Wyse 5470 All-in-One Thin Client

Service Manual

1

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DELL Technologies

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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1

Working on your thin client

Safety instructions

Prerequisites

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.

NOTE: 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 Regulatory Compliance home page.

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 below steps before you work on the thin client.

About this task

NOTE: For more safety best practices, see the Regulatory Compliance home page at Regulatory Compliance home page.

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 shut down instructions, see documentation of the respective operating system.

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

Standby power

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

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

Bonding

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

Electrostatic discharge—ESD protection

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

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

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

- **Catastrophic**—Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code emitted for missing or nonfunctional memory.
- **Intermittent**—Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, etc.

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

Perform the following steps to prevent ESD damage:

- Use a wired 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-staticwrist 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

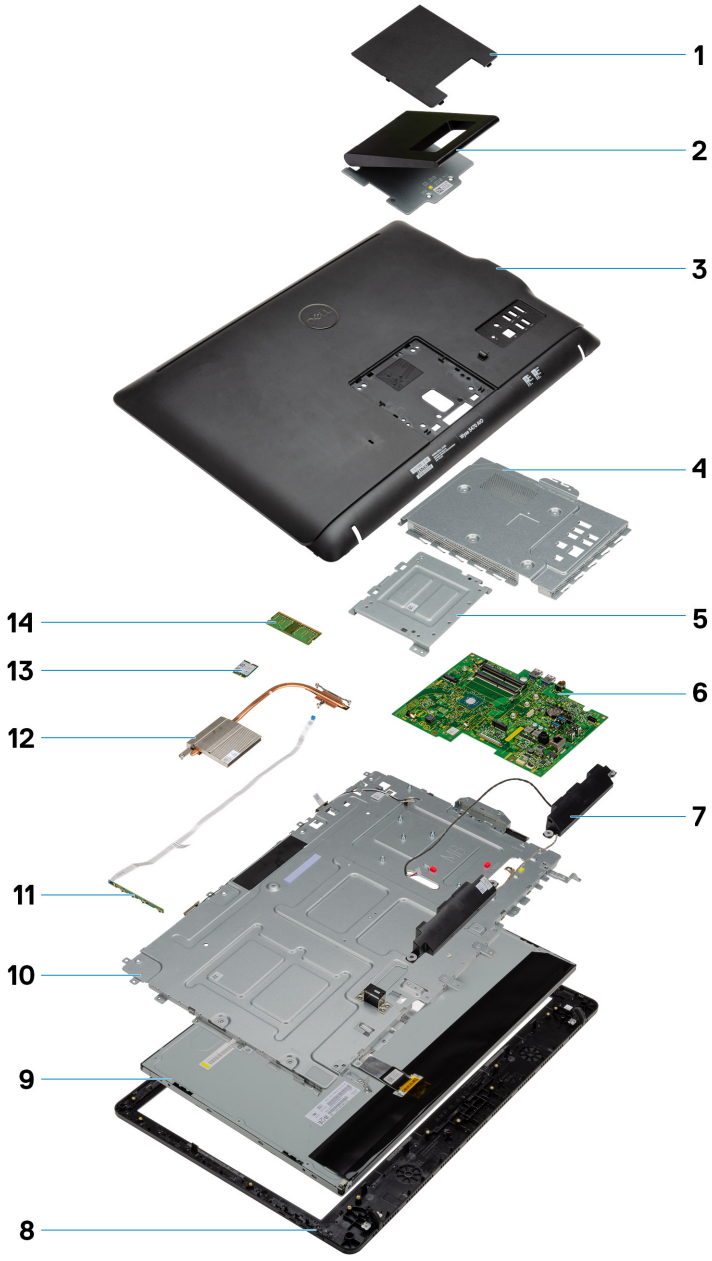
CAUTION: You must not leave any stray or loose screws inside your thin client. This may damage your thin client.

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.

2

Major components of your thin client



1. Stand cover
2. Stand
3. Back cover
4. Base panel
5. Vesa-mount bracket
6. System board
7. Speakers
8. Display panel
9. LCD
10. Middle frame
11. On-screen display board
12. Heat sink
13. Wireless card
14. Memory

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

3

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

Table 1. Wyse 5470 All-in-One

Component	Screw type	Quantity	Screw image
Cable cover	M3x9	1	
System board shield	M3x5	5	
Solid-state drive/Intel Optane card	M2x2.5	1	
WLAN card shield	M2x2.5	2	
WLAN card	M2x2.5	1	
System fan	M3 x5	3	
Pop-up camera assembly	M3x5	2	
Pop-up camera bezel	M3x5	5	
Base cover	M3x5	4	
PSU cable	M3x5	1	
Power supply unit—PSU	M3x5	1	
Power supply unit fan—PSU fan	M3x5	2	

Table 1. Wyse 5470 All-in-One (continued)

Component	Screw type	Quantity	Screw image
Input and Output bracket	M3x5	3	
System board	M3x5	9	
Speakers	M3 4+7.1 XZN	4	
Power button board	M3x5	1	
Microphone	M2x2.5	2	
Input and Output board shield	M3x5	2	
Input and Output board	M2.5x3.5	2	
Headset port	M3x5	1	
Antennas	M2x2.5	2	
Display panel	M3x5	8	
Middle frame	M3x5	11	

Stand

Removing the easel stand

Prerequisites

Follow the procedure in Before working on your thin client.

About this task

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




Wyse 5470 AIO





Steps

1. Pry up the stand cover off the back cover using a plastic scribe.
2. Slide and remove the stand cover from the back cover.
3. Remove the two screws (M4x8) that secure the easel stand to the stand bracket and lift the stand off the back cover.

Installing the easel stand

Prerequisites

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

About this task

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









Steps

1. Align the screw holes on the stand bracket to the screw holes on the easel stand.
2. Tighten the two screws (M4x8) that secure the easel stand to the chassis.
3. Slide and place the stand cover on the stand bracket.

Back cover

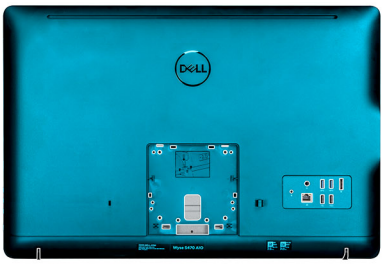
Removing the back cover

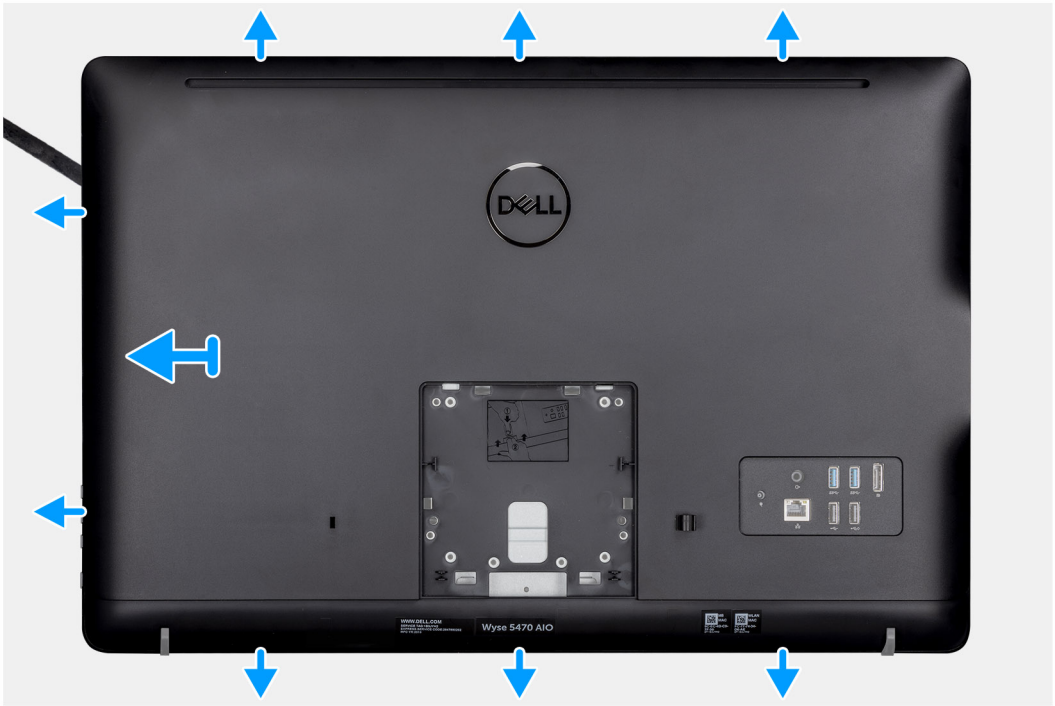
Prerequisites

1. Follow the procedure in Before working on your thin client.
2. Remove the stand.

About this task

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





Steps

1. Using a scribe, pry the back cover from the chassis.
2. Ensure all the notches are unlocked using the scribe around the thin client.
3. Lift the back cover away from the chassis of the thin client.

