

Dell™ Latitude™ D510 Service Manual

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Notes, Notices, and Cautions



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



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



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

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Model PP10L

April 2005 Rev. A00

Before You Begin

Dell™ Latitude™ D510 Service Manual

- [Preparing to Work Inside Your Computer](#)
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Preparing to Work Inside Your Computer

This section provides procedures for removing and installing the components in your computer. Unless otherwise noted, each procedure assumes that the following conditions exist:

- 1 You have performed the steps in "[Turning Off Your Computer](#)" and "[Before Working Inside Your Computer](#)."
 - 1 You have read the safety information in the *Product Information Guide*.
 - 1 A component can be replaced by performing the removal procedure in reverse order.
-

Recommended Tools

The procedures in this document may require the following tools:

- 1 1/4 inch flat-blade screwdriver
 - 1 #1 Phillips screwdriver
 - 1 Small plastic scribe
 - 1 Flash BIOS-update program floppy disk or CD
-

Turning Off Your Computer

 **NOTICE:** To avoid losing data, save and close any open files and exit any open programs before you turn off your computer.

1. Shut down the operating system:
 - a. Save and close any open files, exit any open programs, click the **Start** button, and then click **Shut Down**.
 - b. In the **Shut Down** window, click **OK**.

The computer turns off after the operating system shutdown process finishes.

2. Ensure that the computer and any attached devices are turned off. If your computer and attached devices do not automatically turn off when you shut down your operating system, press and hold the power button for 4 seconds.
-

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help ensure your own personal safety.

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

 **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.

 **NOTICE:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **NOTICE:** When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector 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.

 **NOTICE:** To avoid damaging the computer, perform the following steps before you begin working inside the computer.

1. Ensure that the work surface is flat and clean to prevent the computer cover from being scratched.
2. [Turn off your computer.](#)
3. If the computer is connected to a docking device, undock it. See the documentation that came with your docking device for instructions.
- ➔ **NOTICE:** To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network port or device.
4. Disconnect any telephone, network, and USB cables from the computer.
5. Disconnect your computer power supply and all attached devices from their electrical outlets.
- ➔ **NOTICE:** To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.
- ➔ **NOTICE:** To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.
6. Remove any installed PC Cards from the PC Card slot.
7. Close the display and turn the computer upside down on a flat work surface.
- ➔ **NOTICE:** To avoid damaging the system board, you must remove the main battery before you service the computer.
8. Slide and hold the battery-bay latch release on the bottom of the computer, and then remove the battery from the battery bay



9. Remove any installed [memory modules](#), [modems](#), [Mini PCI cards](#), [internal cards with Bluetooth wireless technology](#), [backup batteries](#), and [optical devices](#).
10. Remove the [hard drive](#).

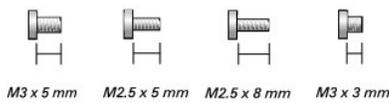
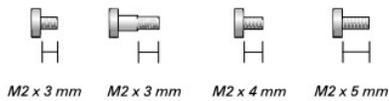
Computer Orientation



1	back
2	right
3	front
4	left

Screw Identification

When you are removing and replacing components, print this section as a guide to keep track of the screws. The placemat provides the number of screws and their sizes.



<p>Optical Device: (optional security screw) (1 each)</p>  <p>M2 x 3 mm</p>	<p>Hard Drive: (2 each)</p>  <p>M3 x 5 mm</p>	<p>Keyboard: (2 each)</p>  <p>M2.5 x 5 mm</p>
<p>Modem: (1 each)</p>  <p>M2 x 3 mm</p>	<p>Hard Drive Carrier: (2 each)</p>  <p>M3 x 3 mm</p>	<p>Display Bezel: (display bumpers, 5 each) (6 each)</p>  <p>M2 x 5 mm</p>

<p>Display Panel: (8 each)</p>  <p><i>M2 x 5 mm</i></p> <p>Display Assembly: (4 each)</p>  <p><i>M2.5 x 5 mm</i></p>	<p>Display Latch: (1 each)</p>  <p><i>M2 x 4 mm</i></p>	<p>Palm Rest: (4 each)</p>  <p><i>M2.5 x 5 mm</i></p> <p>(14 each)</p>  <p><i>M2.5 x 8 mm</i></p>
<p>Speakers: (1 each)</p>  <p><i>M2.5 x 5 mm</i></p>	<p>Fan: (2 each)</p>  <p><i>M2.5 x 8 mm</i></p>	<p>System Board: (2 each)</p>  <p><i>M2.5 x 5 mm</i></p> <p>(4 each)</p>  <p><i>M2 x 3 mm</i></p>

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Flashing the BIOS

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 **NOTICE:** To avoid damaging the system board, ensure you are connected to a known good electrical outlet and that you do not interrupt the BIOS flash process. Loss of power or an interruption during the BIOS flash process can cause damage to the system board.

1. Ensure that the AC adapter is plugged in and that the main battery is installed properly.
2. Turn on the computer and press <F12> during POST to access the Boot Menu.

 **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then, shut down your computer and try again.

3. Insert the flash BIOS update program floppy or CD and select boot from "**CD/DVD/CD-RW Drive**".
4. Select "**Upgrade your system BIOS**" from the menu.

Follow the instructions that appear on the screen. The computer continues to boot and updates the new BIOS. When the update is complete, the computer automatically reboots.

 **NOTE:** To enter the system setup program, press <F2> during POST. Press <Esc> and select **Save/Exit** if you make modifications; otherwise, select **Exit** and then press <Enter> to exit the system setup.

5. Remove the flash BIOS update program floppy or CD from the drive.

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Internal Card With Bluetooth® Wireless Technology

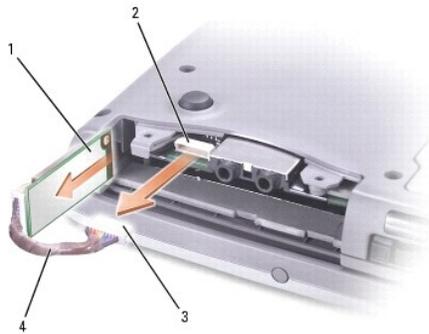
Dell™ Latitude™ D510 Service Manual

CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Remove the [hard drive](#).
3. Turn the computer upside down.
4. Pull the card connector out of the system board connector.
5. Pull the card cable to remove the internal card with Bluetooth wireless technology from the computer.

