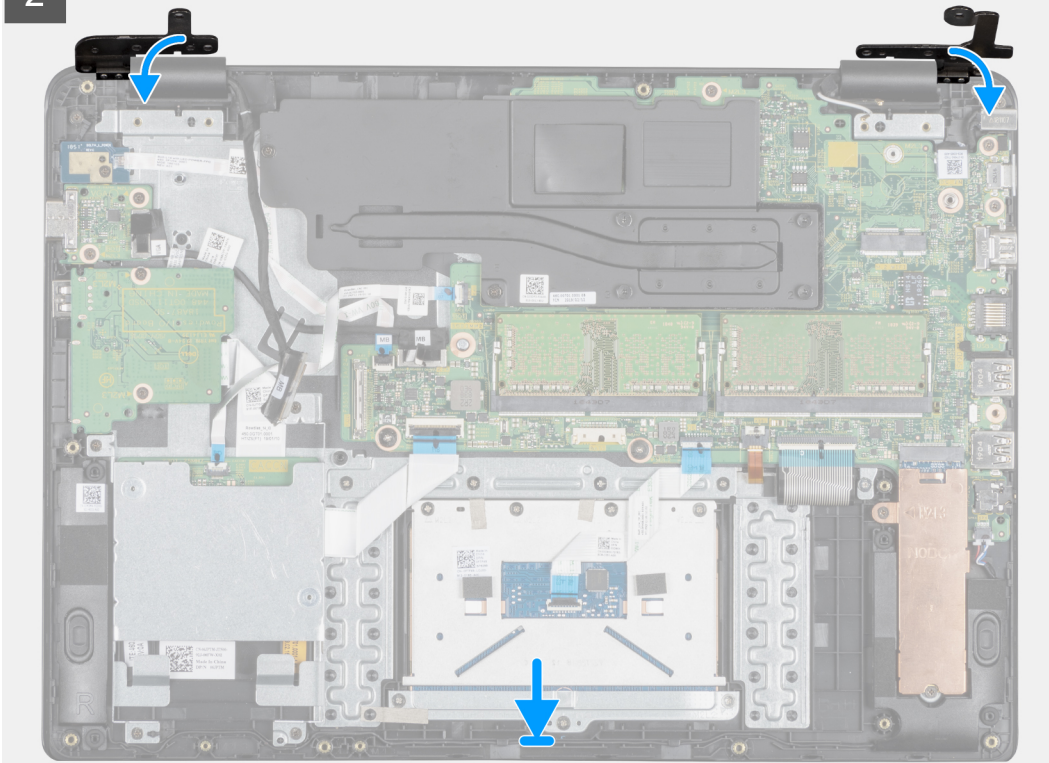


1

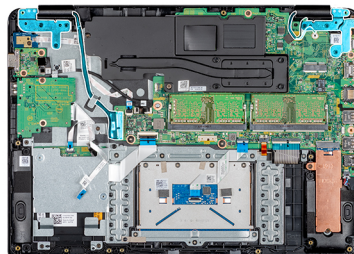




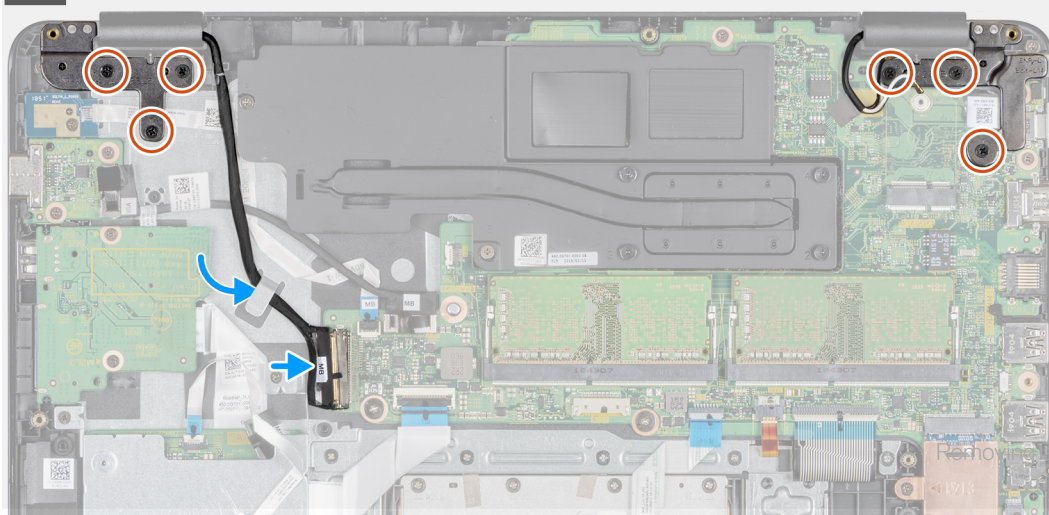
2



6x
M2.5x5



3



Remove and installing components

Steps

- 1 Align and place the palm-rest and keyboard assembly under the hinges on the display assembly.
- 2 Press the hinges down on the system board, and palm-rest and keyboard assembly.
- 3 Seat the palm-rest and keyboard assembly on the display assembly.
- 4 Replace the six screws (M2.5x5) that secure the left and right hinges to the system board, and palm-rest and keyboard assembly.
- 5 Route the display cable through the routing guides on the palm-rest and keyboard assembly.
- 6 Connect the display cable to the connector on the system board.
- 7 Close the latch to secure the cable.
- 8 Adhere the tape that secures the display cable to the system board.

Next steps

- 1 Installing the [WLAN](#).
- 2 Installing the [battery](#).
- 3 Installing the [base cover](#).
- 4 Installing the [SD memory card](#).
- 5 Follow the procedure in [After working on your thin client](#).

Power-button board

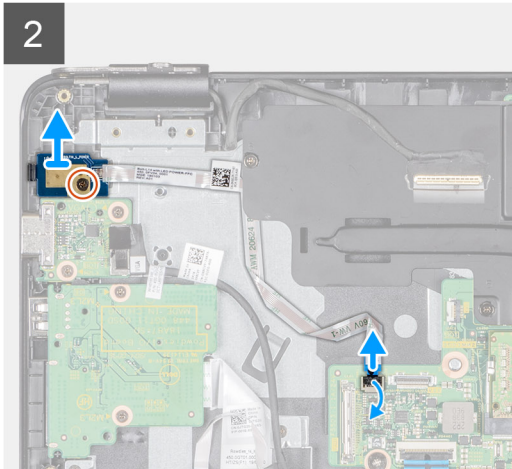
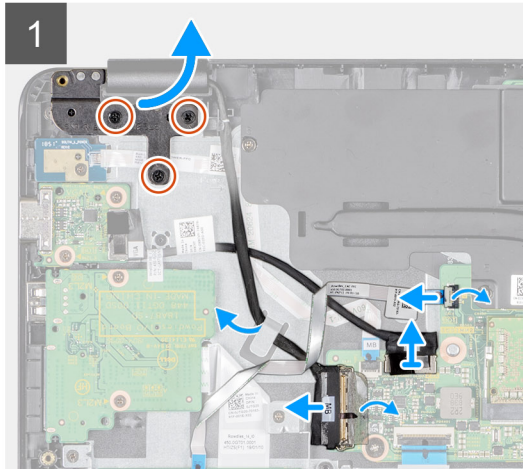
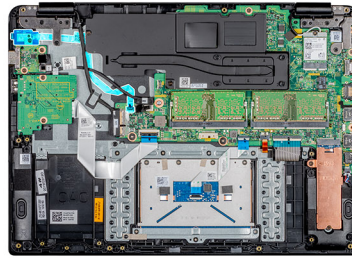
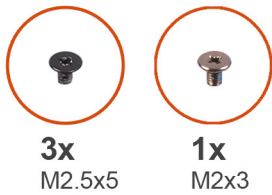
Removing the power button board

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

The following image indicates the location of the power button and provides a visual representation of the removal procedure:



Steps

- 1 Remove the three screws (M2.5x5) that connects the left hinge to the keyboard and palm-rest assembly.
- 2 Lift the left hinge from the palm-rest and keyboard assembly.
- 3 Open the latch and disconnect the CAC reader cable from the system board.
- 4 Open the latch and disconnect the VGA daughterboard cable from the system board.
- 5 Peel the tape that secures the display cable to the system board.
- 6 Open the latch and disconnect the display cable from the system board.
- 7 Remove the display cable from the routing guide.
- 8 Open the latch and disconnect the power button board cable from the system board.
- 9 Remove the screw (M2x3) that secures the power button board to the palm-rest and keyboard assembly.
- 10 Peel the power button cable off the palm-rest and keyboard assembly.
- 11 Lift the power button board with the cable from the palm-rest and keyboard assembly.

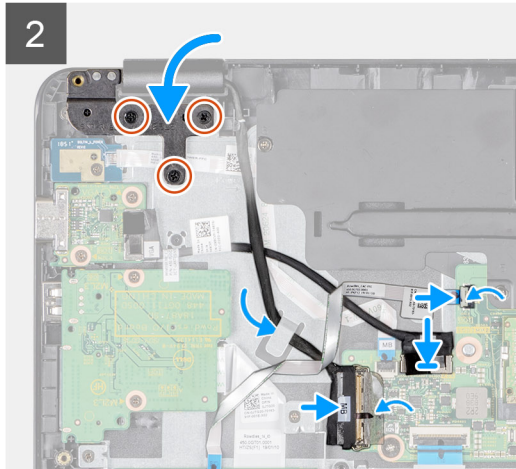
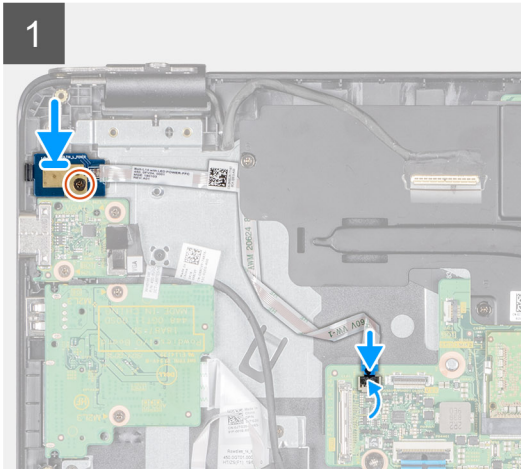
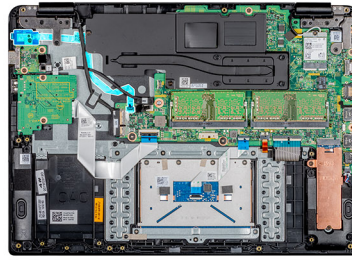
Installing the power button board

Prerequisite

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 into the slot on the palm-rest and keyboard assembly.
- 2 Replace the screw (M2x3) that secures the power button board to the palm-rest and keyboard assembly.
- 3 Adhere the power button cable to the palm-rest and keyboard assembly.
- 4 Slide the power button cable to the system board and close the latch to secure the cable.
- 5 Route the display cable through the routing guide.
- 6 Connect the display cable to the system board and close the latch to secure the cable.
- 7 Adhere the tape that secures the display cable to the system board.
- 8 Connect the VGA daughterboard cable to the system board and close the latch to secure the cable.
- 9 Slide the CAC reader cable to the respective port on the system board and close the latch to secure the cable.
- 10 Press the left hinge to the palm-rest and keyboard assembly.
- 11 Replace the three screws (M2.5x5) that connect the left hinge to the keyboard and palm-rest assembly.