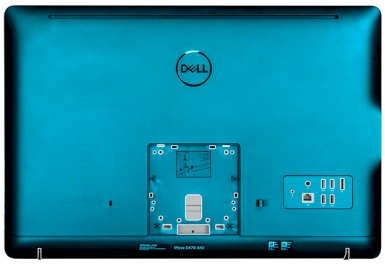
Installing the back cover

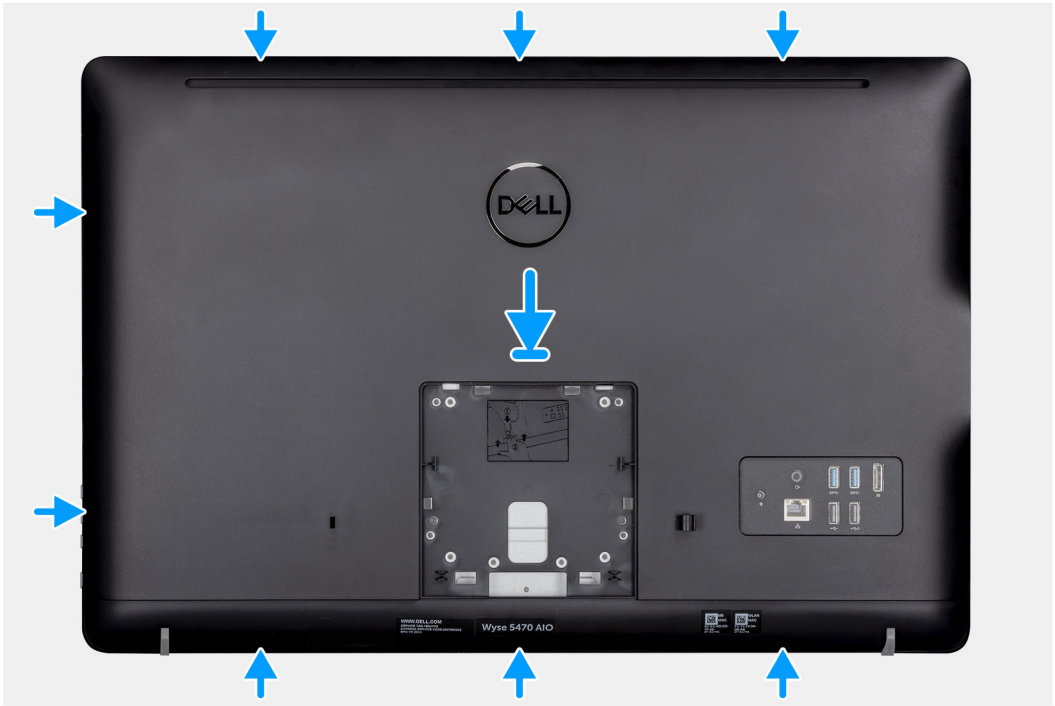
Prerequisites

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

About this task

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





Steps

1. Place the back cover on to the system chassis.
2. Align the notches on the back cover with the slots on the chassis.
3. Press the back cover to the system chassis and ensure all the locks are secured in position.

Next steps

1. Install the stand.
2. Follow the procedure in After working on your thin client.

Vesa-mount bracket

Removing the VESA-mount bracket

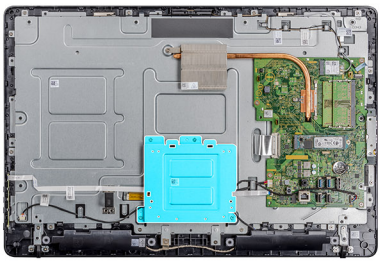
Prerequisites

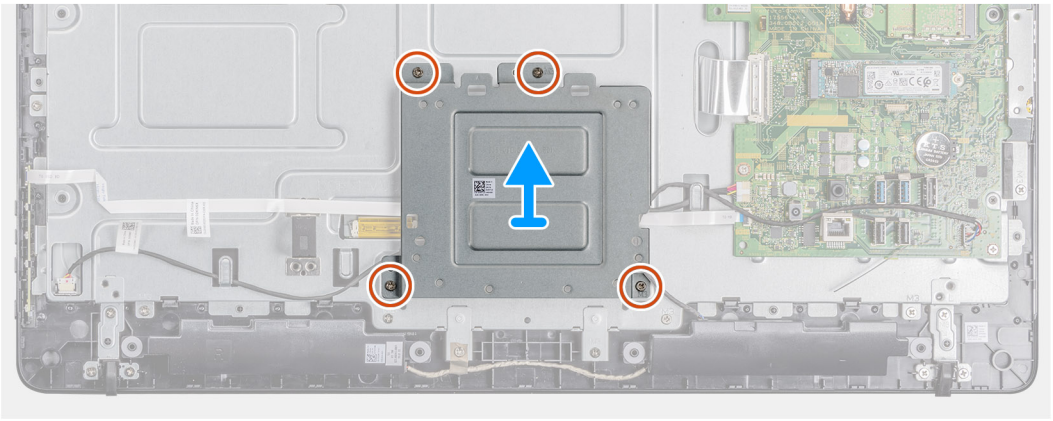
1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.

About this task

The following image indicates the location of VESA-mount bracket and provides a visual representation of the removal procedure.







Steps

1. Remove the four screws (M3x5) that secure the VESA-mount bracket to the middle cover.
2. Lift the VESA-mount bracket off the middle cover.
3. Note the speaker cable routing on the VESA-mount bracket and remove it from the routing guides.

Installing the VESA-mount bracket

Prerequisites

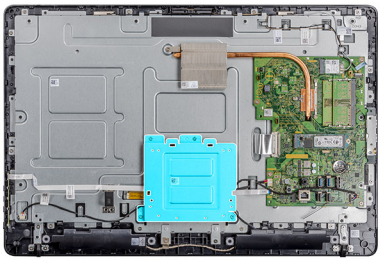
If you are replacing a component, remove the existing component before performing the installation procedure.

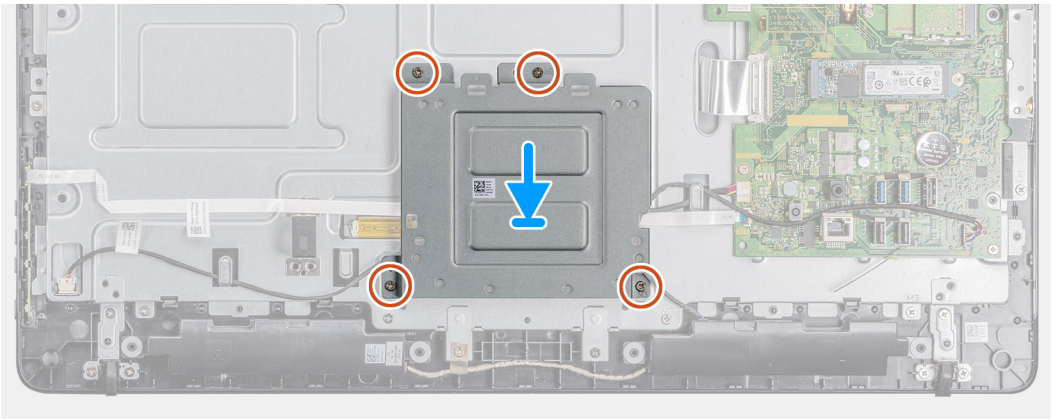
About this task

The following image indicates the location of the VESA-mount bracket and provides a visual representation of the installation procedure.



4x
M3x5





Steps

1. Align the screw holes on the VESA-mount bracket with the screw holes on the middle frame.
2. Replace the four screws (M3x5) that secure the vesa-mount bracket to the middle frame.
3. Route the speaker cable through the routing guides on the VESA-mount bracket.

Next steps

1. Install the back cover.
2. Install the stand.
3. Follow the procedure in After working on your thin client.

On-screen display board

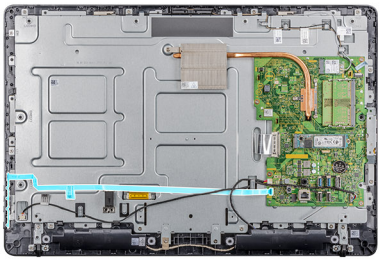
Removing the OSD board

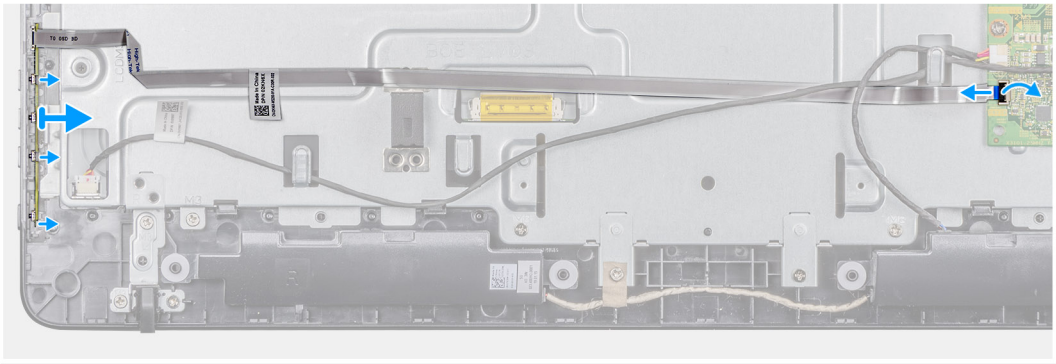
Prerequisites

1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.
4. Remove the VESA-mount bracket.

About this task

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





Steps

1. Open the latch and disconnect the cable from the system board.
2. Peel off the OSD cable from the middle frame.
3. Move the securing clip away from the control-buttons board and lift the OSD board out of the slot.

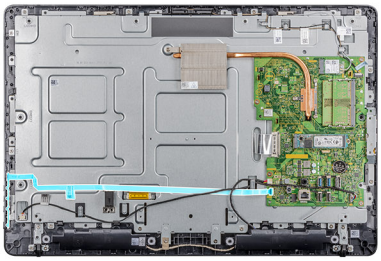
Installing the OSD board

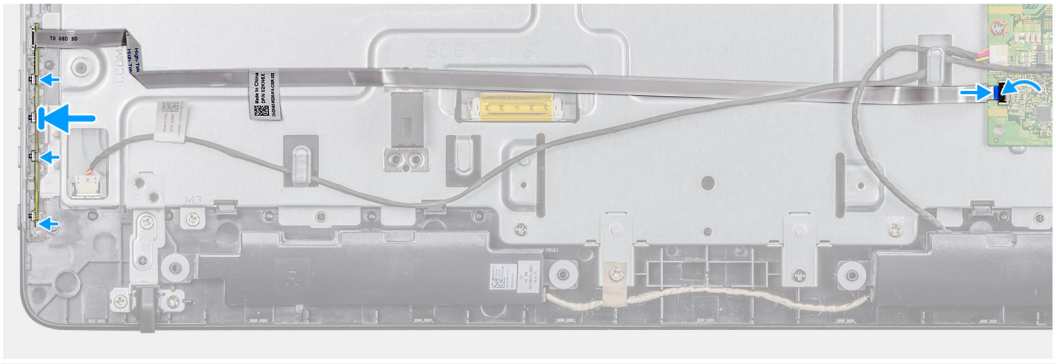
Prerequisites

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

About this task

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





Steps

1. Move the securing clip away and place the OSD board until it locks in to the display bezel.
2. Adhere the tape that secures the OSD board cable to the middle frame.
3. Connect the cable to the connector on the system board.
4. Close the latch to secure the cable.