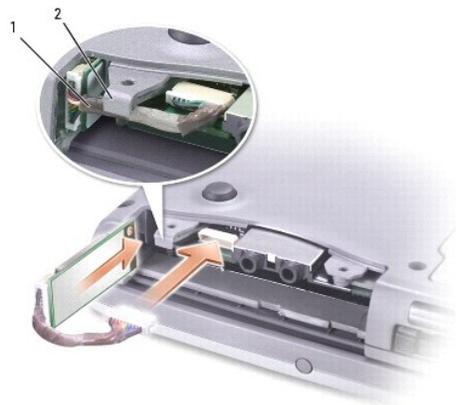
NOTICE: When replacing the internal card with Bluetooth wireless technology, ensure that the card cable is routed correctly so that you do not damage the cable when you install the hard drive.



1	internal card with Bluetooth wireless technology
2	system board connector
3	card connector
4	card cable

To replace the internal card with Bluetooth wireless technology:

1. Insert the internal card with Bluetooth wireless technology.
2. Ensure that the card cable is routed under the tab.



1	cable
2	tab

3. Connect the card cable.
4. Replace the hard drive.

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Coin Cell Battery

Dell™ Latitude™ D510 Service Manual

⚠ CAUTION: Before working inside your Dell™ computer, read the safety instructions in your *Product Information Guide*.

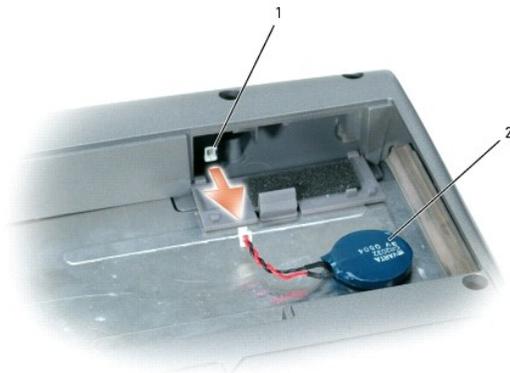
👉 NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Turn the computer upside down.
3. Depress the coin cell-cover latch in the battery bay and rotate it out to remove the coin cell- battery cover.



1	coin cell-cover latch
2	coin cell-battery cover

4. Pull the coin cell battery straight out of the computer base.
5. Disconnect the coin cell-battery cable connector from the battery connector.



1	battery connector
2	coin cell battery

Microprocessor Module

Dell™ Latitude™ D510 Service Manual

- [Removing the Microprocessor Module](#)
- [Installing the Microprocessor Module](#)

Removing the Microprocessor Module

⚠ CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

- ➡ **NOTICE:** To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.
- ➡ **NOTICE:** Do not touch the processor die. Press and hold the microprocessor down on the substrate on which the die is mounted while turning the cam screw to prevent intermittent contact between the cam screw and microprocessor.
- ➡ **NOTICE:** To avoid damage to the microprocessor, hold the screwdriver so that it is perpendicular to the microprocessor when turning the cam screw.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."

2. Remove the [keyboard](#).

➡ **NOTICE:** To ensure maximum cooling for the microprocessor, do not touch the heat transfer areas on the microprocessor thermal-cooling assembly. The oils in your skin reduce the heat transfer capability of the thermal pads.

3. Remove the [microprocessor thermal-cooling assembly](#).

➡ **NOTICE:** When removing the microprocessor module, pull the module straight up. Be careful not to bend the pins on the microprocessor module.

4. Use a small, flat-blade screwdriver to rotate the ZIF-socket cam screw counterclockwise until it comes to the cam stop.



1	ZIF socket cam screw
2	pin-1 corner

➡ **NOTE:** The ZIF-socket cam screw secures the microprocessor to the system board. Take note of the arrow on the ZIF-socket cam screw.

5. Lift out the microprocessor module.

Installing the Microprocessor Module

➡ **NOTICE:** Ensure that the cam lock is in the fully open position before seating the microprocessor module. Seating the microprocessor module properly in the ZIF socket does not require force.

 **NOTICE:** A microprocessor module that is not properly seated can result in an intermittent connection or permanent damage to the microprocessor and ZIF socket.

1. Align the pin-1 corner of the microprocessor module with the pin-1 corner of the ZIF socket, and insert the microprocessor module.

 **NOTE:** The pin-1 corner of the microprocessor module has a triangle that aligns with the triangle on the pin-1 corner of the ZIF socket.

 **NOTICE:** You must position the microprocessor module correctly in the ZIF socket to avoid permanent damage to the module and the socket.

When the microprocessor module is correctly seated, all four corners are aligned at the same height. If one or more corners of the module are higher than the others, the module is not seated correctly.

2. Tighten the ZIF socket by turning the cam screw clockwise to secure the microprocessor module to the system board.
3. Replace the parts that you removed in [Removing the Microprocessor Module](#).

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Display Assembly and Display Latch

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- [Display Assembly](#)
- [Display Bezel](#)
- [Display Panel](#)
- [Display Latch](#)

