

# Dell Embedded Box PC 3000 Service Manual

**Computer Model:** Dell Embedded Box PC 3000  
**Regulatory Model:** N02PC  
**Regulatory Type:** N02PC001



# Notes, cautions, and warnings

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



**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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# Before working inside your Embedded Box PC

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

## Before you begin


- 1 Save and close all open files and exit all open applications.
- 2 Shut down the Embedded Box PC.  
The shut-down instruction varies depending on the operating system installed on the Embedded Box PC.








 **NOTE:** For more information, see the documentation of your operating system for shut-down instructions.

- 3 Disconnect the Embedded Box PC and all attached devices from their electrical outlets.
- 4 Disconnect all cables such as network cables from the Embedded Box PC.
- 5 Disconnect all attached devices and peripherals, such as keyboard, mouse, and monitor, from the Embedded Box PC.
- 6 After the Embedded Box PC is unplugged, press and hold the power button for 5 seconds to ground the system board.

## Safety instructions

Use the following safety guidelines to protect your Embedded Box PC from potential damage and ensure your personal safety.

 **WARNING:** Before working inside your Embedded Box PC, read the safety information that shipped with your Embedded Box PC and follow the steps in [Before working inside your Embedded Box PC](#). After working inside your Embedded Box PC, follow the steps in [After working inside your Embedded Box PC](#). For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).

-  **WARNING:** Disconnect all power sources before opening the Embedded Box PC cover or panels. After you finish working inside the Embedded Box PC, replace all covers, panels, and screws before connecting to the electrical outlet.
-  **CAUTION:** To avoid damaging the Embedded Box PC, ensure that the work surface is flat and clean.
-  **CAUTION:** To avoid damaging the components and cards, handle them by their edges, and avoid touching pins and contacts.
-  **CAUTION:** You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that shipped with the product or at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).
-  **CAUTION:** Before touching anything inside your Embedded Box PC, ground yourself by touching an unpainted metal surface, such as the metal at the back of the Embedded Box PC. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.
-  **CAUTION:** When you disconnect a cable, pull on its connector or on its pull tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the ports and connectors are correctly oriented and aligned.
-  **CAUTION:** Press and eject any installed card from the media-card reader.

## Recommended tools

The procedures in this document may require the following tools:

- Philips screwdriver
- Flat-head screwdriver
- Plastic scribe
- Hex screwdriver
- 8 mm open wrench

- 10 mm open wrench

## Screw list


The following table provides the list of screws that are used for securing different components to the Embedded Box PC.

<b>Component</b>	<b>Secured to</b>	<b>Screw type</b>	<b>Quantity</b>
Logo board	Chassis	M2x5	3
System board	Chassis	M2x5	5
System board	Chassis	STDF (L20) HEX, M2.5x4	4
IET board	System board	M2x5	4
WLAN card	System board	M2x3	2
WWAN card	System board	M2x3	2
I/O plate	Chassis	M3x5 countersunk	5
Top cover	Chassis	M3x5 countersunk	4
	Chassis	M2x5	1
Intrusion switch	Intrusion-switch bracket	M2x10	1
	Top-cover bracket	M3x5 countersunk	1
Back cover	Chassis	M3x5 countersunk	6
COM port	I/O plate	4-40UNCx6.3	4
VGA port	I/O plate	4-40UNCx6.3	2
Multi-Function port	I/O plate	4-40UNCx6.3	2
Can-bus cable	I/O plate	4-40UNCx6.3	2
Hard-drive cage	System board	M3x5	4
Solid-state drive card bracket/hard drive	Hard-drive bracket	M3x3	4
Interposer board	Solid-state drive slot	M2x3	3

<b>Component</b>	<b>Secured to</b>	<b>Screw type</b>	<b>Quantity</b>
Solid-state drive bracket	Solid-state drive slot	M2x3	1
Solid-state drive bracket	Solid-state drive bracket	M2x3	1
Wall-mount bracket	Chassis	M3x5	2
Din-rail bracket	Back cover	M4x7	4