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

Heat sink

Removing the heat sink

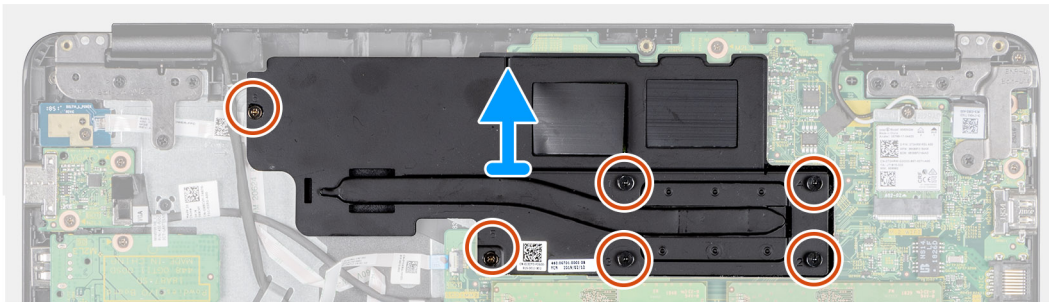
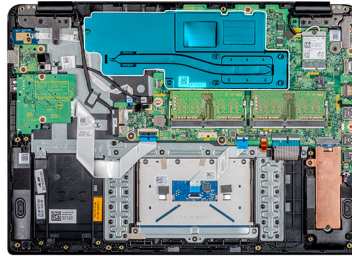
Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).

- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).

About this task

The following image indicates the location of the heat sink and provides a visual representation of the removal procedure:



Steps

- 1 In the reverse sequential order (6, 5, 4, 3, 2, 1), loosen the six captive screws (M2x3) that secure the heat sink to the system board.
- 2 Carefully lift the heat sink and place it away from the system.

Installing the heat sink

Prerequisite

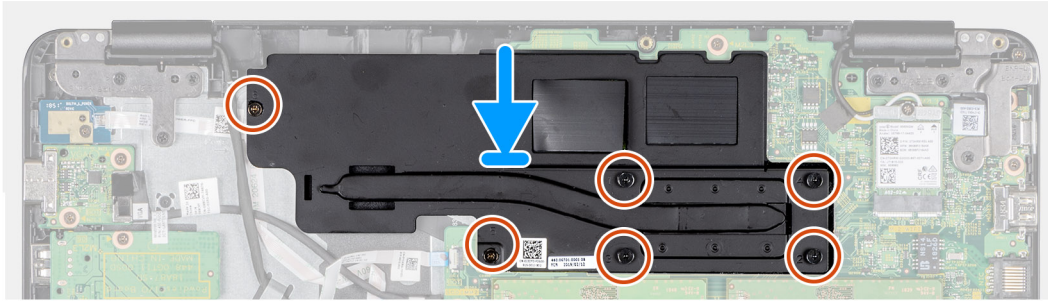
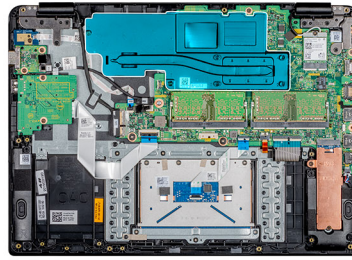
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the heat sink and provides a visual representation of the installation:



6x
M2x3



Steps

- 1 Carefully align the screws with the holes and place the heat sink on the system board.
- 2 In sequential order as indicated on the heat sink, tighten the six captive screws (M2x3) that secure the heat sink to the system board.

Next steps

- 1 Installing the [battery](#).
- 2 Installing the [base cover](#).
- 3 Installing the [SD memory card](#).
- 4 Follow the procedure in [After working on your thin client](#).

System board

Removing the system board

Prerequisites

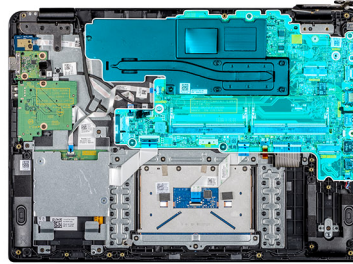
- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [WLAN](#).
- 6 Removing the [Memory](#).
- 7 Removing the [SSD](#).

About this task

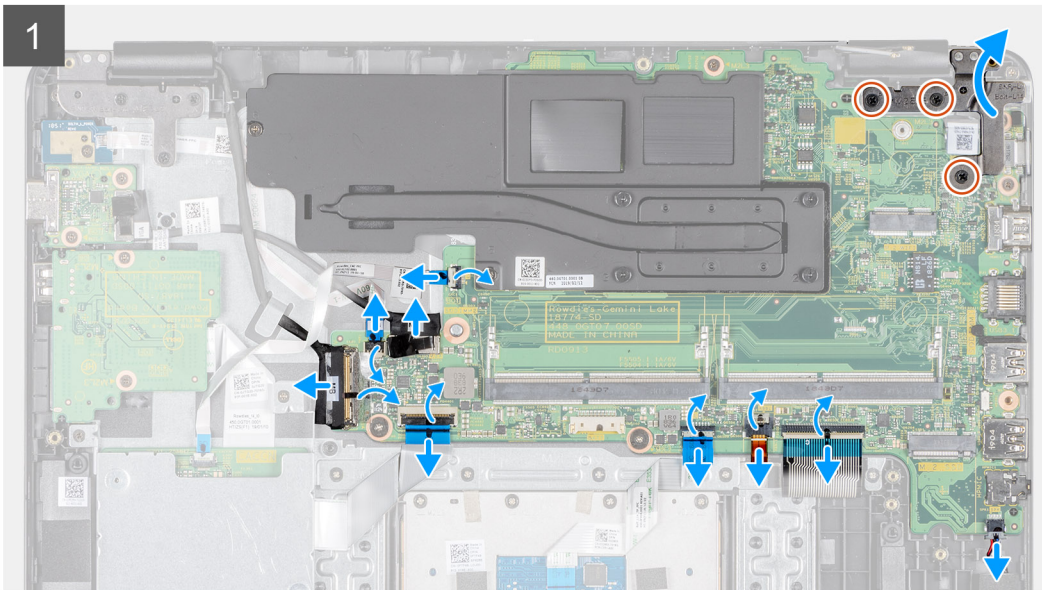
The following image indicates the location of the system board and provides a visual representation of the removal procedure:



3x
M2.5x5



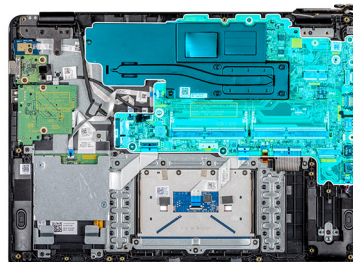
1



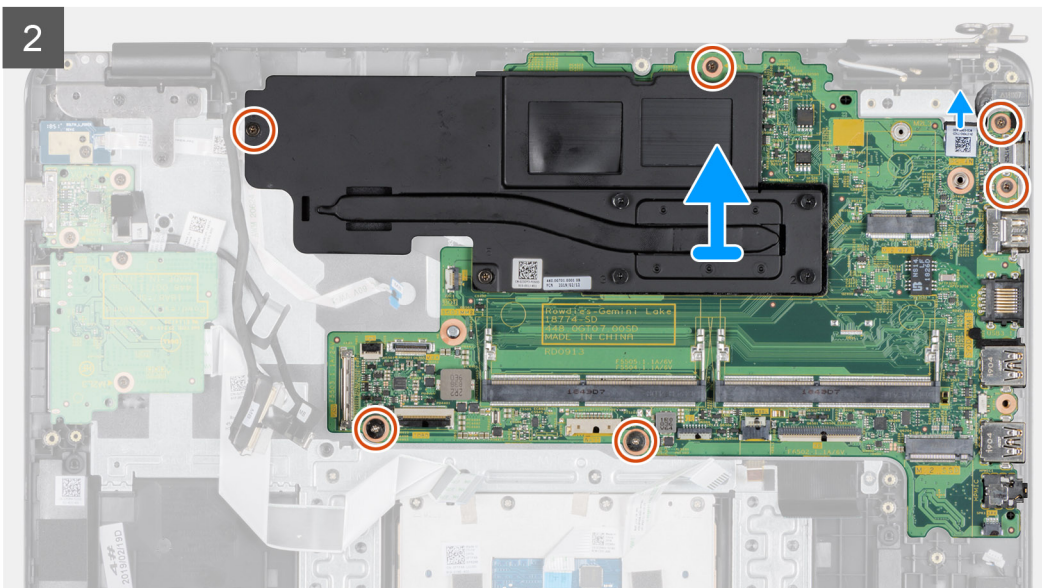
4x
M2x3



2x
M2x2



2



Steps

- 1 Disconnect the speaker cable from the system board.
- 2 Open the latch and disconnect the CAC reader cable from the system board.
- 3 Open the latch and disconnect the power button board cable from the system board.
- 4 Disconnect the VGA daughterboard cable from the system board.
- 5 Peel the tape, open the latch, and disconnect the display cable from the system board.
- 6 Open the latch and disconnect the I/O board cable from the system board.
- 7 Open the latch and disconnect the touch pad cable from the system board.
- 8 Open the latch and disconnect the keyboard cable from the system board.
- 9 Open the latch and disconnect the keyboard-backlight cable from the system board.
- 10 Remove the three (M2.5x5) screws that secure the right hinge to the system board, and palm-rest and keyboard assembly.
- 11 Lift the right hinge from the system board, and palm-rest and keyboard assembly.
- 12 Open the latch and disconnect the power adapter cable from the system board.
- 13 Remove the five screws (three M2x3 and two M2x2) that secures the system board to the palm-rest and keyboard assembly.
- 14 Loosen the captive screw (M2x3) that is marked as 6 on the heat sink.
- 15 Lift the system board with the heat sink off the palm-rest and keyboard assembly.