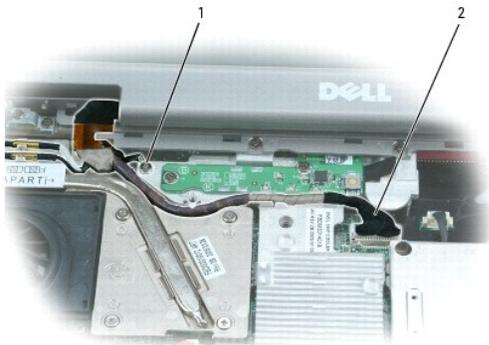
Display Assembly

⚠ CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

➡ NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

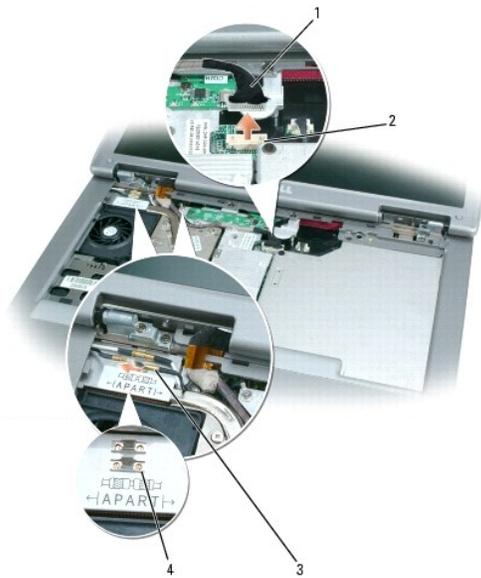
➡ NOTICE: You must remove the display assembly before you remove the palm rest.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Remove the [keyboard](#).
3. Open the display assembly approximately 180 degrees, and support the display assembly so that it does not open past this position.
4. Remove the captive screw that grounds the display cable.
5. Disconnect the display cable from the display cable connector on the system board.
6. Release the display cable from its routing clips and slide it out from beneath the tab on the palm rest.



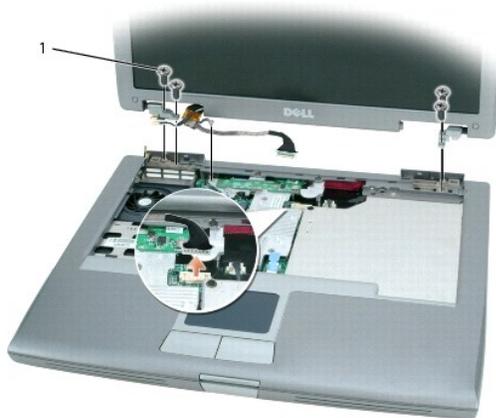
1	captive screw
2	display cable

7. Release the two antenna cables from the two antenna-securing clips.
8. Disconnect one antenna cable from the display by holding the two gold antenna connectors and gently pulling them apart. Then disconnect the other antenna cable. (The gold antenna connectors on each cable are keyed to ensure that they are correctly reconnected.)



1	display cable
2	display cable connector on system board
3	antenna cables (2)
4	antenna securing clips (2)

9. Remove the four M2.5 x 5-mm screws.



1	M2.5 x 5-mm screws (4)
---	------------------------

10. Rotate the display assembly to a 90-degree angle, and lift the display assembly up and out of the computer base.

Display Bezel

CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."

2. Remove the [keyboard](#).
3. Remove the [display assembly](#).
4. Use a plastic scribe to pry the five display bumpers out of the screw holes located on the front of the bezel.
5. Remove the six M2 x 5-mm screws located on the front of the bezel.



1	display bumper	4	M2 x 5-mm screws (6)
2	support bracket	5	display bumpers (4)
3	display panel	6	display bezel

➡ **NOTICE:** Carefully separate the bezel from the top cover to avoid damage to the bezel.

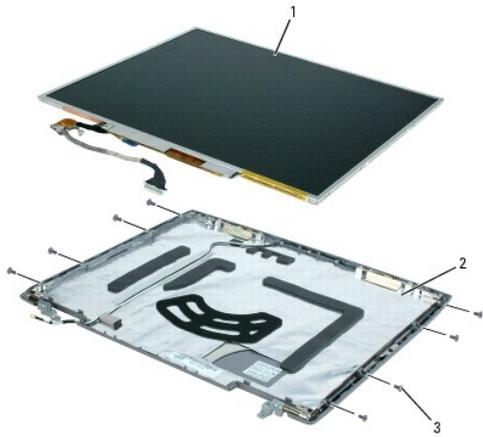
6. Starting at the edges of the bottom of the display panel, use your fingers to separate the bezel from the top cover by lifting the inside edge of the bezel away from the top cover.

Display Panel

⚠ **CAUTION:** Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

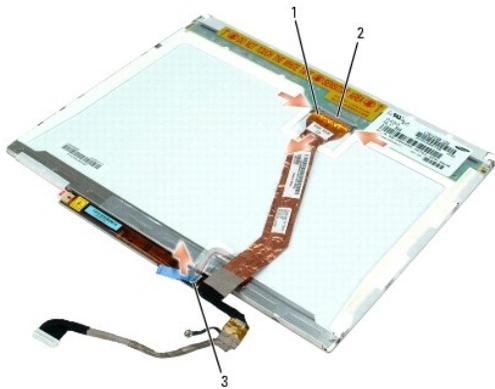
➡ **NOTICE:** To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Remove the [keyboard](#).
3. Remove the [display bezel](#).
4. Remove the eight M2 x 5-mm screws from the display panel.



1	display panel
2	top cover
3	M2 x 5-mm screws (8)

- Lift the display panel, rotating it out of the display cover.
- Use the pull-tab to disconnect the bottom flex-cable connector from the inverter connector.



1	top flex-cable connector
2	display connector
3	bottom flex-cable connector with pull-tab

- Press in both sides of the top flex-cable connector, and pull it away from the display connector.

Display Latch

⚠ CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

🔌 NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

- Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
- Remove the [keyboard](#).
- Remove the [display assembly](#).
- Remove the [display bezel](#).

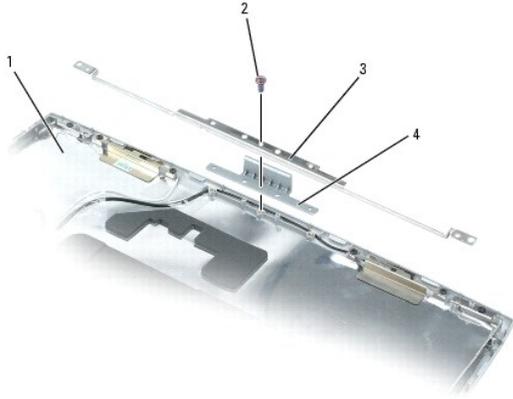
5. [Remove the display panel.](#)

NOTICE: A strip of copper foil may be present beneath the support bracket on some systems; ensure that you *do not* tear this foil while removing the bracket.

6. Remove the M2 x 4-mm screw that secures the support bracket to the top cover.

7. Lift the support bracket out of the top cover, and then remove the display latch.

NOTE: Ensure that the support bracket is upright when you replace the display latch.