Next steps

1. Install the vesa-mount bracket.
2. Install the back cover.
3. Install the stand.
4. Follow the procedure in After working on your thin client.

Solid-state drive

Removing the solid-state drive

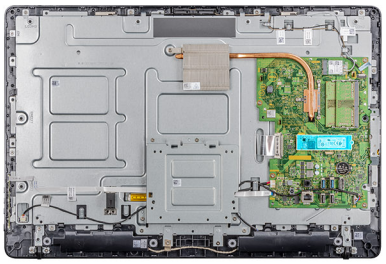
Prerequisites

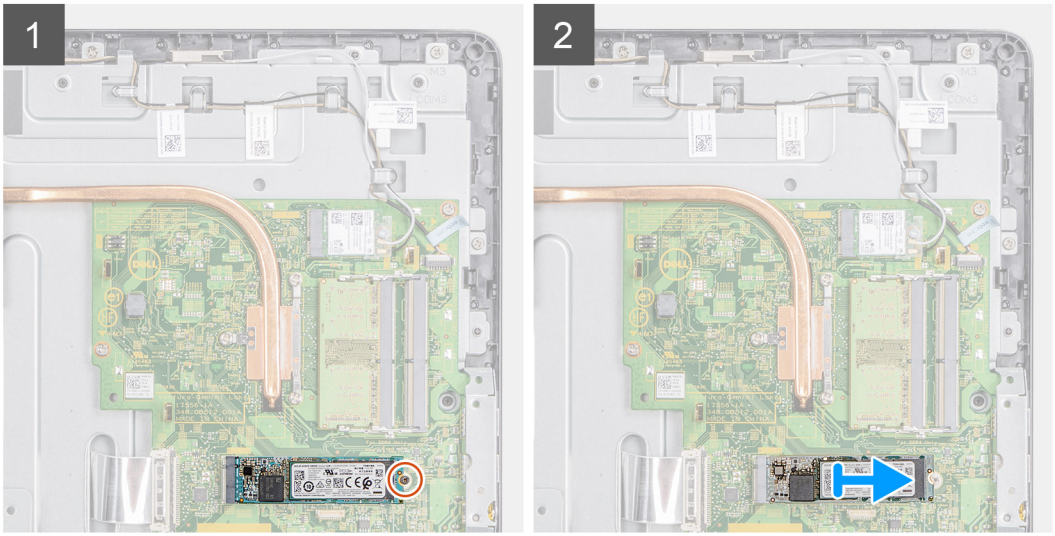
1. Follow the procedure in Before working inside your thin client.
2. Remove the stand.
3. Remove the back cover.

About this task

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







Steps

1. Remove the screw (M2x3.5) that secures the solid-state drive card to the system board.
2. Slide and remove the solid-state drive off the solid-state drive slot on the system board.

Installing the solid-state drive

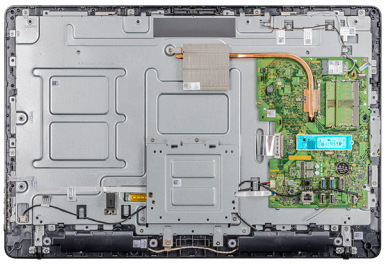
Prerequisites

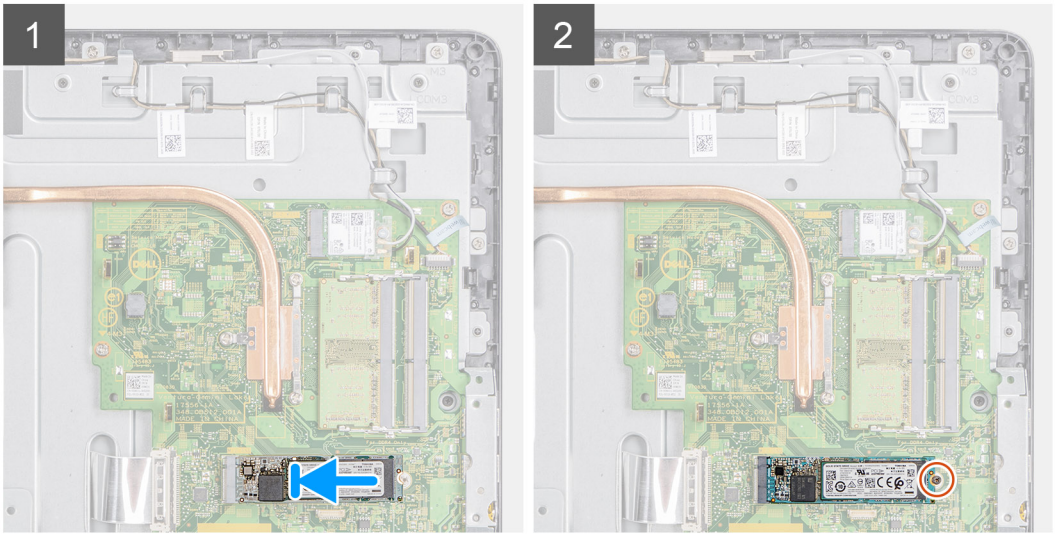
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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 slide the solid-state drive into the solid-state drive slot on the system board.
2. Replace the screw (M2x3.5) that secures the solid-state drive to the system board.

Next steps

1. Install the back cover.
2. Install the stand.
3. Follow the procedure in After working inside your thin client.

Memory module

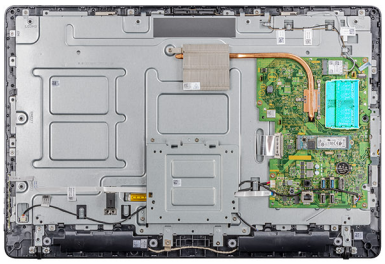
Removing the memory modules

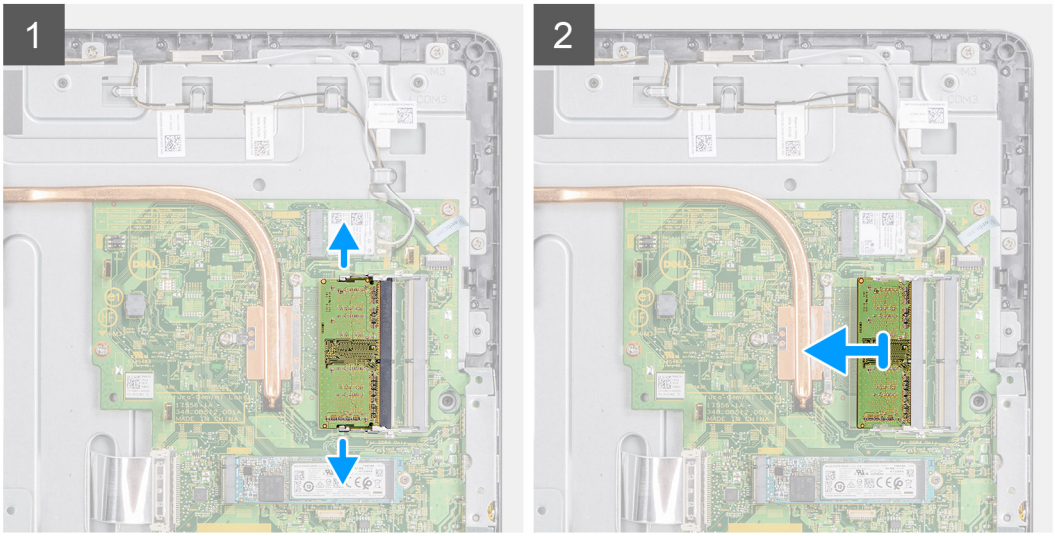
Prerequisites

1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.

About this task

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





Steps

1. Using your fingertips, carefully spread apart the securing clips at each end of the memory-module slot until the memory module pops up.
2. Slide and remove the memory module from the memory-module slot.

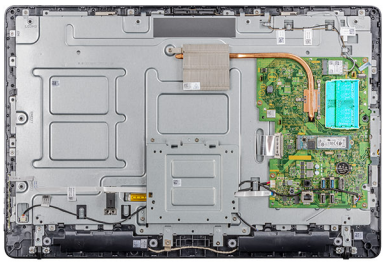
Installing the memory modules

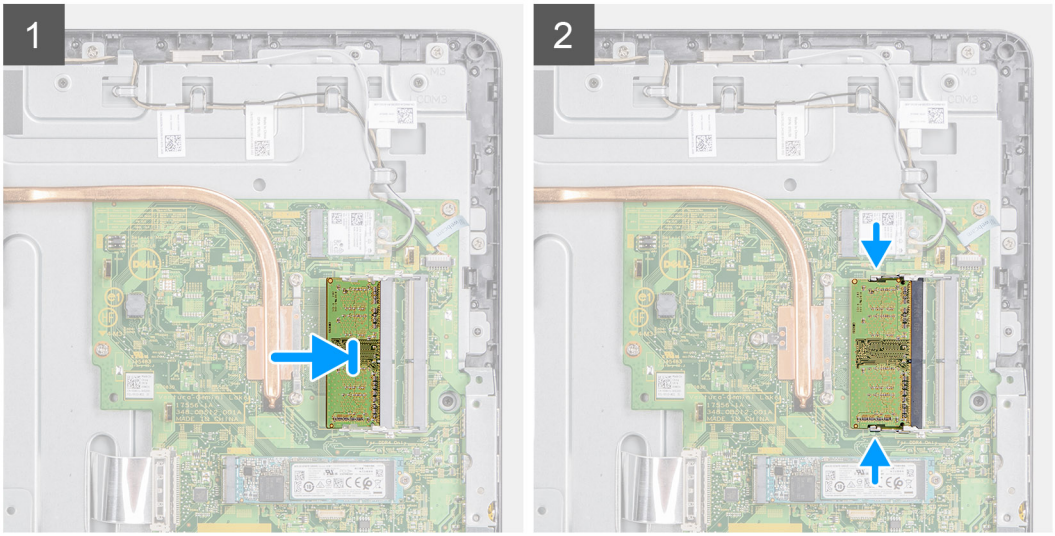
Prerequisites

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

About this task

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





Steps

1. 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 and press the memory module down until it clicks into place.