Next step

 **NOTE:** To remove the heat sink from the system board, see [Removing the heat sink](#).

Installing the system board

Prerequisite

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

 **NOTE:** To install the heat sink on to the system board, see [Installing the heat sink](#).

About this task

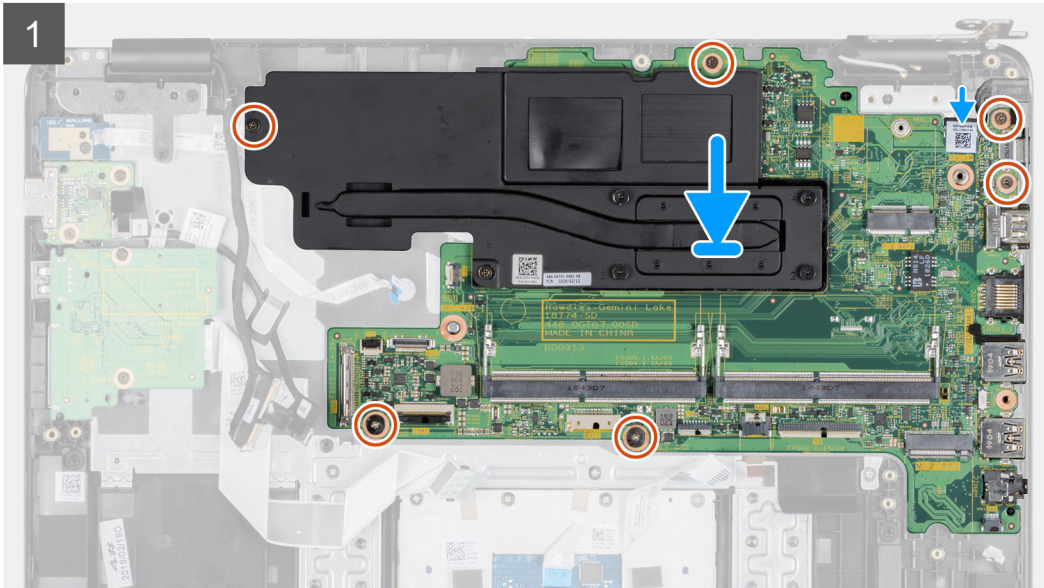
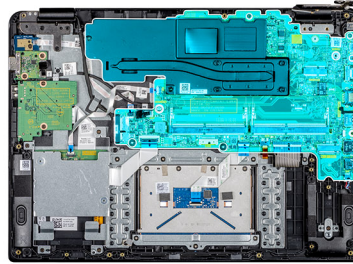
The following image indicates the location of the system board and provides a visual representation of the installation procedure:



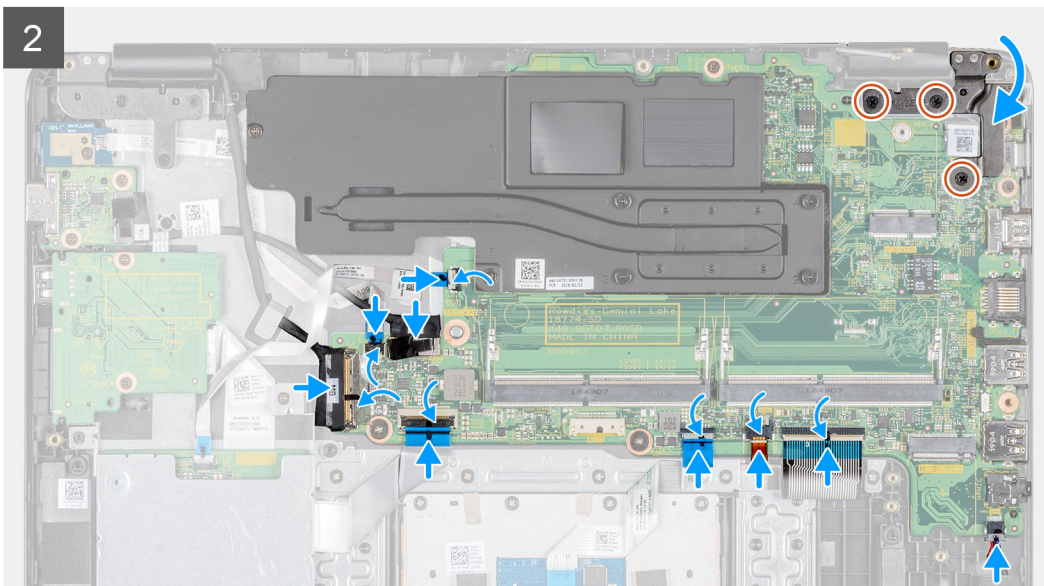
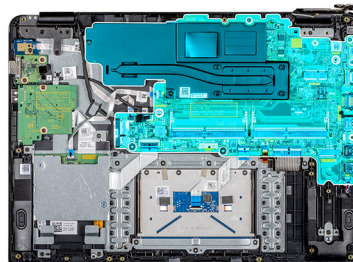
4x
M2x3



2x
M2x2



3x
M2.5x5



Steps

- 1 Align the screw hole on the system board with the screw hole on the palm-rest and keyboard assembly.
- 2 Tighten the captive screw (M2x3) that is marked as 6 on the heat sink.
- 3 Replace the five screws (three M2x3 and two M2x2) that secures the system board to the palm-rest and keyboard assembly.
- 4 Press the right hinge gently to the system board, and palm-rest and keyboard assembly.
- 5 Replace the three (M2.5x5) screws that secure the right hinge to the system board, and palm-rest and keyboard assembly.
- 6 Slide the power adapter cable in to the DC in port on the system board and close the latch to secure the cable.
- 7 Slide the keyboard cable in to the keyboard cable port on the system board and close the latch to secure the cable.
- 8 Slide the keyboard-backlight cable into the keyboard-backlight cable port on the system board and close the latch to secure the cable.
- 9 Slide the touch pad cable in to the touch pad cable port on the system board and close the latch to secure the cable.
- 10 Slide the I/O board cable in to the I/O board cable port on the system board and close the latch to secure the cable.
- 11 Connect the display cable on to the system board, close the latch, and adhere the tape.
- 12 Slide the VGA daughterboard cable in to the VGA daughterboard cable port on the system board and close the latch to secure the cable.
- 13 Slide the power button board cable in to the power button board cable port on the system board and close the latch to secure the cable.
- 14 Slide the CAC reader cable in to the CAC reader cable port on the system board and close the latch to secure the cable.
- 15 Connect the speaker cable to the speaker cable port on the system board.

Next steps

- 1 Installing the [SSD](#).
- 2 Installing the [Memory](#).
- 3 Installing the [WLAN](#).
- 4 Installing the [battery](#).
- 5 Installing the [base cover](#).
- 6 Installing the [SD memory card](#).
- 7 Follow the procedure in [After working on your thin client](#).

Power-adapter port

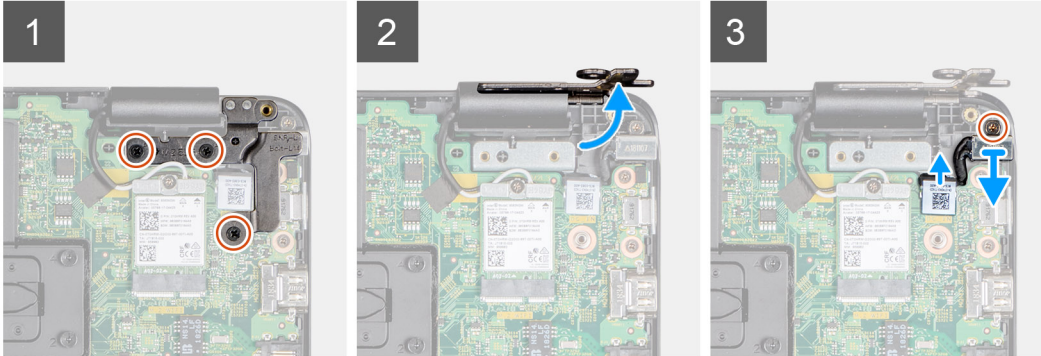
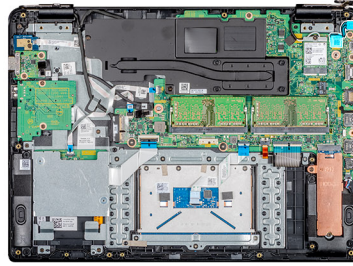
Removing the power adapter port

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [WLAN](#).

About this task

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



Steps

- 1 Remove the three screws (M2.5x5) that secure the right hinge to the system board, and palm-rest and keyboard assembly.
- 2 Lift the right hinge from the system board, and the palm-rest and keyboard assembly.
- 3 Disconnect the power adapter cable from the system board.
- 4 Remove the power adapter cable from the routing guide.
- 5 Remove the screw (M2x3) that secures the power adapter port to the palm-rest and keyboard assembly.
- 6 Lift the power adapter port with the cable from the palm-rest and keyboard assembly.

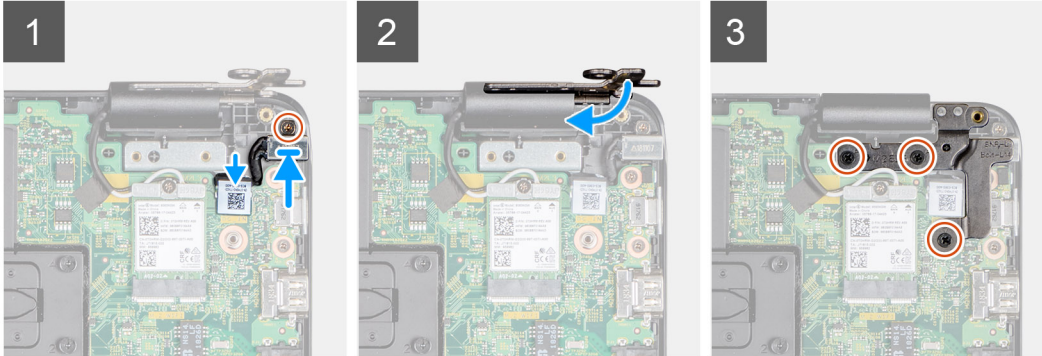
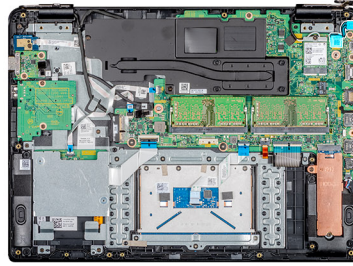
Installing the power adapter port

Prerequisite

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

About this task

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



Steps

- 1 Place the power adapter port into the slot on the palm-rest and keyboard assembly.
- 2 Replace the screw (M2x3) that secures the power adapter port to the palm-rest and keyboard assembly.
- 3 Connect the power adapter cable to the system board and route the cable through the routing guide.
- 4 Press the right hinge on to the system board, and palm-rest and keyboard assembly.
- 5 Replace the three screws (M2.5x5) that secure the right hinge to the system board, and palm-rest and keyboard assembly.