1	top cover
2	M2 x 4-mm screw (1)
3	support bracket
4	display latch

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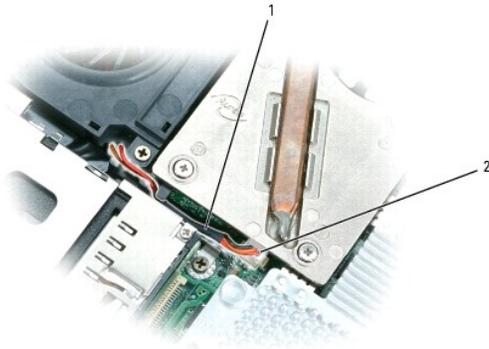
Fan

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CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Remove the [keyboard](#).
3. Remove the [palm rest](#).
4. Pull straight up on the fan cable connector to disconnect it from the system board connector.
5. Free the fan cable from the cable routing pegs on the system board.



1	fan cable routing
2	fan cable connector

6. Remove the two M2.5 x 8-mm screws from the fan, and pull the fan away from the system board.



1	M2.5 x 8-mm screws (2)
2	fan
3	fan cable connector

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Hard Drive

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- [Removing the Hard Drive](#)
- [Installing the Hard Drive](#)
- [Removing the Hard Drive From Its Carrier](#)

Removing the Hard Drive

- ⚠ **CAUTION:** If you remove the hard drive from the computer when the drive is hot, *do not touch* the metal housing of the hard drive.
- ⚠ **CAUTION:** Before working inside your computer, read the safety instructions in your *Product Information Guide*.
- ➡ **NOTICE:** To prevent data loss, shut down your computer before removing the hard drive. Do not remove the hard drive while the computer is on, in standby mode, or in hibernate mode.
- ➡ **NOTICE:** Hard drives are extremely fragile; even a slight bump can damage the drive.
- 🔧 **NOTE:** Dell does not guarantee compatibility or provide support for hard drives from sources other than Dell.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Turn the computer upside down. Use a standard #1 Phillips screwdriver to remove the two M3 x 5-mm screws.



1 M3 x 5-mm screws (2)

3. Turn the computer over so that it is upright.
- ➡ **NOTICE:** You cannot remove your hard drive unless you open your display first.
4. Open the display approximately 2.54 cm (1 in).
- ➡ **NOTICE:** When the hard drive is not in the computer, store it in protective antistatic packaging. See "Protecting Against Electrostatic Discharge" in your *Product Information Guide*.
5. Slide the hard drive out of the computer.

Installing the Hard Drive

1. If installing a new drive, remove it from its packaging. Save the original packaging to use when storing or shipping the hard drive.
If the drive that you are installing is not packaged in a carrier, [remove the old hard drive from its carrier](#) and attach the carrier to the new hard drive.

2. Ensure that the display is open approximately 2.54 cm (1 inch).

NOTICE: Use firm and even pressure to slide the drive into place. If you force the hard drive into place using excessive force, you may damage the connector.

3. Press the hard drive cover into the bay until it is fully seated in the bay.

4. Turn the computer upside down. Use a small screwdriver to tighten the screws.

5. Install the operating system for your computer.

6. Install the drivers and utilities for your computer.

Removing the Hard Drive From Its Carrier

CAUTION: If you remove the hard drive from the computer when the drive is hot, *do not touch* the metal housing of the hard drive.

CAUTION: Before working inside your computer, read the safety instructions in your *Product Information Guide*.

NOTICE: Hard drives are extremely fragile; even a slight bump can damage the drive.

1. Remove the two screws labeled M2 x 3.

2. Use spring tension to gently pry the carrier open near the back of the carrier.

3. Lift the hard drive out of the carrier.



1	M2 x 3 screws (2)
2	hard drive carrier
3	hard drive

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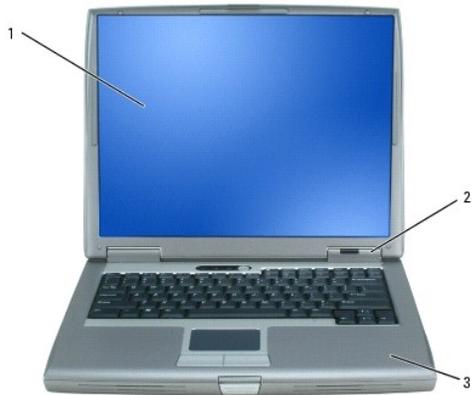
Keyboard

Dell™ Latitude™ D510 Service Manual

CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Turn the computer top-side up.



1	display
2	center control cover
3	palm rest (with touch pad)

3. Remove the center control cover:
 - a. Open the display all the way (180 degrees) so that it lies flat against your work surface.
 - b. Starting on the right side of the computer, use a plastic scribe to pry up the center control cover. Lift it away from the computer, and lay it aside.



1	center control cover
---	----------------------

4. Remove the keyboard:
 - a. Remove the two M2.5 x 5-mm screws across the top of the keyboard.

NOTICE: The keycaps on the keyboard are fragile, easily dislodged, and time-consuming to replace. Be careful when removing and handling the keyboard.

- b. Slide the keyboard towards the display until it is free of the palm rest and hold it slightly above the computer, to allow access to the keyboard connector.
- c. Pull the keyboard connector tab to disconnect the keyboard connector from the system board.
- d. Set the keyboard aside.



1	M2.5 x 5-mm screws (2)
2	keyboard connector tab
3	keyboard connector

NOTE: When you replace the keyboard, ensure that the keyboard tabs are completely secured beneath the palm rest to avoid scratching it.

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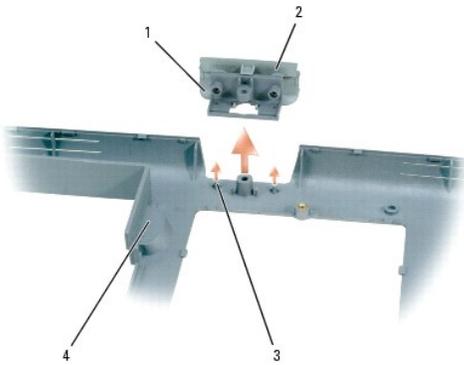
Base Latch

Dell™ Latitude™ D510 Service Manual

⚠ CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

🔌 NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Remove the [palm rest](#).
3. Remove the [speakers](#).
4. Press in the release button, slightly press together the two securing clips, and then pull the base latch straight up and away from the computer base.