Next steps

1. Install the back cover.
2. Install the stand.
3. Follow the procedure in After working on your thin client.

Wireless card

Removing the wireless card

Prerequisites

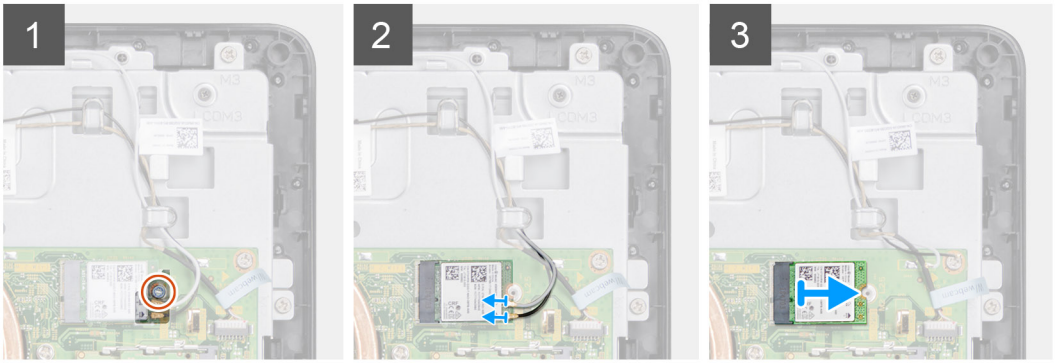
1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.

About this task

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







Steps

1. Remove the screw (M2x3.5) that secures the wireless-card bracket and the wireless card to the system board.
2. Slide the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Slide the wireless card out of the wireless card slot.

Installing the wireless card

Prerequisites

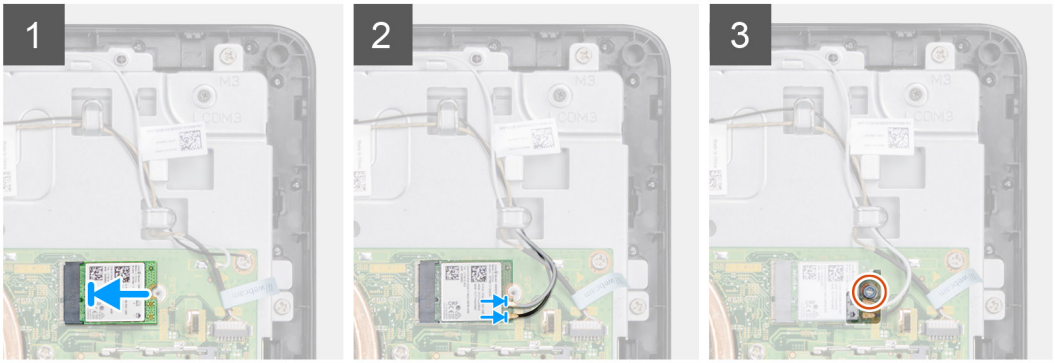
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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







Steps

1. Align the notch on the wireless card with the tab on the wireless-card slot and slide the card into the slot.
2. Connect the antenna cables to the wireless card.
3. Slide the wireless-card bracket over the wireless card.
4. Align the screw hole on the wireless-card bracket with the screw hole on the wireless card.
5. Replace the screw (M2x3.5) that secures the wireless-card bracket and the wireless card to the system board.

Next steps

1. Replace the back cover.
2. Replace the stand.
3. 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. Remove the stand.
3. Remove the back cover.

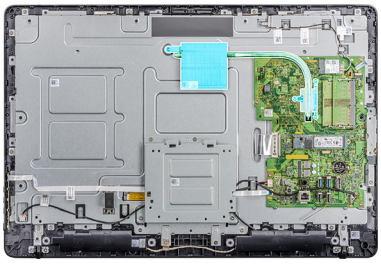
About this task

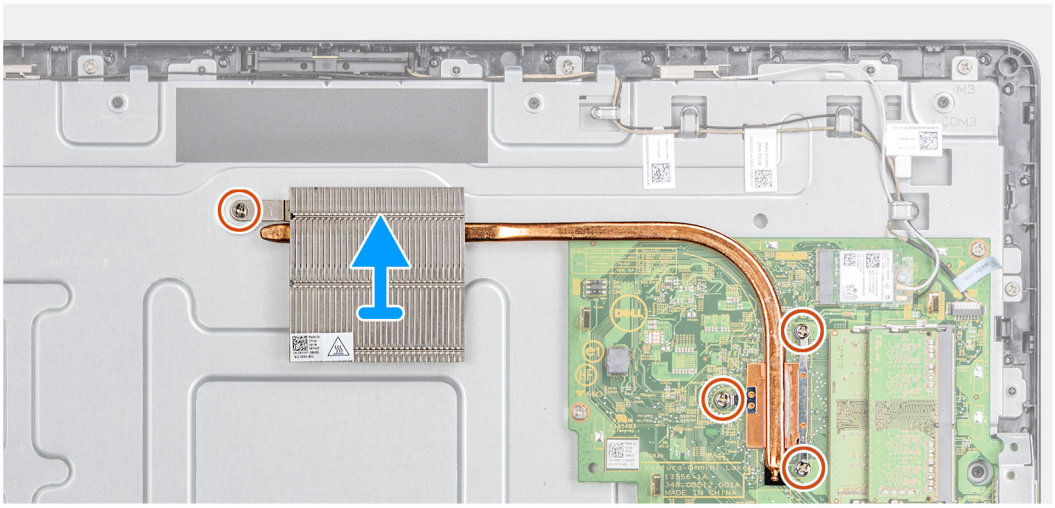
The following image indicates the location of wireless card and provides a visual representation of the removal procedure.

NOTE: Depending on the configuration you ordered, the number of screws and the appearance of the heat-sink assembly may differ.



4x
M3x7





Steps

1. In sequential order (as indicated on the heat sink), loosen the four captive screws (M3x7) that secure the heat sink to the system board.
2. Lift the heat sink off the system board.

Installing the heat sink

Prerequisites

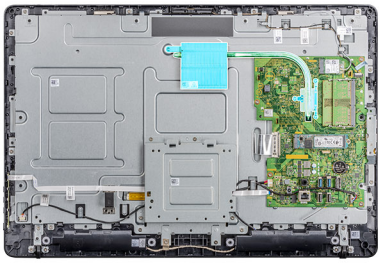
If you are replacing a component, remove the existing component before performing the installation procedure.

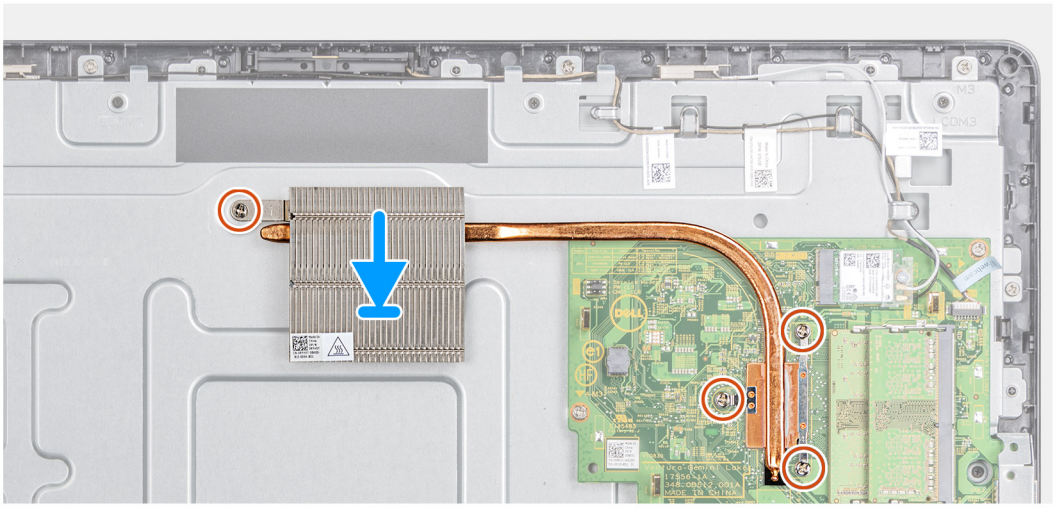
About this task

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



4x
M3x7





Steps

1. Align the captive screws on the heat sink with the screw holes on the system board.
2. In sequential order (as indicated on the heat sink), tighten the four captive screws (M3x7) that secure the heat sink to the system board.