Next steps

- 1 Installing the [WLAN](#).
- 2 Installing the [battery](#).
- 3 Installing the [base cover](#).
- 4 Installing the [SD memory card](#).
- 5 Follow the procedure in [After working on your thin client](#).

Display bezel

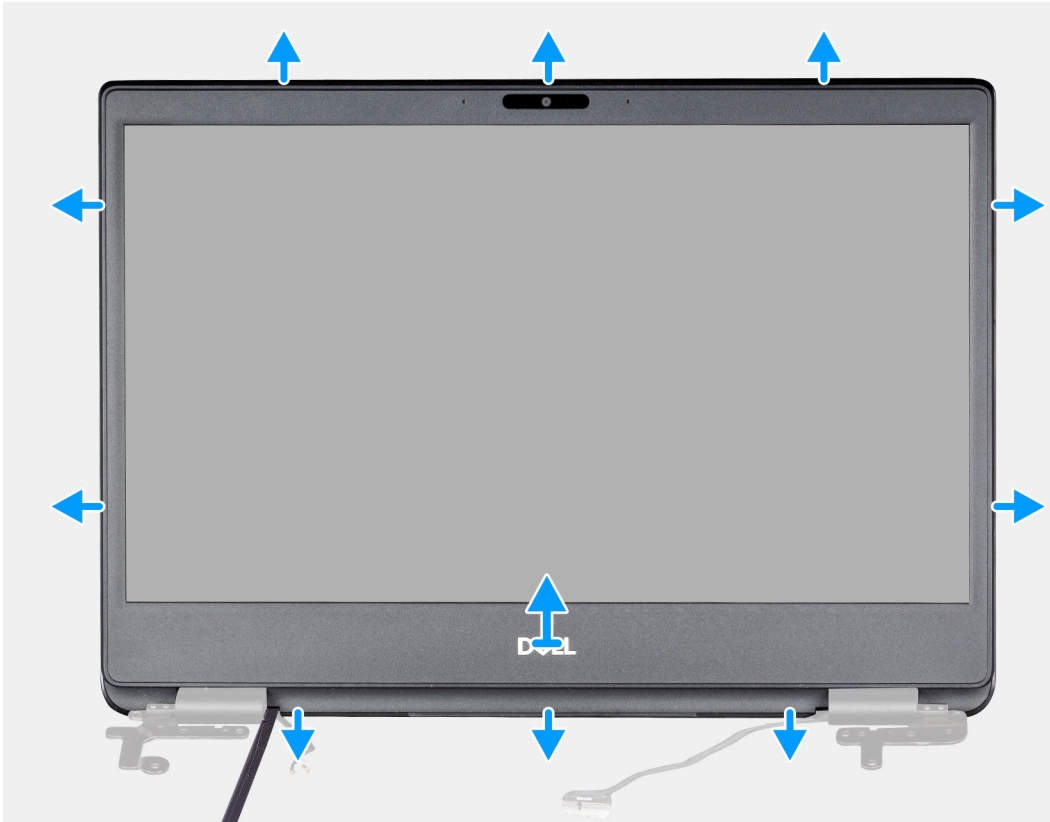
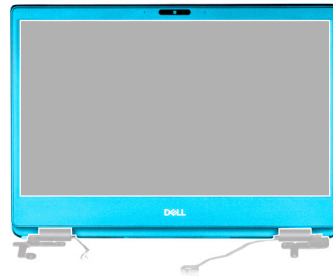
Removing the display bezel

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [WLAN](#).
- 6 Removing the [display assembly](#).

About this task

The following image indicates the location of the display bezel and provides a visual representation of the removal procedure:



Steps

- 1 Carefully pry the edges of the display bezel off the display back-cover and antenna assembly.
- 2 Remove the display bezel off the display back-cover and antenna assembly.

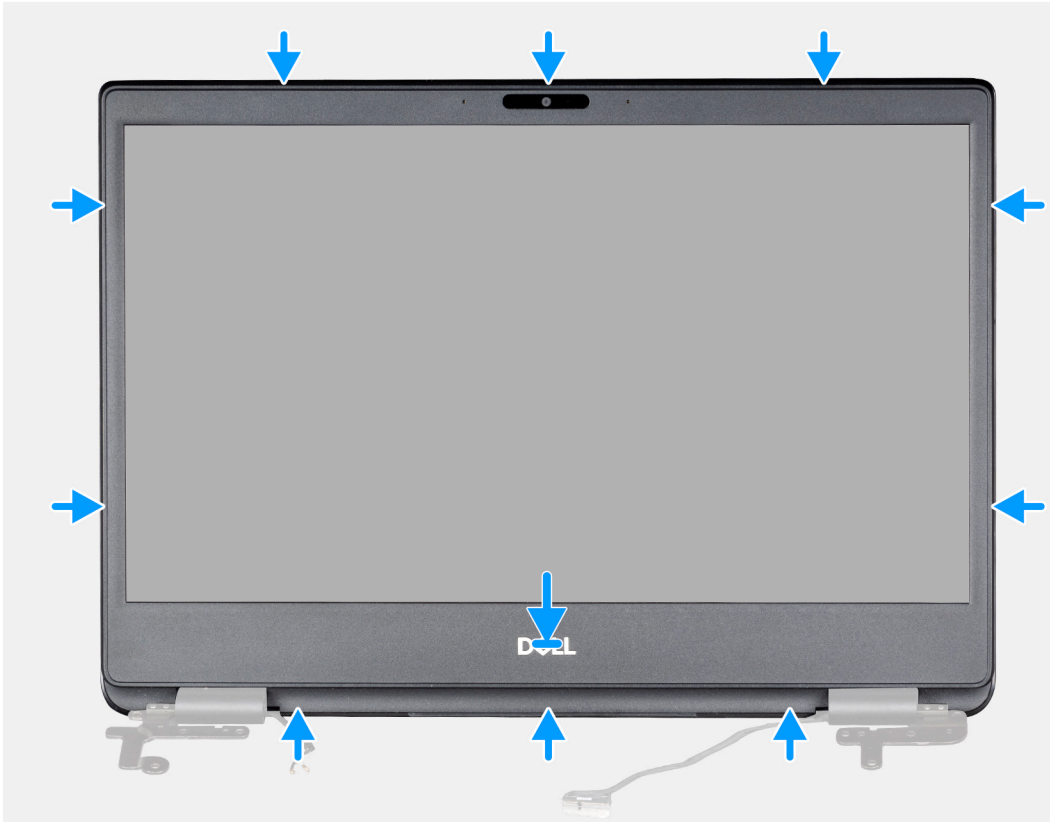
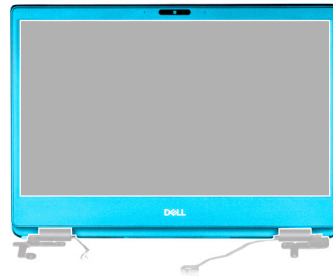
Installing the display bezel

Prerequisite

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:



Steps

- 1 Align the display bezel with the display back-cover.
- 2 Gently snap the display bezel into place.

Next steps

- 1 Installing the [display assembly](#).
- 2 Installing the [WLAN](#).
- 3 Installing the [battery](#).
- 4 Installing the [base cover](#).
- 5 Installing the [SD memory card](#).
- 6 Follow the procedure in [After working on your thin client](#).

Display panel

Removing the display panel

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [WLAN](#).
- 6 Removing the [display assembly](#).
- 7 Removing the [display bezel](#).

About this task

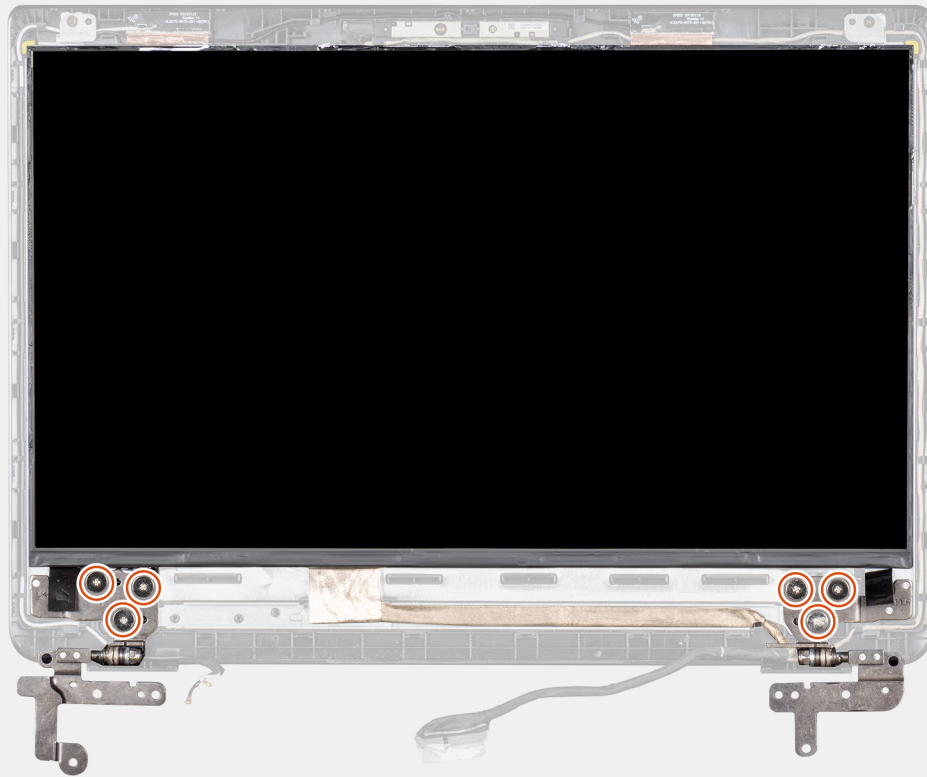
The following image indicates the location of the display panel and provides a visual representation of the removal procedure:



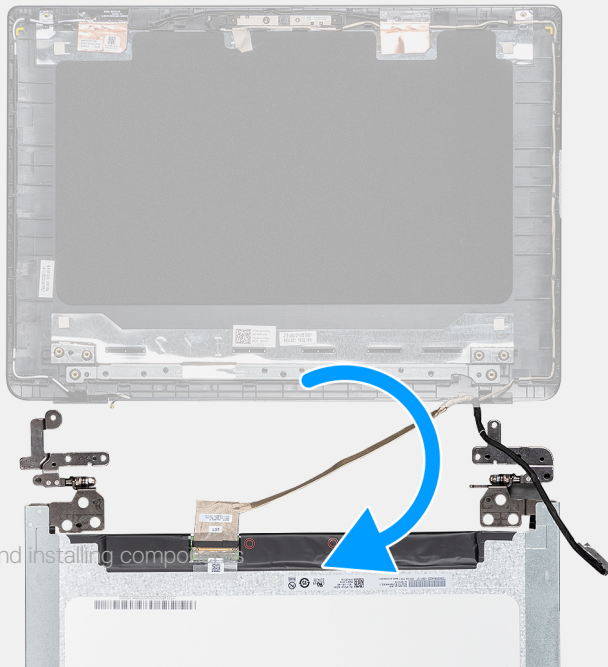
6x
M2.5x3.5

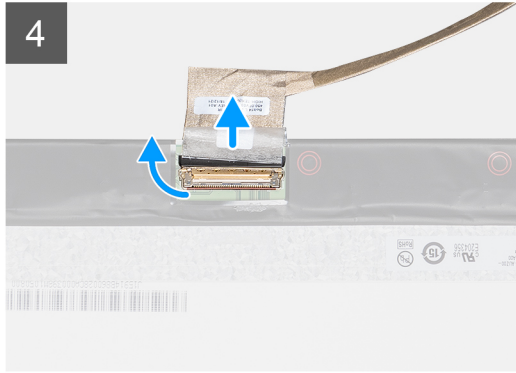
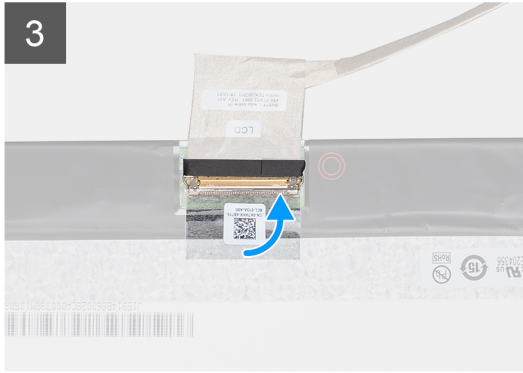
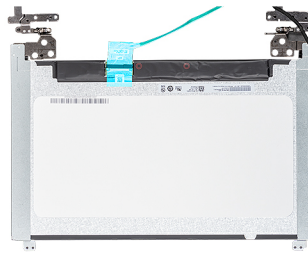


1



2





Steps

- 1 Remove the eight screws (six M2.5x2.5 and two M2x2) that secure the display panel to the display back-cover.
- 2 Lift the display panel and turn it over.
- 3 Peel the tape that secures the display cable to the back of the display panel.
- 4 Lift the latch and disconnect the display cable from the display panel cable connector.
- 5 Lift the display panel away from the display back-cover.

NOTE: Do not pull and release the Stretch (SR) Tapes from the display panel. There is no need to separate the brackets from the display panel.

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

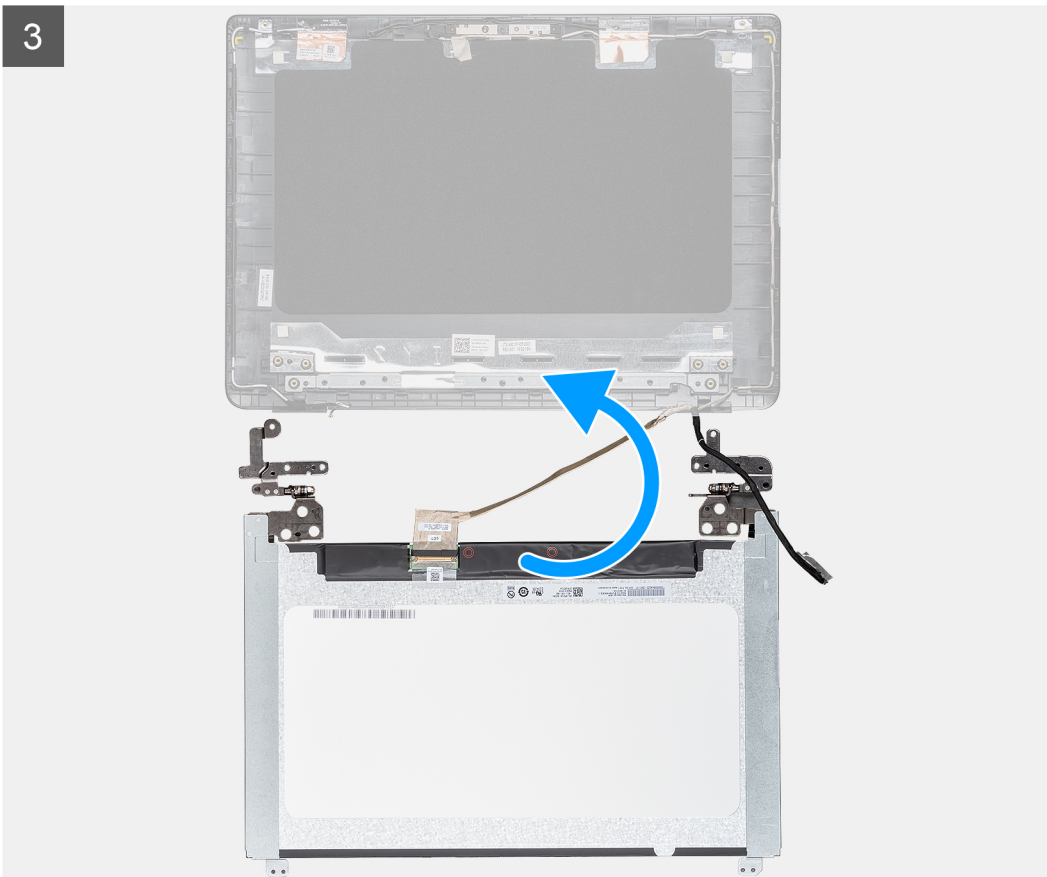
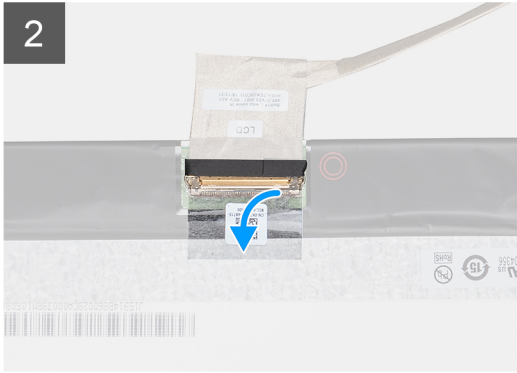
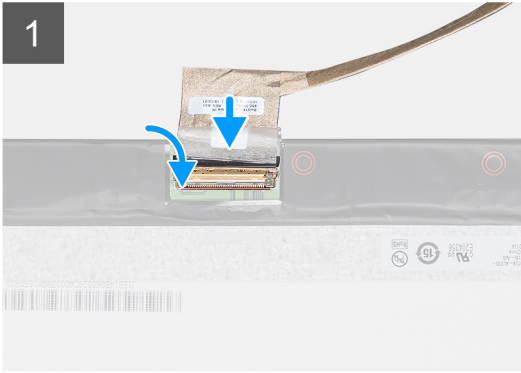
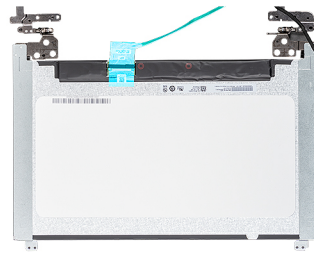
Installing the display panel

Prerequisite

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

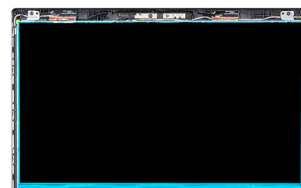
About this task

The following image indicates the location of the display panel and provides a visual representation of the installation procedure:



58 Removing and installing components

6x



Steps

- 1 Place the display panel on a flat and clean surface.
- 2 Connect the display cable to the connector at the back of the display panel and close the latch to secure the cable.
- 3 Adhere the tape that secures the display cable to the back of the display panel.
- 4 Turn the display panel over and place it on the display back-cover.
- 5 Align the screw holes on the display panel with the screw holes on the display back-cover.
- 6 Replace the eight screws (six M2.5x2.5 and two M2x2) that secure the display panel to the display back-cover.

Next steps

- 1 Installing the [display bezel](#).
- 2 Installing the [display assembly](#).
- 3 Installing the [WLAN](#).
- 4 Installing the [battery](#).
- 5 Installing the [base cover](#).
- 6 Installing the [SD memory card](#).
- 7 Follow the procedure in [After working on your thin client](#).