1	base latch
2	release button
3	securing clips (2)
4	computer base

Palm Rest

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CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

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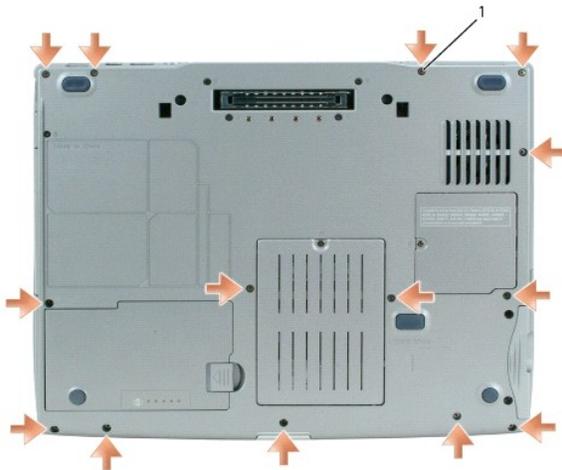
1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."

2. Remove the [keyboard](#).

NOTICE: You must remove the display assembly before you remove the palm rest: the display hinges pass through the back of the palm rest.

3. Remove the [display assembly](#).

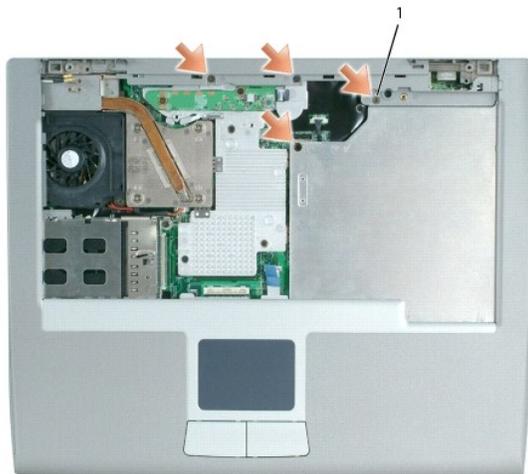
4. Turn the computer upside down and remove the 14 M2.5 x 8-mm screws.



1 M2.5 x 8-mm screws (14)

5. Turn the computer top-side up and remove the three M2.5 x 5-mm screws labeled "P" from the top of the palm rest.

6. Remove the M2.5 x 5-mm screw labeled "P" from the metal shield.



1 M2.5 x 5-mm screws labeled "P" (4)

7. Use the touch pad connector tab to disconnect the touch pad connector from the system board.



1 touch pad connector

2 system board connector

➡ **NOTICE:** Carefully separate the palm rest from the computer base to avoid damage to the palm rest.

8. Starting at the back center of the palm rest, use your fingers to separate the palm rest from the computer base by gently lifting up the palm rest while pressing down on the back of the computer base.

🔍 **NOTE:** When you reinstall the palm rest, attach the right side of the palm rest first and ensure that the modem ends of the antennae cables are visible in the PCI card compartment on the base of the computer.

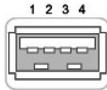
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Pin Assignments for I/O Connectors

Dell™ Latitude™ D510 Service Manual

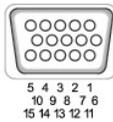
- [USB Connector](#)
- [Video Connector](#)
- [Parallel Connector](#)
- [S-Video TV-Out Connector](#)
- [Serial Connector](#)
- [IEEE 1394 Connector](#)

USB Connector



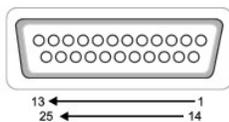
Pin	Signal
1	USB5V+
2	USBP-
3	USBP+
4	GND

Video Connector



Pin	Signal	Pin	Signal
1	CRT_R	9	5V+
2	CRT_G	10	GND
3	CRT_B	11	MONITOR_DETECT-
4	NC	12	DDC_DATA
5	GND	13	CRT_HS
6	GND	14	CRT_VS
7	GND	15	DDC_CLK
8	GND		

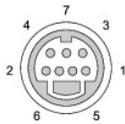
Parallel Connector



Pin	Signal	Pin	Signal

1	STROBE-	10	ACK-
2	PD0	11	BUSY
3	PD1	12	PE
4	PD2	13	SLCT
5	PD3	14	AFD/3M-
6	PD4	15	ERROR-
7	PD5	16	INIT-
8	PD6	17	SLIN-
9	PD7	18-25	GND

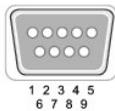
S-Video TV-Out Connector



S-Video	
Pin	Signal
1	GND
2	GND
3	DLUMA-L
4	DCRMA-L

Composite Video	
Pin	Signal
5	NC
6	DCMPS-L
7	GND

Serial Connector



Pin	Signal	Pin	Signal
1	DCD	6	DSR
2	RXDA	7	RTS
3	TXDA	8	CTS
4	DTR	9	RI
5	GND		

IEEE 1394 Connector



Pin	Signal
1	TPB-
2	TPB+
3	TPA-
4	TPA+

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Speakers

Dell™ Latitude™ D510 Service Manual

⚠ CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

👉 NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."

2. Remove the [palm rest](#).

3. Note the location of the coin-cell battery.

4. Remove the speaker cable from the speaker-cable routing clips.

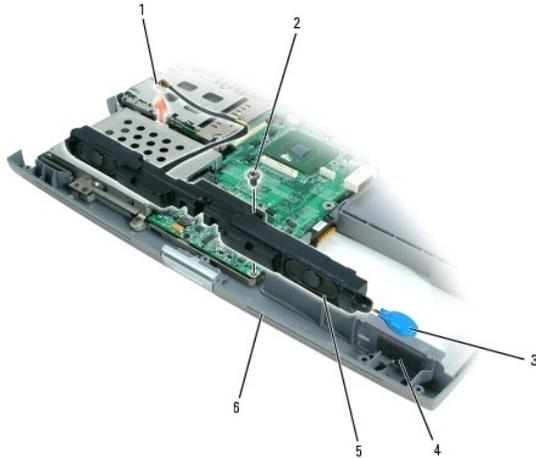
👉 NOTICE: To avoid damage to the speaker cable, be sure to re-route it through both securing clips. When inserting it back into each routing clip, slightly bend open the clip with your finger, insert the cable, and then press the clip closed.