Next steps

1. Replace the back cover.
2. Replace the stand.
3. Follow the procedure in After working on your thin client.

Coin-cell battery

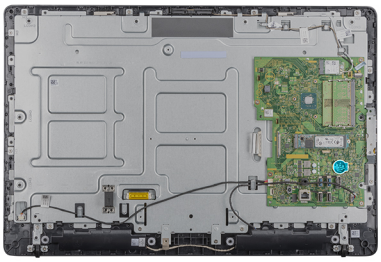
Removing the coin-cell battery

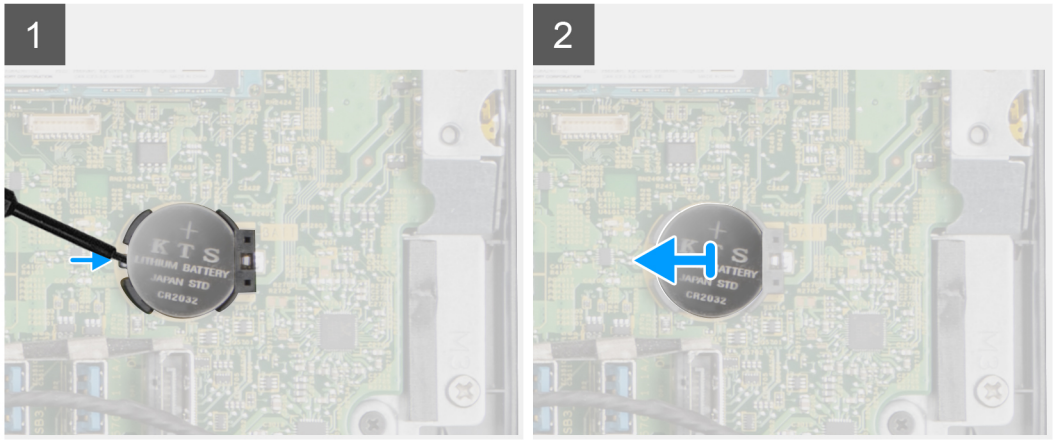
Prerequisites

1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.

About this task

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





Steps

1. Pry open the coin-cell battery using a scribe.
2. Remove the coin-cell battery from the holder.

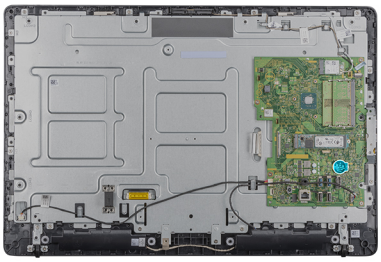
Installing the coin-cell battery

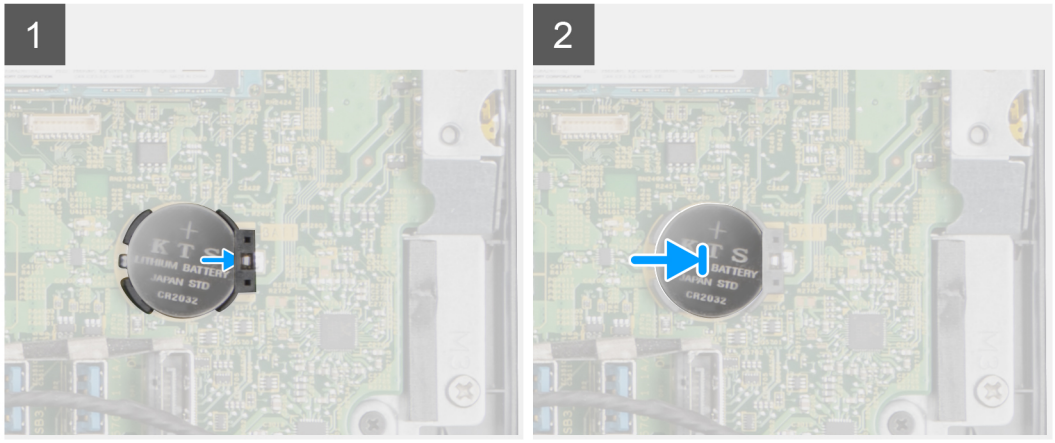
Prerequisites

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

About this task

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





Steps

Place the coin-cell battery in the holder and press until it snaps in to the place.

Next steps

1. Install the back cover.
2. Install the stand.
3. Follow the procedure in After working on your thin client.

Camera

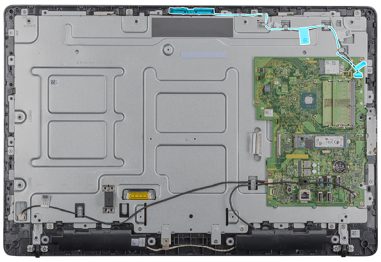
Removing the camera

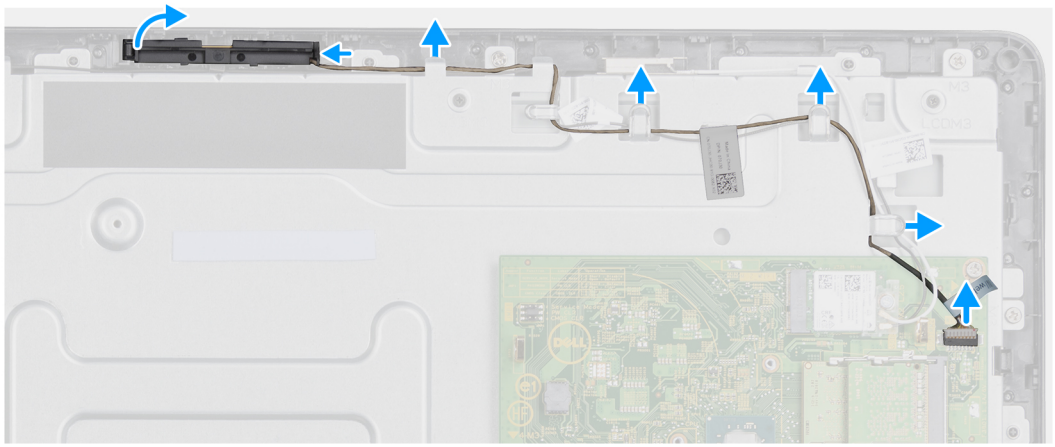
Prerequisites

1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.

About this task

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





Steps

1. Note the antenna, microphone, and camera-cable routing and remove the cables from the routing guides on the display bezel and middle cover.
2. Using your fingertips, press the securing clip and lift the camera assembly.
3. Disconnect the camera cable from the camera.
4. Disconnect the camera assembly from the tab on the display bezel.

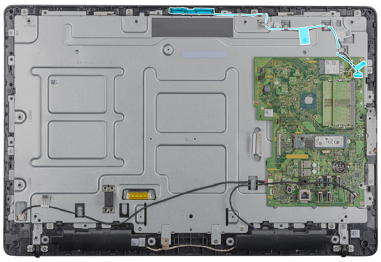
Installing the camera

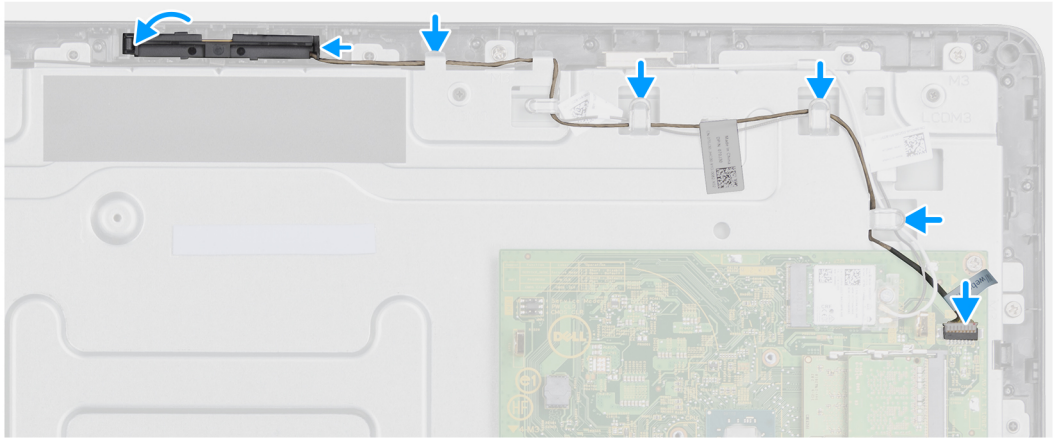
Prerequisites

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

About this task

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





Steps

1. Connect the camera cable to the connector port on the system board.
2. Connect the camera assembly to the tabs on the display bezel.
3. Press the camera assembly into the slot on the display bezel until the securing clip locks in place.
4. Route the camera cable through the routing guides on the middle frame and display bezel.

Next steps

1. Install the back cover.
2. Install the stand.
3. Follow the procedure in After working on your thin client.

System board

Removing the system board

Prerequisites

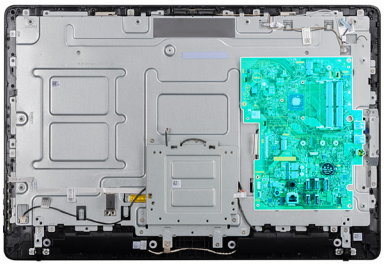
1. Follow the procedure in Before working inside your thin client.
2. Remove the stand.
3. Remove the back cover.
4. Remove the Vesa mount.
5. Remove the memory module
6. Remove the Solid state drive.
7. Remove the WLAN card.
8. Remove the heat sink.