Camera

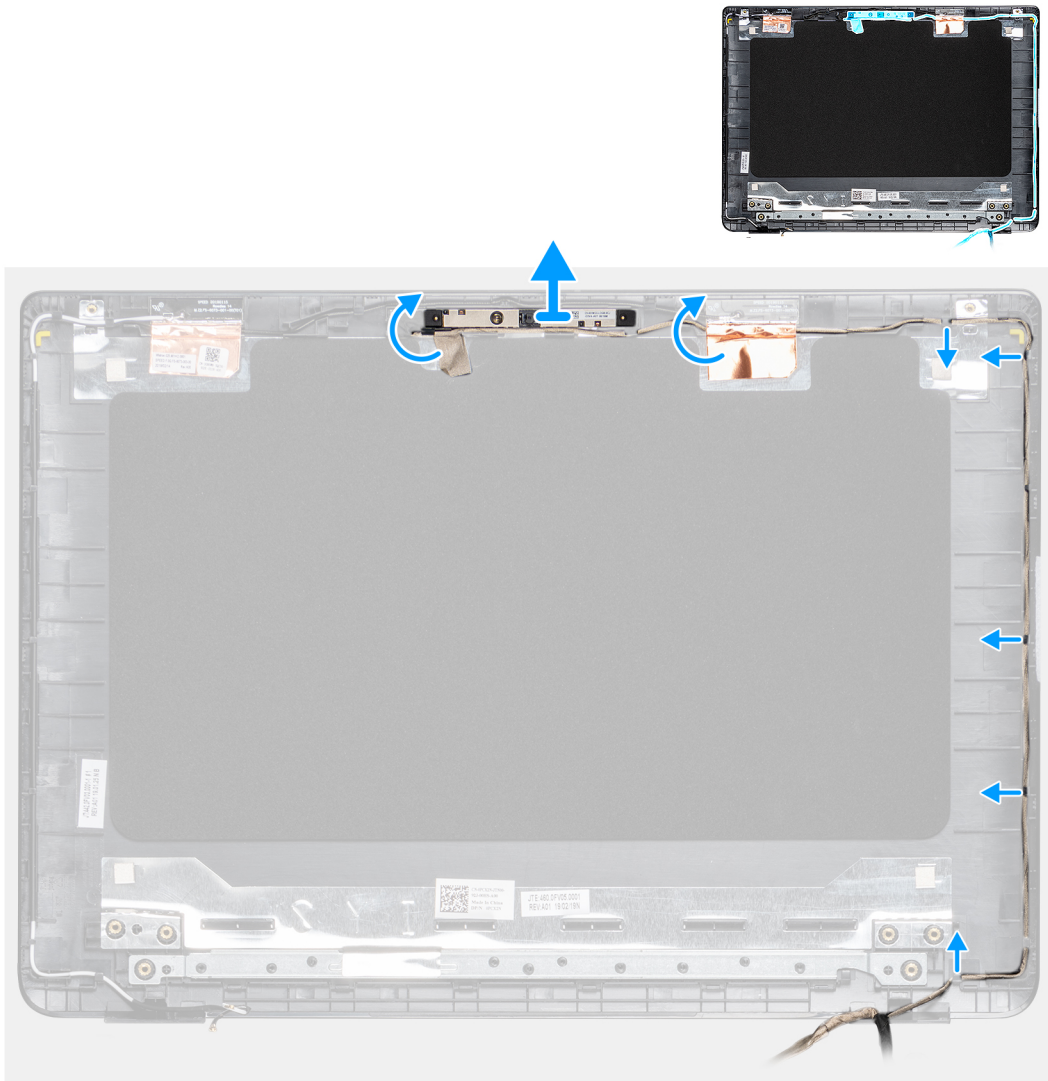
Removing the camera

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [WLAN](#).
- 6 Removing the [display assembly](#).
- 7 Removing the [display bezel](#).
- 8 Removing the [display panel](#).

About this task

The following image indicates the location of the camera and provides a visual representation of the removal procedure:



Steps

- 1 Using a plastic scribe, gently pry the camera off the display back-cover.
- 2 Remove the camera cable from the routing channels.
- 3 Lift the camera module from the display back-cover.

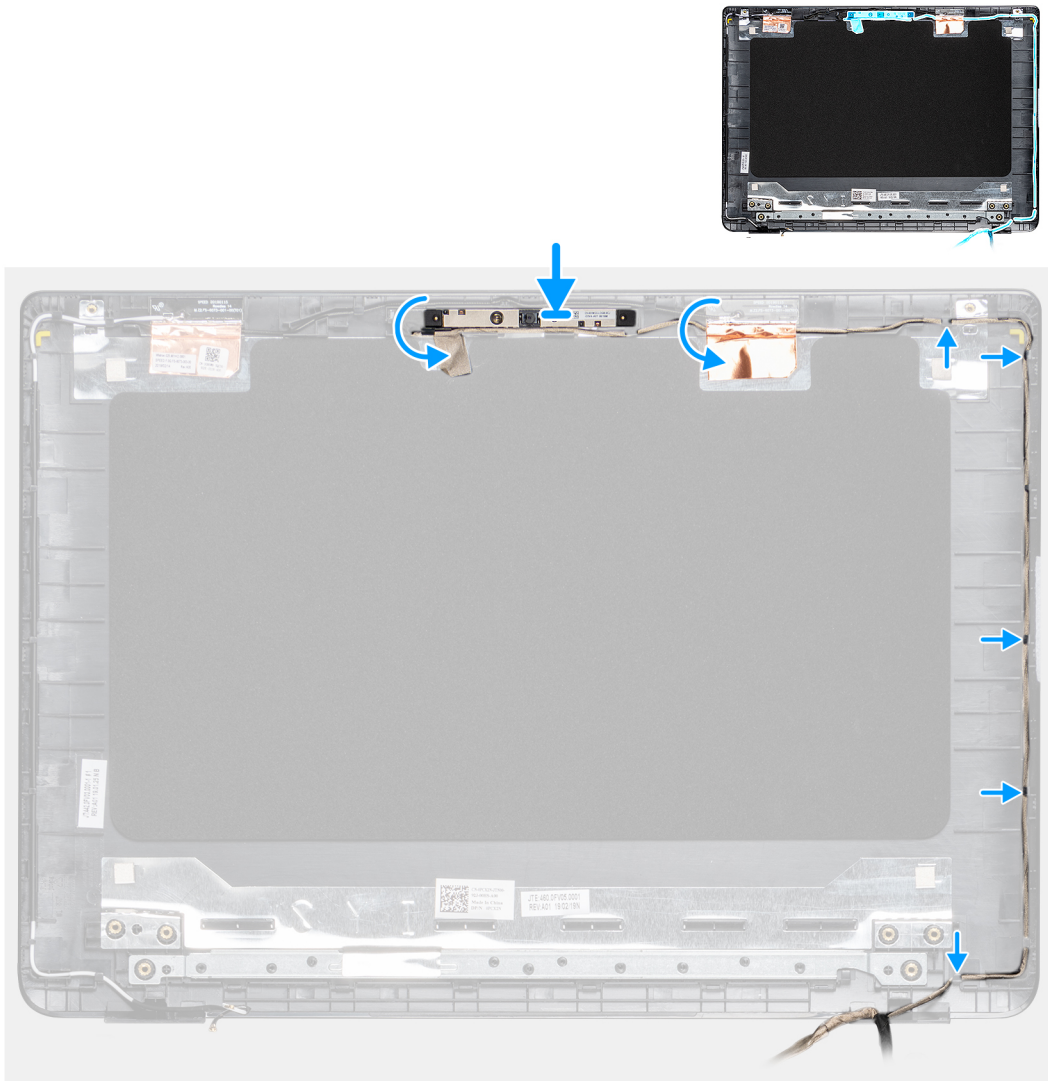
Installing the camera

Prerequisite

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 Using the alignment post, adhere the camera module on the display back-cover.
- 2 Route the camera cable through the routing channels.

Next steps

- 1 Installing the [display panel](#).
- 2 Installing the [display bezel](#).
- 3 Installing the [display assembly](#).
- 4 Installing the [WLAN](#).
- 5 Installing the [battery](#).
- 6 Installing the [base cover](#).
- 7 Installing the [SD memory card](#).
- 8 Follow the procedure in [After working on your thin client](#).

Palm-rest and keyboard assembly

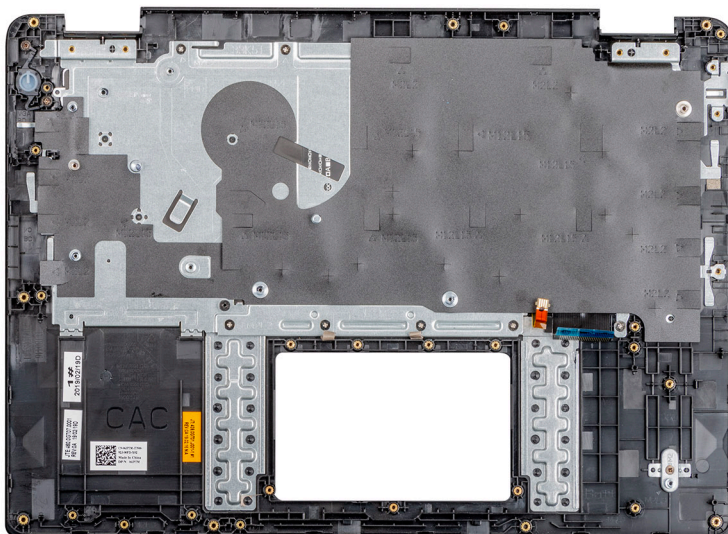
Removing the palm-rest and keyboard assembly

Prerequisites

- 1 Follow the procedure in [Before working on your thin client](#).
- 2 Removing the [SD memory card](#).
- 3 Removing the [base cover](#).
- 4 Removing the [battery](#).
- 5 Removing the [WLAN](#).
- 6 Removing the [Memory](#).
- 7 Removing the [SSD](#).
- 8 Removing the [CAC reader](#).
- 9 Removing the [IO board](#).
- 10 Removing the [touch pad assembly](#).
- 11 Removing the [VGA daughterboard](#).
- 12 Removing the [speakers](#).
- 13 Removing the [display assembly](#).
- 14 Removing the [system board](#).
- 15 Removing the [power adapter port](#).
- 16 Removing the [power button board](#).

About this task

The following image indicates the location of the I/O board and provides a visual representation of the removal procedure:



Step

After performing the preceding steps, you are left with the palm-rest and keyboard assembly.

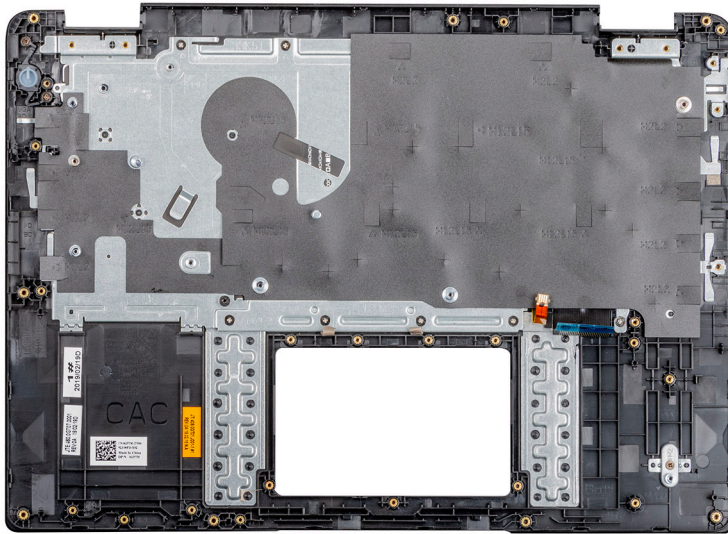
Installing the palm-rest and keyboard assembly

Prerequisite

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

About this task

The following image indicates the palm-rest and keyboard assembly and provides a visual representation of the installation procedure:



Step

Place the palm-rest and keyboard assembly on a flat surface.