5. Disconnect the speaker connector from the system board connector.

👉 NOTICE: Handle the speakers with care to avoid damaging them.

6. Remove the M2.5 x 5-mm screw labeled "B" from the speakers.

7. Gently pull the front of the computer base outward while lifting the speakers.



1	speaker connector
2	M2.5 x 5-mm screw labeled "B"
3	coin-cell battery
4	coin-cell battery compartment
5	speakers
6	computer base

8. Disconnect the coin-cell battery from the speakers.

👉 NOTICE: When replacing the speakers, be sure to replace the coin-cell battery in its compartment.

System Board

Dell™ Latitude™ D510 Service Manual

- [Removing the System Board](#)
- [Installing the System Board](#)

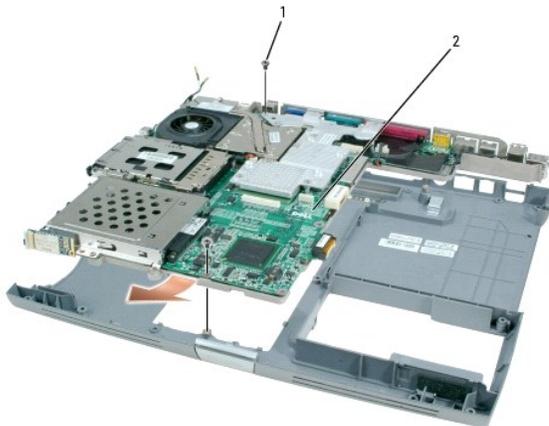
Removing the System Board

⚠ CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

The system board's BIOS chip contains the Service Tag, which is also visible on a barcode label on the bottom of the computer. The replacement kit for the system board includes a CD that provides a utility for transferring the Service Tag to the replacement system board.

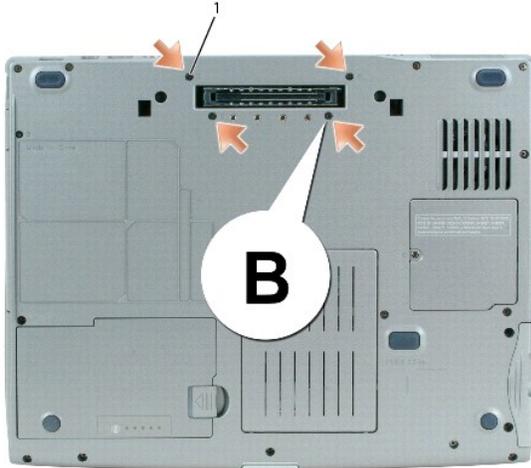
- ➡ **NOTICE:** Disconnect the power supply and any attached devices from electrical outlets, and remove any installed batteries.
- ➡ **NOTICE:** To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Remove the [palm rest](#).
3. Remove the [microprocessor thermal-cooling assembly](#).
4. Remove the [microprocessor](#).
5. Remove the [speakers](#).
6. Remove the two M2.5 x 5-mm screws labeled "B".



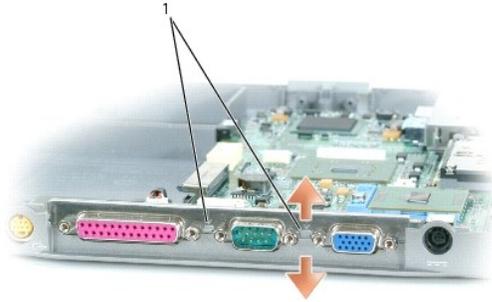
1	M2.5 x 5-mm screws (2)
2	system board

7. Turn the computer upside down and remove the four M2 x 3-mm screws labeled "B" that secure the system board to the computer base.



1 M2 x 3-mm screws labeled "B" (4)

8. Grab the back of the computer base in the center and pull down slightly so that the two system-board securing clips clear their slots, and then pull out the system board.



1 system-board securing clips (2)

Installing the System Board

1. Follow all of the steps in ["Removing the System Board"](#) in reverse order.

🔔 **NOTICE:** Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

2. Turn on the computer.

🔧 **NOTE:** After replacing the system board, enter the computer Service Tag into the BIOS of the replacement system board.

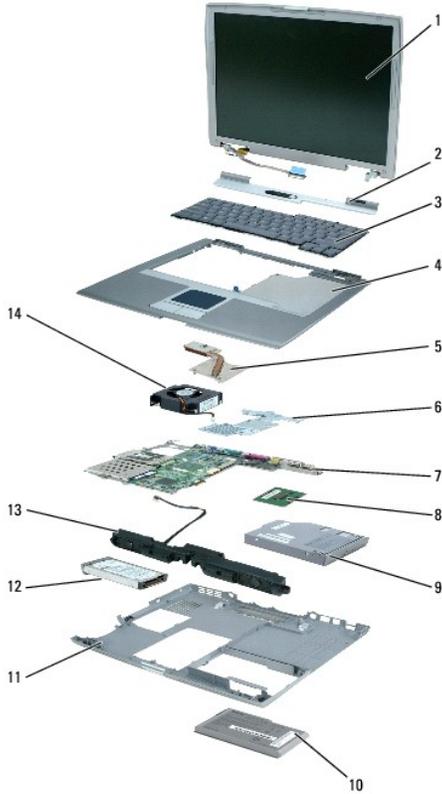
3. Insert the floppy disk or CD that accompanied the replacement system board into the appropriate drive and follow the instructions that appear on the screen.

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System Components

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- ➔ **NOTICE:** Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.
- ➔ **NOTICE:** Unless otherwise noted, each procedure in this document assumes that a part can be replaced—or, if purchased separately, installed—by performing the removal procedure in reverse order.