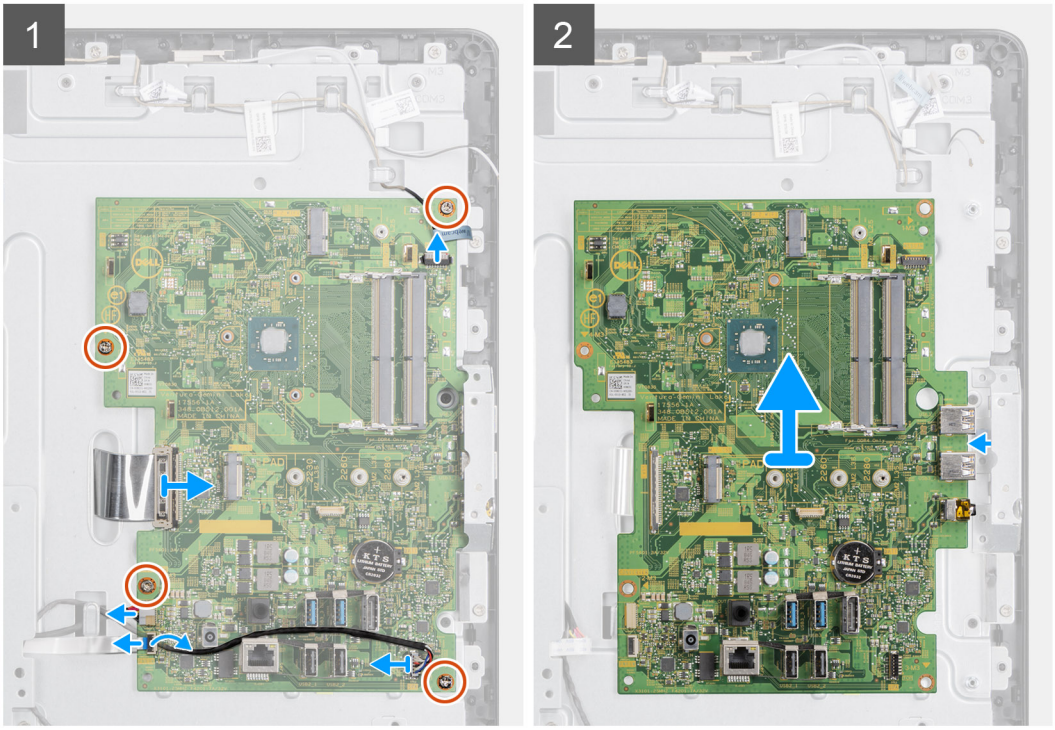
About this task

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



4x
M3x5





Steps

1. Disconnect the camera cable, speaker cable, OSD board cable, and converter cable from the system board.
2. Remove the heat sink from the system board.
3. Peel the tape from the middle frame that secures the OSD board cable to the system board.
4. Using the pull tab, disconnect the display cable from the system board.
5. Remove the memory module from the memory module slot on the system board.
6. Remove the WLAN card from the WLAN card slot on the system board.
7. Remove the four screws (M3x5) that secure the system board to the middle frame.
8. Gently lift and move the system board towards the left to free the system board away from the USB / global headset jack port frame on the middle frame chassis.

Installing the system board

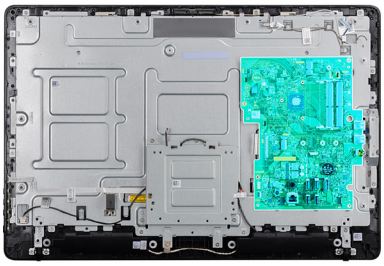
Prerequisites

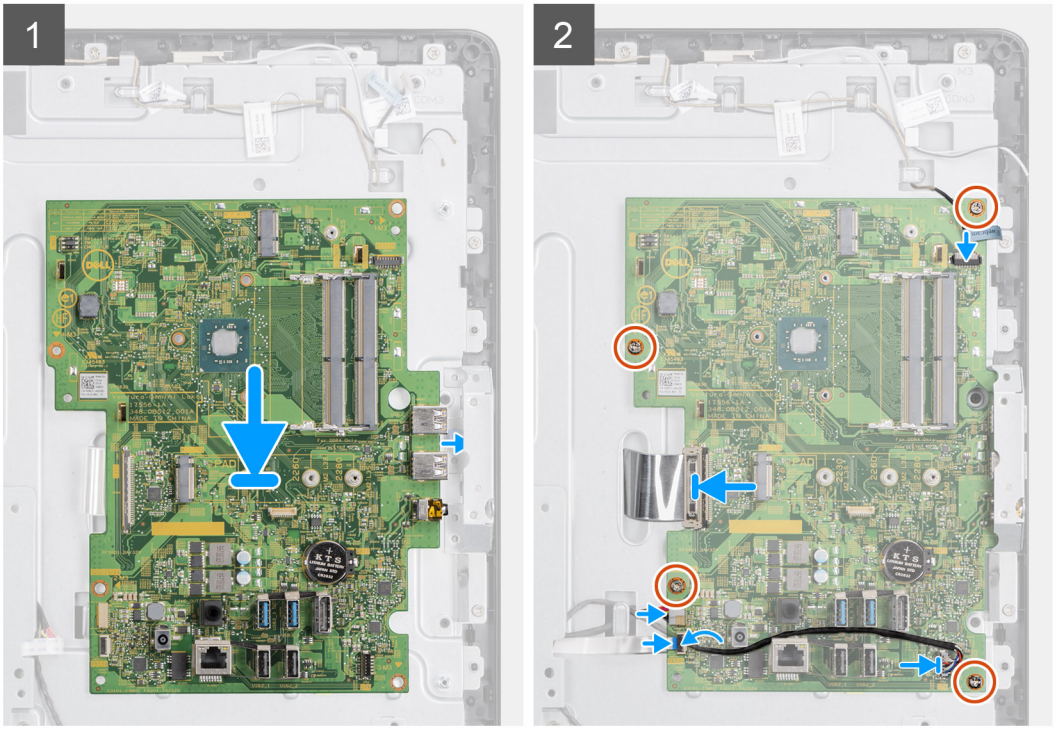
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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







Steps

1. Slide the system board into the slots on to the middle frame.
2. Align the screw holes on the system board with the screw holes on the chassis.
3. Replace the four screws (M3x5) on to the system board.
4. Install the heat sink assembly to the system board.
5. Connect the converter board cable securely to the system board.
6. Connect the on-screen display cable to the system board and close the latch to secure it.
7. Connect the camera cable securely to the system board.
8. Connect the display cable (LVDS) and secure the connection to the system board.
9. Connect the speaker cable to the system board.

Next steps

1. Install the heat sink.
2. Install the WLAN card.
3. Install the Solid-state drive.
4. Install the memory module.
5. Install the Vesa-mount.
6. Install the back cover.
7. Install the stand.

Speakers

Removing the speakers

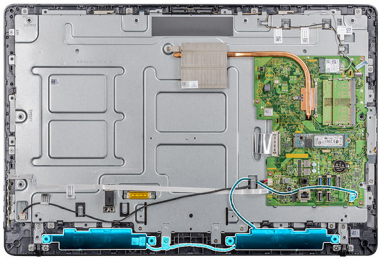
Prerequisites

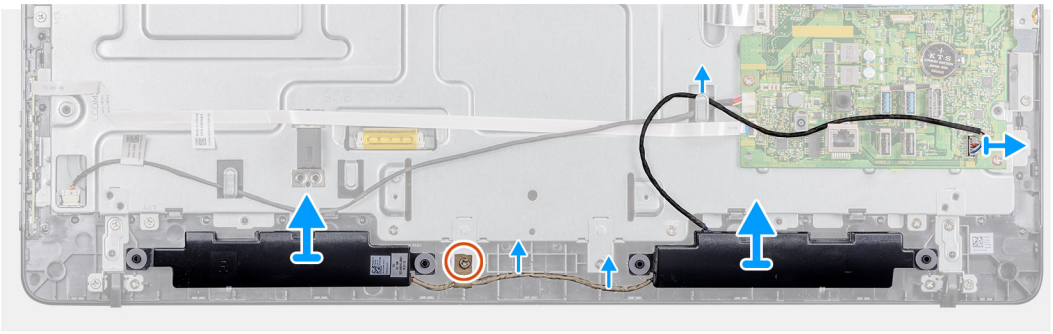
1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.

About this task

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







Steps

1. Disconnect the speaker cable from the system board.
2. Remove the speaker cable from the routing guide on the VESA-mount bracket.
3. Note the speaker-cable routing on the display bezel and remove the screw (M3x5) that secures the cable to the middle frame.
4. Peel off the tape from the VESA-mount bracket.
5. Lift the speakers, along with the speaker cable, off the display assembly.

Installing the speakers

Prerequisites

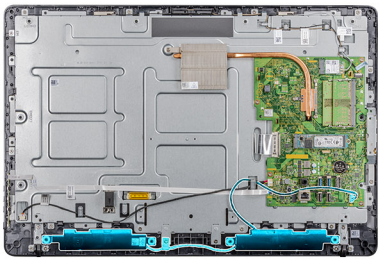
If you are replacing a component, remove the existing component before performing the installation procedure.

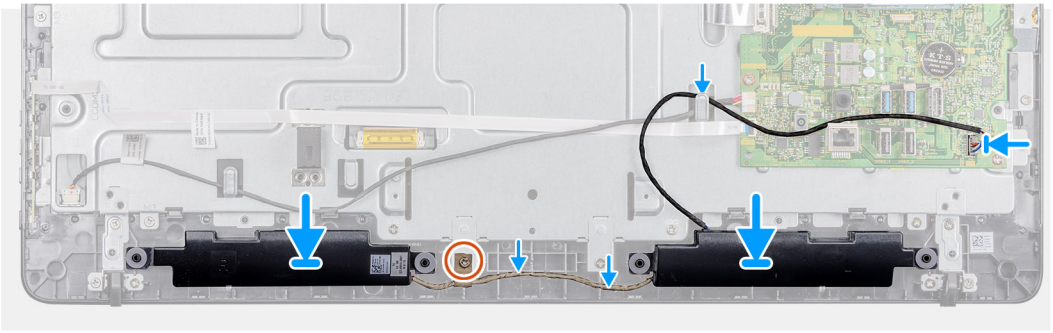
About this task

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



1x
M2x4





Steps

1. Using the alignment posts, place the speakers on the display assembly.
2. Route the speaker cable through the routing guide on the display bezel.
3. Adhere the tape of the speaker cable to the VESA-mount bracket and the routing guide.
4. Connect the speaker cable to the system board.