Next steps

- 1 Installing the [power button board](#).
- 2 Installing the [power adapter port](#).
- 3 Installing the [system board](#).
- 4 Installing the [display assembly](#).
- 5 Installing the [speakers](#).
- 6 Installing the [VGA daughterboard](#).
- 7 Installing the [touch pad assembly](#).
- 8 Installing the [IO board](#).
- 9 Installing the [CAC reader](#).
- 10 Installing the [SSD](#).
- 11 Installing the [Memory](#).
- 12 Installing the [WLAN](#).
- 13 Installing the [battery](#).
- 14 Installing the [base cover](#).
- 15 Installing the [SD memory card](#).
- 16 Follow the procedure in [After working on your thin client](#).

System setup

Accessing thin client BIOS settings

About this task

This section describes about the Wyse 5470 thin client UEFI BIOS settings. While starting a thin client, a Dell logo is displayed for a short period.

Steps

- 1 During start-up, press the **F2** key, and enter the default password `Fireport`.
The **BIOS** settings dialog box is displayed.
- 2 Use the **System Setup** settings to change the BIOS settings.

NOTE: There is an option to restore BIOS defaults, Factory Defaults, and Custom user settings for Users in the BIOS menu. BIOS default setting restores the values that were part of the BIOS file. Restoring Factory default restores the BIOS setting to the values that was configured in factory before shipping the client.

System Setup overview

System Setup enables you to:

- Change the system configuration information after you add, change, or remove any hardware in your thin client.
- Set or change a user-selectable option such as the user password.
- Read the current amount of memory or set the type of hard drive installed.

Before you use System Setup, Dell recommends that you write down the **System Setup** screen information for future reference.

CAUTION: Unless you are an expert thin client user, do not change the settings for this program. Certain changes can cause your thin client to work incorrectly.

Boot Sequence

Boot Sequence enables you to bypass the System Setup–defined boot device order and boot directly to a specific device. During the Power-on Self-Test (POST), when the Dell logo is displayed, you can:

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

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

- UEFI Boot
 - UEFI: 32GB SATA Flash Drive, Partition X
- Other options
 - BIOS Setup
 - BIOS Flash Update
 - Diagnostics

NOTE: If you select the Diagnostics option, the ePSA diagnostics screen is displayed. To access the System setup menu, click BIOS Setup.

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 2. 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: This option is applicable 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.

General screen options

This section lists the primary hardware features of your thin client.

Table 3. General screen options

Option	Description
System Information	This section lists the primary hardware features of your thin client. - System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, Express Service Code, the Signed Firmware update—enabled by default - Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, DIMM B Size NOTE: Since Memory Available is less than the Memory Installed, certain operating systems may not be able to use all the available memory. - PCI information: Displays Slot details, by default Slot1 is empty. - Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology - Device Information: Primary Hard Drive, EMMC Device, LOM MAC Address, second NIC MAC Address, Video Controller, Audio Controller, Wi-Fi Device, Bluetooth Device
Battery Information	This section provides the information of the battery health of your machine. It also shows the status of the AC adapter and also displays whether the battery is charging or not.
Boot Sequence	This option enables you to change the order in which the system boots an operating system. Default Boot Sequence

Option	Description
	– UEFI: Hard Drive, Partition 4 – Onboard NIC(IPV4) – Onboard NIC(IPV6) • Boot List Option: You can add a boot option, delete an existing boot option, and view the boot options.
UEFI boot path security	This option enables you to control the system prompt of How to enter the Admin Password (if set) when you boot a UEFI boot path from the F12 boot menu. The options include: • Always, except internal hard drive (default) • Always • Never
Date/Time	This option enables you to change the system date and time.

System configuration

Table 4. System Configuration

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. Click one of the following options: Enable UEFI Network Stack If enabled, UEFI networking protocols are installed, allowing pre-operating system and early operating system networking features to use enabled NICs. This maybe used without PXE turned on. Integrated NIC • Disabled • Enabled • Enabled w/PXE—Default
SATA Operation	Allows you to configure the operating mode of the integrated SATA hard drive controller. Click one of the following options: • Disabled • AHCI • RAID—Default  NOTE: SATA is configured to support RAID mode.
Drives	Allows you to enable or disable various drives on board. The options are: • SATA-0 • M.2 PCIe SSD-0/SATA-2

Option	Description
	All the options are set by default.
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. This option is disabled by default.
USB Configuration	Allows you to enable or disable the internal/integrated USB configuration. The options are: • Enable USB Boot Support • Enable External USB Ports All the options are set by default.  NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.
Dell Type-C Dock Configuration	Allows you to enable or disable Dell Docks configuration settings.
USB PowerShare	Allows you to On or Off external devices to be powered or charged using the stored system battery.
Audio	Allows you to switch all integrated audio On/Off, or enable/disable the microphone and the internal speaker separately. The options are: • Enable Audio • Enable Microphone • Enable Internal Speaker This option is enabled by default.
Keyboard Illumination	This field lets you choose the operating mode of the keyboard illumination feature. The keyboard brightness level can be set from 0% to 100%. The options are: • Disabled • Dim • Bright—Default
Keyboard Backlight Timeout on AC	Allows you to define the timeout value for the keyboard backlight when an AC adapter is plugged in the system. The keyboard backlight timeout value is only in effect when the backlight is enabled. • 5 seconds • 10 seconds—Default • 15 seconds • 30 seconds • 1 minute • 5 minutes • 15 minutes • Never

Option	Description
Keyboard Backlight Timeout on Battery	Allows you to define the timeout value for the keyboard backlight when the system is running only on battery power. The keyboard backlight timeout value is only in effect when the backlight is enabled. • 5 seconds • 10 seconds—Default • 15 seconds • 30 seconds • 1 minute • 5 minutes • 15 minutes • Never
Touchscreen	Allows you to enable or disable touch screen.
Miscellaneous devices	Allows you to enable or disable various on board devices. • Enable Camera—Default • Enable Hard Drive Free Fall Protection—Default • Enable Secure Digital (SD) Card—Default • Secure Digital Card (SD) Read-Only Mode • Secure Digital (SD) Card Boot

Video screen options

Table 5. Video

Option	Description
LCD Brightness	Allows you to set the display brightness depending upon the power source. On Battery (50% is default) and On AC (100% default).

Security screen options

Table 6. Security screen options

Option	Description
Admin Password	This option enables you to set, change, or delete the administrator password. NOTE: • You must set the administrator password before you set the system or hard drive password. Also, deleting the administrator password automatically deletes the system password and the hard drive password. • Successful password changes take effect immediately. By default, the administrator password is not set.
System Password	This option enables you to set, change, or delete the system password.

Option	Description
	 NOTE: Successful password changes take effect immediately. By default, the administrator password is not set.
M.2 SATA SSD Password	This option enables you to set, change, or delete the M.2 SATA SSD password. Once a password is set, it remains on the SSD.  NOTE: Successful password changes take effect immediately. By default, the SSD password is not set.
Strong Password	This option enables you to enforce the option to always set strong passwords. By default, the Enable Strong Password option is not selected.  NOTE: If Strong Password is enabled, the administrator and system passwords must contain at least one uppercase character and one lowercase character. The password must be at least eight characters long.
Password Configuration	This option enables you to specify the minimum and maximum password lengths of the administrator and system passwords. - min-4—By default, the minimum value is set to 4. You can increase the value. - max-32—By default, the maximum value is set to 32. You can decrease the value.
Password Bypass	This option enables you to enable and disable the permission to bypass the system and the internal hard drive password, when they are set. The options are: - Disabled—enabled by default - Reboot Bypass
Password Change	This option enables you to enable the disable permission to the system and hard drive passwords when the administrator password is set. By default, the Allow Non-Admin Password Changes option is selected.
Non-Admin Setup Changes	This option enables you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password.
UEFI Capsule Firmware Updates	This option enables you to enable or disable UEFI Capsule Firmware. This option controls whether this system enables BIOS update through UEFI capsule update packages. This option is enabled by default.
TPM 2.0 Security	This option enables you to enable the Trusted Platform Module Technology feature. The options include: - TPM On—enabled by default - Clear - PPI Bypass for Enable Commands - Attestation Enable—enabled by default

Option	Description
	• PPI Bypass for Disable Commands • Key Storage Enable—enabled by default • PPI Bypass for Clear Command • SHA-256—enabled by default • Disabled • Enabled—selected by default
Admin Setup Lockout	This option enables you to prevent users from entering Setup when an administrator password is set.
Master Password Lockout	This is an authentication information that is sometimes required to log in to a thin client's basic input/output system (BIOS) before the machine boots to the operating system. The Hard disk password needs to be cleared before enabling the Master Password Lockout. This option is disabled by default.
SMM Security Mitigation	This option enables you to enable and disable additional UEFI SMM security mitigation protections.

Secure Boot screen options

Table 7. Secure Boot screen options

Options	Description
Secure Boot Enable	This option enables or disables the secure boot feature. By default, the Secure Boot Enable option is not set.
Secure Boot Mode	This option enables you to change the secure boot operation mode, modifies the behavior of secure boot to allow evaluation or enforcement of the UEFI driver signatures. The options include: • Deployed Mode • Audit Mode
Expert Key Management	This option enables you to manipulate the security key databases only if the system is in Custom Mode. The Enable Custom Mode option is disabled by default. The options include: • PK • KEK • db • dbx If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx is displayed. The options are: • Save to File—Saves the key to a user-selected file • Replace from File—Replaces the current key with a key from a user-selected file • Append from File—Adds a key to the current database from a user-selected file • Delete—Deletes the selected key • Reset All Keys—To reset the default setting • Delete All Keys—Deletes all the keys

Options	Description
	 NOTE: If you disable the Custom Mode, all the changes are erased and the keys are restored to the default settings.