1	display assembly	8	microprocessor
2	center control cover	9	optical device
3	keyboard	10	battery
4	palm rest (with touch pad)	11	computer base
5	microprocessor thermal-cooling assembly	12	hard drive
6	graphics cooling assembly	13	speakers
7	system board	14	fan

Microprocessor Thermal-Cooling Assembly

Dell™ Latitude™ D510 Service Manual

- [Removing the Microprocessor Thermal-Cooling Assembly](#)
- [Installing the Microprocessor Thermal-Cooling Assembly](#)

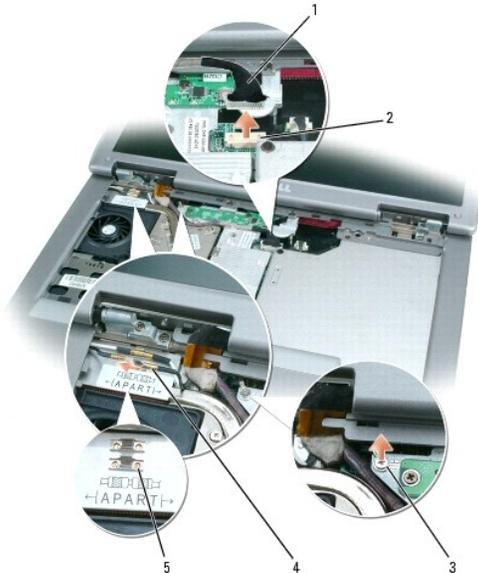
Removing the Microprocessor Thermal-Cooling Assembly

⚠ CAUTION: Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

🔌 NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

🔌 NOTICE: Disconnect the computer and any attached devices from electrical outlets, and remove any installed batteries.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Remove the [keyboard](#).
3. Remove the captive screw that attaches the display cable to the system board.
4. Disconnect the display cable from the display cable connector on the system board.
5. Release the display cable from its routing clips and slide it out from beneath the tab on the palm rest.
6. Release the two antenna cables from the two antenna-securing clips.
7. Disconnect one antenna cable from the display by holding the two gold antenna connectors and gently pulling them apart. Then disconnect the other antenna cable. (The gold antenna connectors on each cable are keyed to ensure that they are correctly reconnected.)



1	display cable connector
2	display cable connector on system board
3	captive screw
4	antenna cables (2)
5	antenna connectors (2)

8. In consecutive order, loosen the four captive screws labeled "1" through "4," that secure the microprocessor thermal-cooling assembly to the system board.



9. Lift the microprocessor thermal-cooling assembly up and to the right to remove it from the system board.



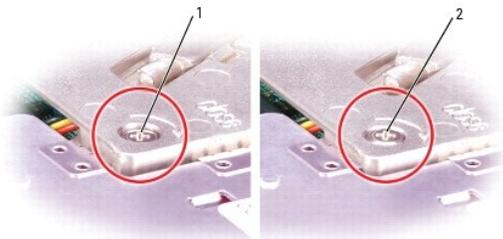
Installing the Microprocessor Thermal-Cooling Assembly

➡ **NOTICE:** Ensure that you do not trap any cables beneath the microprocessor thermal-cooling assembly when you replace it.

1. Slip the left side of the microprocessor thermal-cooling assembly underneath the palm rest and then place the assembly over the microprocessor.

➡ **NOTICE:** While tightening the screws, ensure that the cooler plate is no higher than the screw heads.

2. Tighten the four captive screws, labeled "1" through "4," in consecutive order.



1 | incorrectly installed heat sink

2 | correctly installed heat sink |

3. Slide the display cable behind the tab on the palm rest and place it between its routing clips.
4. Attach the display cable to the display panel connector on the system board.
5. Reconnect the two antenna cables and then secure them into the two antenna-securing clips.

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Notes, Notices, and Cautions

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **NOTICE:** A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **CAUTION:** A CAUTION indicates a potential for property damage, personal injury, or death.

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Model PP10L

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Memory Module, Modem, Mini PCI Card, and Optical Devices

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- [Memory Module](#)
- [Modem](#)
- [Mini PCI Card](#)
- [Optical Devices](#)

Memory Module

⚠ CAUTION: Before working inside your Dell™ computer, read the safety instructions in your *Product Information Guide*.

➡ NOTICE: To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

🔧 NOTE: Memory modules purchased from Dell are covered under your computer warranty.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Turn the computer upside down, loosen the captive screw (labeled "M") in the memory module cover, and lift the cover.

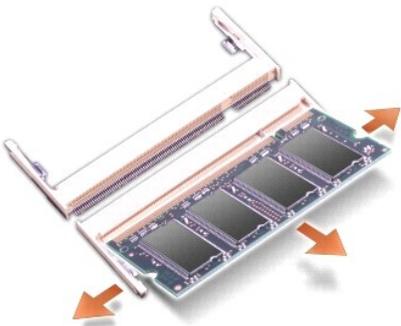


➡ NOTICE: To prevent damage to the memory module connector, do not use tools to spread the securing clips that secure the memory module.

3. If you are replacing a memory module, remove the existing module.

➡ NOTICE: Handle memory modules by their edges, and do not touch the components on a module.

- a. Use your fingertips to carefully spread apart the securing clips on each end of the memory module connector until the module pops up.
- b. Remove the module from the connector.



- ➔ **NOTICE:** If you need to install memory modules in two connectors, install a memory module in the connector labeled "DIMM A" before you install a module in the connector labeled "DIMM B."
- ➔ **NOTICE:** Do not attempt to install non-DDR2 memory modules in the connectors. Installing incompatible memory modules can damage the connectors.

4. Ground yourself and install the new memory module:
 - a. Align the notch in the module with the slot in the center of the connector.
 - b. Slide the edge of the module firmly into the connector, and rotate the module down until you feel a click. If you do not feel the click, remove the module and reinstall it.

🔧 **NOTE:** If the memory module is not installed properly, the computer will not boot. No error message indicates this failure.

5. Replace the cover and screw.

➔ **NOTICE:** If the memory module cover is difficult to close, remove the module and reinstall it. Forcing the cover to close may damage your computer.

6. Insert the battery into the battery bay, or connect the AC adapter to your computer and an electrical outlet.
7. Turn on the computer.