Next steps

1. Replace the back cover.
2. Replace the stand.
3. Follow the procedure in After working on your thin client.

Middle frame

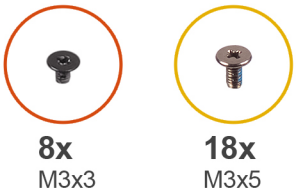
Removing the middle frame

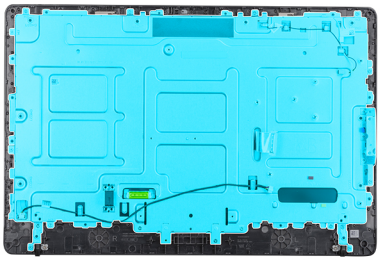
Prerequisites

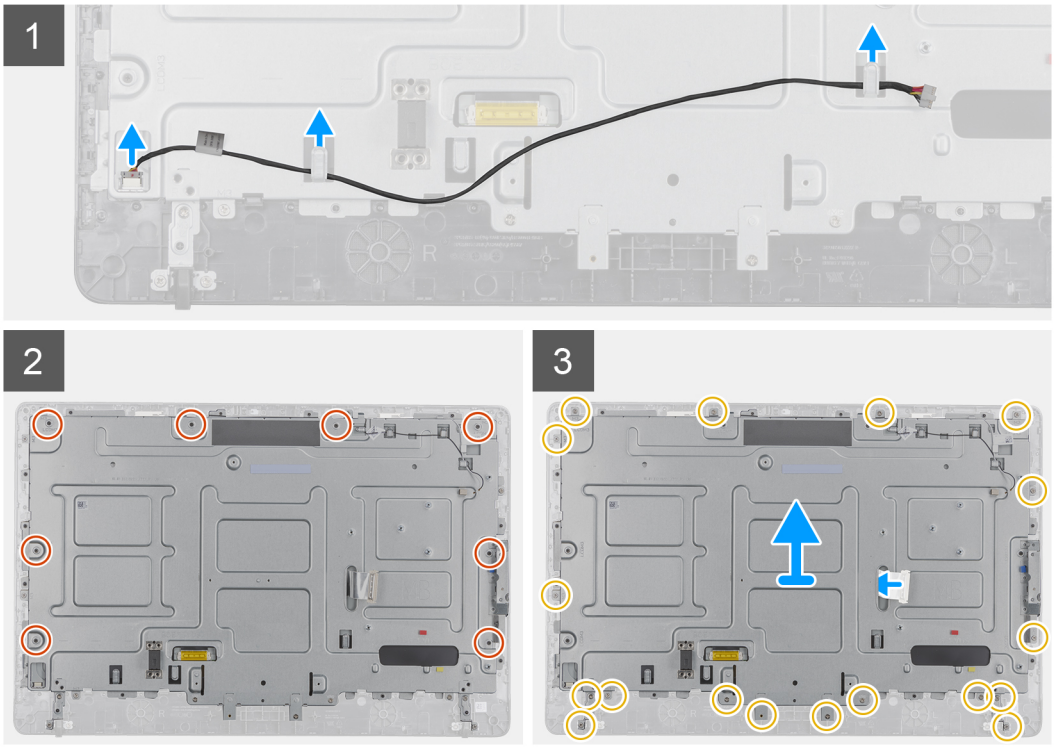
1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.
4. Remove the VESA-mount.
5. Remove the Solid state drive.
6. Remove the wireless card.
7. Remove the heat sink.
8. Remove the systemboard.
9. Remove the OSD board.
10. Remove the speaker.

About this task

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







Steps

1. Note the routing of the antenna, camera, and microphone cables and remove the cables from the routing guides on the middle frame.
2. Disconnect the converter board cable from the display panel and remove it off the middle frame.
3. Remove the eight screws (M3x3) that secure the middle frame to the display panel.
4. Remove the eighteen screws (M3x5) that secure the middle frame to the chassis.
5. Release the middle cover from the tabs on the display assembly.
6. Slide the display cable through the slot on the display assembly.
7. Lift the middle frame off the chassis.

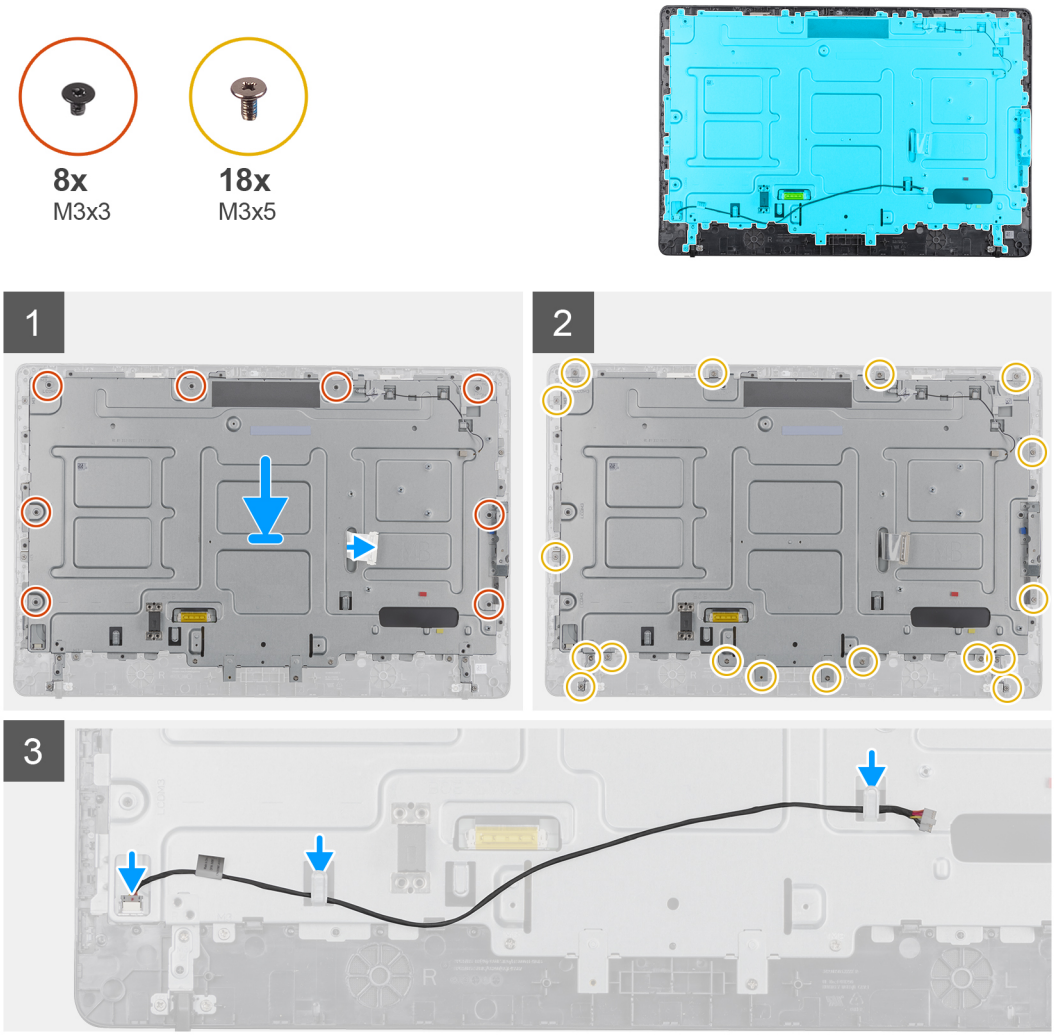
Installing the middle frame

Prerequisites

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

About this task

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



Steps

1. Align the slots on the middle frame with the slots on the chassis.
2. Slide the display cable through the slot on the middle frame.
3. Place the middle frame on the display assembly and press down until the tabs lock in place.
4. Replace the eighteen screws (M3x5) that secure the middle frame to the chassis.
5. Replace the eight screws (M3x3) that secure the middle frame to the display panel.
6. Connect the converter board cable to the display panel and route the cable on to the middle frame.
7. Route of the antenna, camera, and microphone cables on to the routing guides on the middle frame.

Next steps

1. Install the speaker.
2. Install the VESA-mount.
3. Install the system board.
4. Install the heat sink.
5. Install the wireless card.
6. Install the solid state drive.
7. Install the OSD board.
8. Install the back cover.
9. Install the stand.
10. Follow the procedure in After working on your thin client.

Rubber feet

Removing the rubber feet

Prerequisites

1. Follow the procedure in Before working on your thin client.
2. Remove the stand.
3. Remove the back cover.
4. Remove the VESA-mount.
5. Remove the solid-state drive.
6. Remove the wireless card.
7. Remove the heat sink.
8. Remove the system board.
9. Remove the speakers.
10. Remove the middle frame.

About this task

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



Steps

1. Remove the two screws (M3x5) that secure the rubber foot to the display assembly.
2. Lift the rubber foot off the display bezel.

Installing the rubber feet

Prerequisites

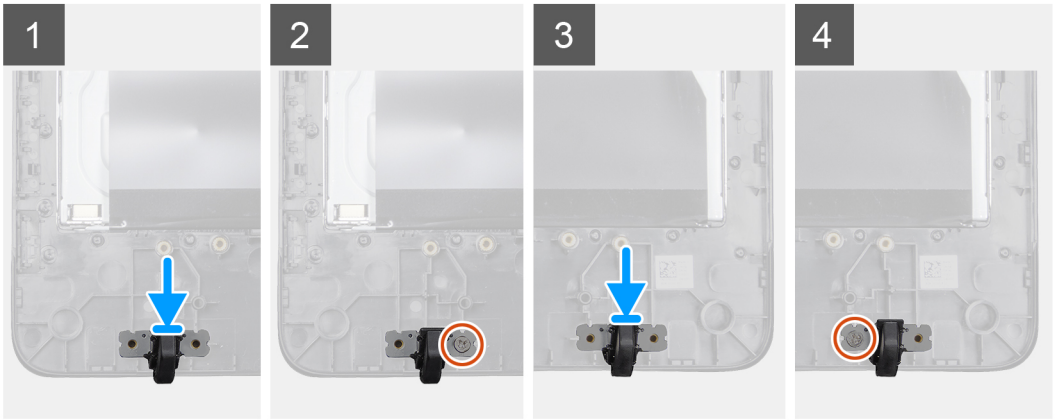
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

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







Steps

1. Align the screw holes on the rubber foot with the screw holes on the display bezel.
2. Install the two screws (M3x5) that secure the rubber foot to the display assembly.

Next steps

1. Install the middle cover.
2. Install the speakers.
3. Install the VESA-mount.
4. Install the system board.
5. Install the heat sink.
6. Install the wireless card.
7. Install the heat sink.
8. Install the solid-state drive.
9. Install the back cover.
10. Install the stand.
11. 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. Remove the stand.
3. Remove the back cover.
4. Remove the Vesa-mount.
5. Remove the speakers.