Intel Software Guard Extensions screen options

Table 8. Intel Software Guard Extensions options

Option	Description
Intel SGX Enable	Enable Intel Software Guard Extensions option to provide a secured environment for running code or storing sensitive information with respect to the operating system. The options are: - Disabled - Enabled - Software Controlled—This option is enabled by default
Enclave Memory Size	This option sets the Intel Software Guard Extensions (SGX) Enclave Reserve Memory size. When SGX is set to Software Controlled, this setting is not available and has no effect. The options include: 32 MB 64 MB 128 MB—default

Performance screen options

Table 9. Performance options

Option	Description
Multi Core Support	This option specifies whether one or more cores are enabled on the processor. The options include: - All—enabled by default 1 2 3
Intel SpeedStep	This option enables you to enables or disables the Intel SpeedStep feature. The option is: Enable Intel SpeedStep This option is enabled by default.
C-States Control	This option enables you to enables or disables the additional processor sleep states. This option is disabled by default.
Intel TurboBoost	This option enables you to enables or disables the Intel TurboBoost mode of the processor. The option is:

Option	Description
	Enable Intel TurboBoost—This option is enabled by default.

Power management

Table 10. Power Management

Option	Description
AC Behavior	Allows you to enable or disable the thin client from turning on automatically when an AC adapter is connected. • Wake on AC This option is not set by default.
Auto On Time	Allows you to set the time at which the thin client must turn on automatically. The options are: • Disabled—default • Every Day • Weekdays • Select Days This option is not set by default.
USB Wake Support	Allows you to enable USB devices to wake the system from standby. • Enable USB Wake Support This option is not set by default.
Wireless Radio Control	If enabled, this feature sense the connection of the system to a wired network and subsequently disable the selected wireless radios. • Control WLAN radio • Control WWAN radio
Wake on LAN/WLAN	This option enables the thin client to power up from the off state when triggered by a special LAN signal. Wake-up from the Standby state is unaffected by this setting and must be enabled in the operating system. This feature only works when the thin client is connected to AC power supply. • Disabled—Does not allow the system to power on by special LAN signals when it receives a wake-up signal from the LAN or wireless LAN. • LAN Only—Allows the system to be powered on by special LAN signals. • LAN with PXE—A wake-up signal that is sent to the system in either the S4 or S5 sleep state, wakes, and boots the system to PXE immediately.
Block Sleep	This option minimizes AC power usage at times of peak demand.
Peak Shift	Allows you to block entering to sleep in operating system environment.
Advanced Battery Charge Configuration	This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the nonwork hours to improve the battery health.
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery.

Option	Description
	The options are: • Adaptive—Default • Standard - Fully charges your battery at a standard rate. • ExpressCharge- The battery charges over a shorter period using Dell's fast charging technology. • Primarily AC use • Custom If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.  NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.

Post behavior

Table 11. POST Behavior

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. • Enable Adapter Warnings—Default
Numlock Enable	The option specifies if the Numlock function should be enabled when the system boots. The option is set by default.
Fn Lock Options	Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. • Fn Lock—Default Click one of the following options: • Lock Mode Disable/Standard • Lock Mode Enable/Secondary—Default
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. Click one of the following options: • Minimal • Thorough—Default • Auto
Extend BIOS POST Time	Allows you to create an additional preboot delay. Click one of the following options: • 0 seconds—Default • 5 seconds • 10 seconds
Full Screen Logo	Allows you to display full screen logo, if your image matches screen resolution. • Enable Full Screen Logo

Option	Description
	This option is not set by default.
Warnings and Errors	Allows you to select different options to either stop, prompt and wait for user input, continue when warnings are detected but pause on errors, or continue when either warnings or errors are detected during the POST process. Click one of the following options: • Prompt on Warnings and Errors—Default • Continue on Warnings • Continue on Warnings and Errors
MAC Address Pass-Through	This feature replaces the external NIC MAC address with the selected MAC address from the system. Click one of the following options: • Passthrough MAC Address—Default • Integrated NIC 1 MAC Address • Disabled

Wireless options

Table 12. Wireless

Option	Description
Wireless Switch	Allows to set the wireless devices that can be controlled by the wireless switch. The options are: • WLAN/WiGig • Bluetooth  NOTE: For WLAN and WiGig, enable or disable controls are tied together and they cannot be enabled or disabled independently. All the options are enabled by default.
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. The option is: • WLAN/BT The option is enabled by default.

Virtualization support screen options

Table 13. Virtualization options

Option	Description
Virtualization	This option enables or disables the Intel Virtualization Technology.

Option	Description
	Enable Intel Virtualization Technology (default).
VT for Direct I/O	This option specifies whether a virtual machine monitor can use the additional hardware capabilities that are provided by Intel Virtualization Technology for Direct I/O. This option is not enabled by default.

Maintenance screen options

Table 14. Maintenance options

Option	Description
Service Tag	Displays the Service Tag of your thin client.
Asset Tag	This option enables you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	This controls flashing of the system firmware to previous revisions. The option Allow BIOS downgrade is enabled by default.
Data Wipe	This field enables you to erase the data securely from all internal storage devices. Option Wipe on Next boot is not enabled by default. The following is the list of devices affected: • Internal SATA HDD/SSD • Internal M.2 SATA SDD • Internal M.2 PCIe SSD • Internal eMMC  CAUTION: If you enable this option, all the data is permanently deleted
BIOS Recovery	This option enables you to recover certain corrupted BIOS conditions from a recover file on the user's primary hard drive or an external USB drive. • BIOS Recovery from Hard Drive—enabled by default • BIOS Auto-Recovery—disabled by default

System logs

Table 15. System Logs

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

Troubleshooting your system

You can troubleshoot the thin client by using indicators such as diagnostic lights and error messages during the operation of the device. Additionally, you can use Enhanced Pre-Boot System Assessment (ePSA) diagnostics to carry out complete diagnosis and troubleshooting of thin clients.

Topics:

- [Enhanced Pre-Boot System Assessment diagnostics](#)
- [Running the ePSA diagnostics](#)
- [Battery status LED](#)
- [Diagnostic LED](#)
- [Power behavior](#)

Enhanced Pre-Boot System Assessment diagnostics

The Enhanced Pre-Boot System Assessment (ePSA) diagnostics, also known as system diagnostics performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups, enabling you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed devices
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

CAUTION: Use the system diagnostics that comes with your software to test only your thin client. Using this program with other thin clients may cause invalid results or error messages.

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

Running the ePSA diagnostics

- 1 Start up the thin client.
- 2 As the thin client boots, press the F12 key.

The boot menu screen is displayed.

```

Use the ↑(Up) and ↓(Down) arrow keys to move the pointer to the desired boot device.
Press [Enter] to attempt the boot or ESC to Cancel. (* = Password Required)

Boot mode is set to: UEFI; Secure Boot: OFF

UEFI BOOT:
  UEFI: 32GB SATA Flash Drive, Partition 3
OTHER OPTIONS:
  BIOS Setup
  *BIOS Flash Update
  Diagnostics
  
```

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- 3 On the boot menu screen, select the **Diagnostics** option.
The **Enhanced Pre-boot System Assessment** window is displayed.
- 4 Click the arrow key at the bottom-left corner.
The Diagnostics front page is displayed.
- 5 Press the arrow in the lower-right corner to go to the page listing.
The detected items 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**.
If there are any issues, error codes are displayed. Note the error code and validation number, and contact Dell.

Battery status LED

Table 16. Battery status LED

Power Source	LED behavior	System Power State	Battery Charge Level
AC Adapter	Solid White	S0	0-100%
AC Adapter	Solid White	S4/S5	< Fully Charged
AC Adapter	Off	S4/S5	Fully Charged
Battery	Amber	S0	< = 10%
Battery	Off	S0	> 10%
Battery	Off	S4/S5	0-100%

- **S0 (ON)**—System is turned on.
- **S4**—The system consumes the least power compared to all other sleep states. The system is almost at an OFF state, expect for a trickle power. The context data is written to hard drive.
- **S5 (OFF)**—The system is in a shutdown state.

Diagnostic LED

This section details the diagnostic features of the battery LED.

Instead of beep codes, errors are indicated via the bicolor Battery Charge/Status LED. A specific blink pattern is followed by flashing a pattern of flashes in amber, followed by white. The pattern then repeats.

NOTE: The diagnostic pattern consists of a two-digit number being represented by a first group of LED blinks (1 through 9) in amber, followed by a 1.5 second pause with the LED off, and then a second group of LED blinks (1 through 9) in white. This is then followed by a three second pause, with the LED off, before repeating over again. Each LED blink takes 0.5 seconds.

The system will not shut down when displaying the Diagnostic Error Codes.

Diagnostic Error Codes always supersede any other use of the LED. For instance, on Laptops, battery codes for Low Battery or Battery Failure situations will not be displayed when Diagnostic Error Codes are being displayed.

Table 17. Diagnostic LED

Blinking pattern		Possible problem	Suggested resolution
Amber	White		
2	1	CPU failure	Replace the system board
2	2	System Board failure (included BIOS corruption or ROM error)	Flash latest BIOS version. If problem persists, replace the system board

Blinking pattern		Possible problem	Suggested resolution
Amber	White		
2	3	No Memory/ RAM detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module
2	4	Memory/RAM failure	Replace the memory module
2	5	Invalid memory installed	Replace the memory module
2	6	System board/Chipset Error/Clock failure/Gate A20 failure/Super IO failure/Keyboard controller failure	Replace the system board
2	7	LCD failure	Replace the LCD
3	1	RTC power failure	Replace the CMOS battery
3	2	PCI or 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

Power behavior

Table 18. Power behavior

AC adapter	System behavior	POST error message
AC adapter power is greater than or equal to the system power requirement at full CPU speed.	System boots normally and allows CPU to run at full speed.	None
AC adapter Power is less than the system power requirements at full CPU speed.	Lower the maximum CPU speed to a value that does not exceed the power available by the AC adapter.	Alert—xxxxxxW AC power adapter has been detected, which is less than the recommended xxxxxxW AC adapter originally shipped. The system adjusts the performance to match the power available. Connect a Dell xxxxxxW AC adapter or greater for best system performance.
AC adapter is not genuine Dell.	Limit the CPU speed to the lowest possible value.	Alert—xxxxxxW AC power adapter has been detected, which is less than the recommended xxxxxxW AC adapter originally shipped. The system adjusts the performance to match the power available. Connect a Dell xxxxxxW AC adapter or greater for best system performance.
AC adapter power is less than power state of CPU.	No boot or error message, but the system shuts down.	If the system is able to boot: Alert—xxxxxxW AC power adapter has been detected, which is less than the recommended xxxxxxW AC adapter originally shipped. The system is unable to boot. Please connect a Dell xxxxxxW AC adapter or greater for best system performance. Press any key to shut down.

Getting help

Contacting Dell

Prerequisite

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

About this task

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

Steps

- 1 Go to **Dell.com/support**.
- 2 Select your support category.
- 3 Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
- 4 Select the appropriate service or support link based on your need.