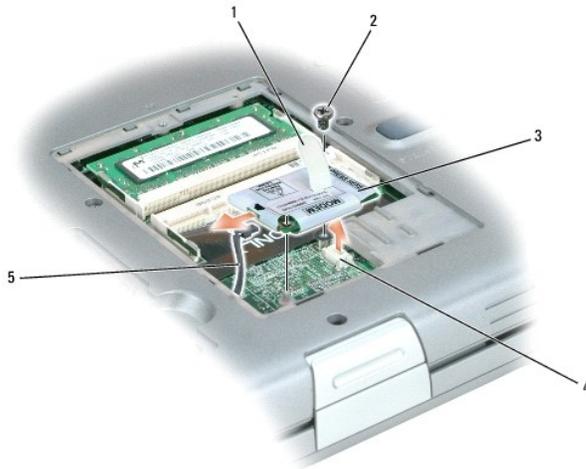
If memory has been added, as the computer boots it detects the additional memory and automatically updates the system configuration information.

Modem

⚠ **CAUTION:** Before performing the following procedures, read the safety instructions in your *Product Information Guide*.

➔ **NOTICE:** To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Turn the computer upside down, loosen the captive screw (labeled "M") from the memory module cover, and lift the cover.
3. If you are replacing a modem, remove the existing modem:
 - a. Remove the M2 x 3-mm screw from the modem.



1	pull-tab	4	modem connector on system board
2	M2 x 3-mm screw	5	modem cable
3	modem		

- b. Use the pull-tab to disconnect the modem from the modem connector on the system board.
- c. Disconnect the modem cable from the modem.

4. Connect the modem cable to the modem.

➡ **NOTICE:** Do not press down on the left side of the modem (side with the modem cable connection) while installing it.

5. Align the connector on the bottom of the modem with the modem connector on the system board and then press down on the right side of the modem to seat both connectors.

6. Replace the M2 x 3-mm screw.

7. Replace the cover and captive screw.

➡ **NOTICE:** If the memory module cover is difficult to close, remove the module and reinstall it. Forcing the cover to close may damage your computer.

Mini PCI Card

If you ordered a Mini PCI card when you ordered your computer, Dell has already installed the card for you.

⚠ **CAUTION:** Before working inside your computer, read the safety instructions in your *Product Information Guide*.

➡ **NOTICE:** To prevent damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface.

➡ **NOTICE:** Handle components and cards by their edges, and avoid touching pins and contacts.

➡ **NOTICE:** 2.4-GHz Wireless LAN PC Cards may be removed and installed by the user.

1. Follow the instructions in "[Preparing to Work Inside Your Computer](#)."
2. Turn the computer upside down, and loosen the captive screw (labeled "C") on the Mini PCI card cover.
3. Place your finger under the cover at the indentation and lift up the cover.



4. If a Mini PCI card is not already installed, go to [step 5](#). If you are replacing a Mini PCI card, remove the existing card:
 - a. Disconnect any attached cables from the Mini PCI card.

➡ **NOTICE:** To prevent damage to the Mini PCI card connector, do not use tools to spread the securing clips that secure the card.

- b. Release the Mini PCI card by spreading the securing clips until the card pops up slightly.
- c. Lift the Mini PCI card out of its connector.



➔ **NOTICE:** In the next step, ensure that the antenna cables extend over the edge of the computer, so that they are not trapped beneath the new Mini PCI card.

5. Align the new Mini PCI card with the connector at a 45-degree angle, and press the Mini PCI card into the connector.

6. Connect the antenna cables from the computer to the antenna connectors on the Mini PCI card.

➔ **NOTICE:** The connectors are keyed for correct insertion; do not force the connections.



1	antenna cables (2)
2	antenna connectors on card (2)

7. Lower the Mini PCI card toward the inner tabs to approximately a 20-degree angle.

8. Continue lowering the Mini PCI card until it snaps into the inner tabs of the connector.

9. Ensure that the cables are positioned so that they will not be pinched when you replace the cover.

10. Replace the cover.

➔ **NOTICE:** If the Mini PCI card cover is difficult to close, remove the card and reinstall it. Forcing the cover to close may damage your computer.

Optical Devices

Your computer ships with an optical drive installed in the module bay. You can install an M2 x 3-mm optical device security screw in the bay, if desired, to make the device more difficult to remove.

⚠ **CAUTION:** Before working inside your computer, read the safety instructions in your *Product Information Guide*.

➔ **NOTICE:** Insert devices into the module bay before you dock and turn on the computer.

 **NOTE:** You do not need to install the device security screw unless you want to keep the module inside the computer for security purposes.

If the Device Security Screw Is Not Installed

 **NOTICE:** To prevent damage to devices, place them in a safe, dry place when they are not installed in the computer. Avoid pressing down on them or placing heavy objects on top of them.

1. Press the device latch release so that the latch release pops out.



1 device latch release

2. Pull the device by the latch release to remove the device from the module bay.



3. Push the new device into the bay until it clicks.

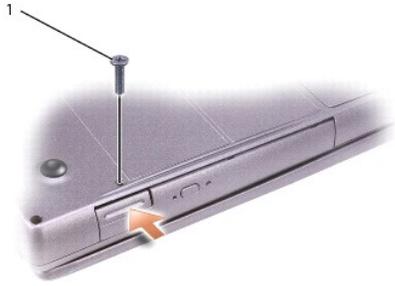
If the Device Security Screw Is Installed

 **NOTICE:** To prevent damage to devices, place them in a safe, dry place when they are not installed in the computer. Avoid pressing down on them or placing heavy objects on top of them.

1. Save and close any open files, exit any open programs, and shut down the computer.
2. If the computer is connected to a docking device (docked), undock it. See the documentation that came with your docking device for instructions.

 **NOTICE:** To prevent damage to devices, place them in a safe, dry place when they are not installed in the computer. Avoid pressing down on them or placing heavy objects on top of them.

3. Close the display and turn the computer upside down.
4. Use a #1 Phillips screwdriver to remove the optical device security screw from the bottom of the computer.



1 M2 x 3-mm screw

5. Press the device latch release so that the latch release pops out.
6. Pull the device by the latch release to remove the device from the module bay.



7. Push the new device into the bay until it clicks.

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