6. Remove the on-screen display board.
7. Remove the camera.
8. Remove the WLAN card.
9. Remove the memory module.
10. Remove the solid-state drive.
11. Remove the heat sink.
12. Remove the middle frame.

About this task

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



procedure.

Steps

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

Installing the display panel

Prerequisites

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

About this task

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



procedure.

Steps

Place the display panel assembly on a flat surface.

Next steps

1. Install the middle frame.
2. Install the camera.
3. Install the speakers
4. Install the system board.
5. Install the heat sink.
6. Install the WLAN card.
7. Install the memory module.
8. Install the Vesa-mount.
9. Install the back cover.
10. Install the stand.
11. Follow the procedure in After working on your thin client.

4

System setup

System Setup overview

System Setup allows 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.

Accessing thin client BIOS settings

About this task

This section describes about the Wyse 5470 AIO 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 was part of the BIOS file. Restoring Factory default restores the BIOS setting to the values that was configured in factory before shipping the client.

Next steps

To access the boot menu during start-up, press the **F12** key. Use the **Boot Selection** menu to select or view the boot sequence order as follows:

- Boot from UEFI: Hard Drive, Partition 4

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.

Table 2. Navigation keys (continued)

Keys	Navigation
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.

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: Windows Boot Manager
  - UEFI: Hard drive, Partition 4
- Other options
  - BIOS Setup
  - BIOS Flash Update
  - Diagnostics
  - Exit Boot Menu and Continue

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

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

Table 3. General screen options (continued)

Option	Description
	Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology ● Device Information: Primary Hard Drive, Video Controller, Audio Controller, Wi-Fi Device, Bluetooth Device
Boot Sequence	This option enables you to change the order in which the system boots an operating system. ● Default Boot Sequence ○ Windows Boot Manager ○ UEFI: Hard Drive, Partition 4 ● 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 screen options

Table 4. System Configuration options

Option	Description
UEFI Network Stack	If the **UEFI Network Stack** option is enabled, the UEFI Networking Protocols are installed and allows pre-operating system and early operating system networking features to use any enabled NICs or SFP. The **UEFI Network Stack** option is enabled by default.
Integrated NIC	The Integrated NIC option controls the on-board LAN controller. The options include: ● Disabled—The internal LAN is off and not visible to the operating system. ● Enabled—The internal LAN is enabled. ● Enabled w/PXE—The internal LAN is enabled (with PXE boot). This option is enabled by default.
SATA Operation	This option configures the operating mode of the integrated SATA hard drive controller. The options include: ● Disabled ● AHCI—enabled by default
Drives	Allows you to configure the SATA drive on board and the M.2 PCIe SSD. ● SATA-0 enabled by default ● M.2 PCIe SSD-0
SMART Reporting	This field controls whether the hard drive errors of integrated drives are reported during system startup.
USB Configuration	This is an optional feature.

Table 4. System Configuration options (continued)

Option	Description
	This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices such as hard drives and USB keys. If the USB port is enabled, the device attached to this port is enabled and available for the operating system. If the USB port is disabled, the operating system cannot detect any device attached to this port. The options include: ● Enable USB Boot Support—enabled by default ● Enable Side USB Ports—enabled by default ● Enable Rear USB Ports—enabled by default **NOTE:** USB keyboard and mouse always work in the BIOS setup irrespective of these settings.
Side USB Configuration	This option enables or disables side USB ports. The options include: ● Side port Top—enabled by default ● Side port Bottom —enabled by default
Rear USB Configuration	This option enables or disables rear USB ports. The options are: ● Rear port Top Left—enabled by default ● Rear port Bottom Left—enabled by default ● Rear port Top Right—enabled by default ● Rear port Bottom Right—enabled by default
USB PowerShare	This option configures the USB PowerShare feature and allows you to charge external devices through the USB PowerShare port when system is off. This option is enabled by default.
Audio	This option enables or disables the integrated audio controller. By default, the **Enable Audio** option is selected. The options include: ● Enable Microphone—enabled by default ● Enable Internal Speaker—enabled by default
OSD Button Management	This option allows the user to disable the OSD (On-Screen Display) buttons on the system. This option is disabled by default.
Miscellaneous devices	This option enables or disables the camera of the Thin Client. By default, the **Enable Camera** option is selected.

Video screen option

Table 5. Video screen option

Option	Description
Primary Display	This option determines which video controller is the primary display when multiple controllers are available in the system. The options include: ● Auto—enabled by default ● Intel HD Graphics

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. **NOTE:** Successful password changes take effect immediately. By default, the administrator password is not set.
Internal HDD-0 password	This option enables you to set, change, or delete the internal hard drive (HDD-0) password. • When a hard drive password is set, it travels with the hard drive, so the hard drive is protected even if it is installed on another system. • The user will be prompted to enter the password every time the user tries to access the hard drive. If the correct password is not entered the hard drive will not function. • By default, the hard drive will not have a password 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.

Table 6. Security screen options (continued)

Option	Description
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 ● 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 into a thin client's basic input/output system (BIOS) before the machine boots up to the operating system. The Hard disk passwords needs to be cleared before enabling the Master Password Lockout. This option will be 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

Table 7. Secure Boot screen options (continued)

Options	Description
	• 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 **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.

Table 9. Performance options (continued)

Option	Description
Intel TurboBoost	This option enables you to enables or disables the Intel TurboBoost mode of the processor. The option is: Enable Intel TurboBoost—This option is enabled by default.

Power management screen options

Table 10. Power management options

Option	Description
AC Recovery	This option enables you to control the system's behavior when AC power is restored after a AC power loss. ● Power Off—enabled by default ● Power On ● Last Power State
Auto On Time	This option enables you to set the time at which the computer must turn on automatically. The options include: ● Disabled—enabled by default ● Every Day ● Weekdays ● Select Days
Deep Sleep Control	This option enables you to determine on how aggressive the system is at conserving power while shutdown—S5 or in Hibernate (S4) mode. The options include: ● Disabled—This option enabled by default ● Enabled in S5 only ● Enabled in S4 and S5
USB Wake Support	This option enables USB devices to wake the system from standby. **NOTE:** This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during standby, the system setup removes power from all the USB ports to conserve battery power. The **Enable USB Wake Support** option is enabled by default.
Wake on LAN	This option enables or disables the feature that powers on the computer from the Off state when triggered by a LAN signal. The options include: ● Disabled ● LAN Only—This option is enabled by default. ● LAN with PXE Boot
Block Sleep	The **Block Sleep** option blocks you from entering to sleep mode in the operating system environment. Block Sleep—This option is disabled by default.

POST behavior screen options

Table 11. POST behavior options

Option	Description
Adapter Warnings	This option enables or disables the system setup (BIOS) warning messages when you use certain power adapters. By default, the Enable Adapter Warnings option is enabled.
Numlock LED	This option enables and disables the Numlock LED when the system boots. By default, this option is enabled.
Keyboard Error	This option enables you to specify whether keyboard related errors are reported when the system boots. By default, the Enable Keyboard Error Detection option is enabled
Fastboot	This option enables you to speed up the boot process by bypassing some of the compatibility steps. The options include: • Minimal • Thorough—This option is enabled by default. • Auto
Extended BIOS POST Time	This option enables you to create an extra preboot delay. The options include: • 0 seconds—This option is enabled by default. • 5 seconds • 10 seconds
Full Screen Logo	This option enables or disables the full screen logo. By default, the Enable Full Screen Logo option is not enabled.

Wireless screen option

Table 12. Wireless option

Option	Description
Wireless Device Enable	This options enables or disables the internal wireless devices. The options include: • WLAN/BT — enabled by default

Virtualization support screen options

Table 13. Virtualization options

Option	Description
Virtualization	This option enables or disables the Intel Virtualization Technology. Enable Intel Virtualization Technology (default).
VT for Direct I/O	This option specifies whether a virtual machine monitor can utilize the additional hardware capabilities 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 computer.
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.
SERR Messages	This option enables you to control the SERR message mechanism. The **Enable SERR Message** option is enabled 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: All the information will be lost if you enable this option.**
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 key. ● BIOS Recovery from Hard Drive—enabled by default ● BIOS Auto-Recovery—disabled by default

System Logs screen option

Table 15. System Logs screen option

Option	Description
BIOS Events	This option enables you to delete all the logs.

Advanced configurations

Table 16. Advanced configurations

Option	Description
Active State Power Management (ASPM)	ASPM is a power management mechanism for PCI Express devices to garner power savings while otherwise in a fully active state. The options include: ● Auto — Communicattion between device and PCI Express hub. ● Disabled — ASPM turned off at all times. ● L1 Only — ASPM is set to use L1.

5

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.

Enhanced Pre-Boot System Assessment diagnostics

About this task

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.

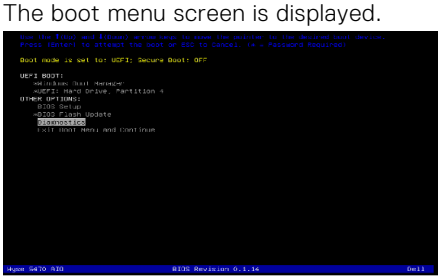
NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the thin client terminal when the diagnostic tests are performed.

Running the ePSA diagnostics

Steps

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

The boot menu screen is displayed.



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.

Power behavior

Table 17. 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

Table 17. Power behavior (continued)

AC adapter	System behavior	POST error message
		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.

Power state and LED status

Table 18. Power states and LED behavior

Indicator	Symptoms	Description
Power LED	Solid white	Thin client is in working—S0 state.
	Breathing white	Thin client is in sleep—S3 state.
	Off	Thin client is in off state.
	Solid amber	Thin client booting is in progress.
	Blinking amber	Bad power supply.

NOTE: Press and hold the power button for at least 4 seconds to shut down the All-in-One thin client forcibly.

6

Getting help

Contacting Dell

Prerequisites

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.