# After working inside your Embedded Box PC

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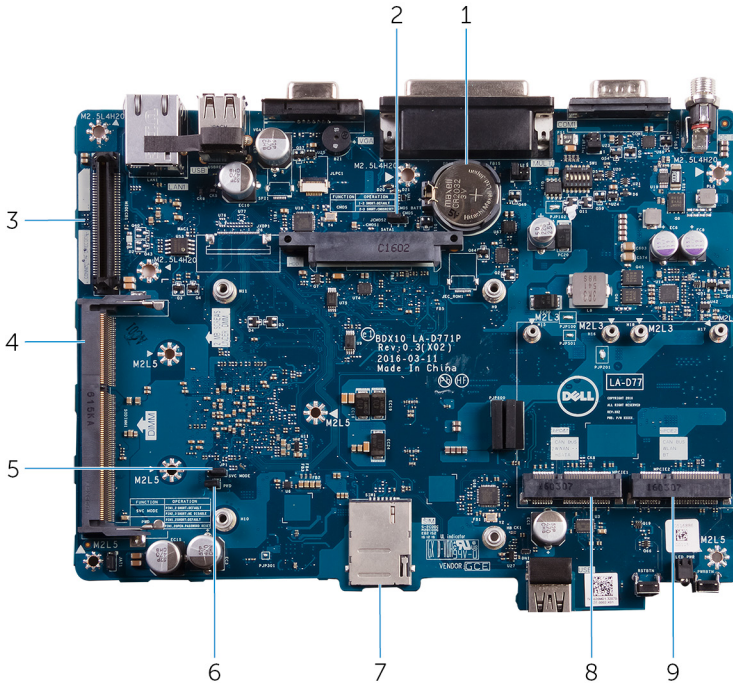
 **CAUTION: Leaving stray or loose screws inside your Embedded Box PC may severely damage your Embedded Box PC.**

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

# Technical overview

**⚠ WARNING:** Before working inside your Embedded Box PC, read the safety information that shipped with your Embedded Box PC and follow the steps in [Before working inside your Embedded Box PC](#). After working inside your Embedded Box PC, follow the steps in [After working inside your Embedded Box PC](#). For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).

## System-board components



- |   |                                      |   |                             |
|---|--------------------------------------|---|-----------------------------|
| 1 | coin-cell battery socket             | 2 | CMOS reset jumper (CMOS)    |
| 3 | IET-board connector                  | 4 | memory-module slot (DIMM)   |
| 5 | service mode reset jumper (SVC MODE) | 6 | password reset jumper (PWD) |

- 7 SIM-card slot (SIM)
- 8 mPCIE one connector (CAN BUS/WWAN)
- 9 mPCIE two connector (CAN BUS/WLAN/BT)

# Removing the back cover

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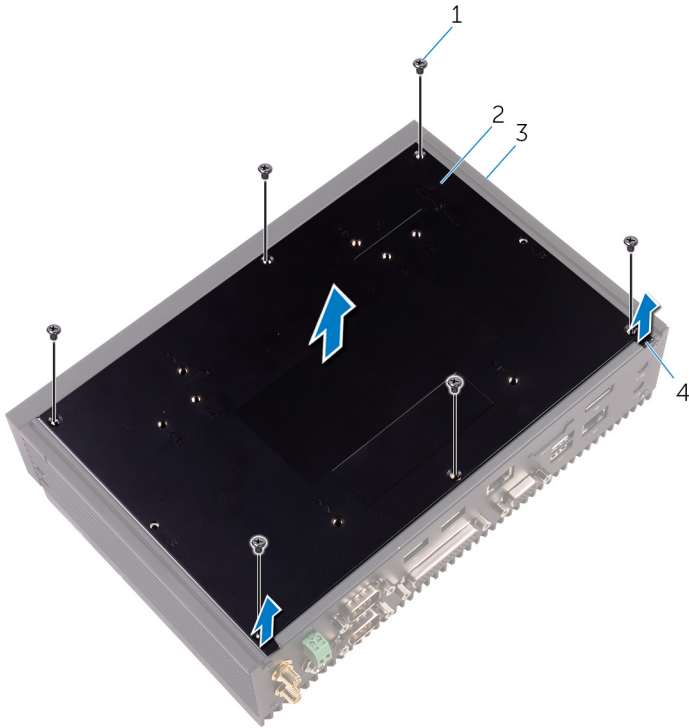


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## Procedure

- 1 Place the Embedded Box PC on a clean and flat surface.
- 2 Remove the screws that secure the back cover to the chassis.

3 Remove the back cover from the chassis by using the two tabs.



1 M3x5 countersunk screws  
(6)

2 back cover

3 chassis

4 tabs (2)

# Replacing the back cover

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## Procedure


- 1 Place the back cover on the chassis.
- 2 Align the screw holes on the back cover with the screw holes on the chassis.
- 3 Replace the screws that secure the back cover to the chassis.

# Removing the hard drive


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 **CAUTION:** Hard drives are fragile. Exercise care when handling the hard drive.

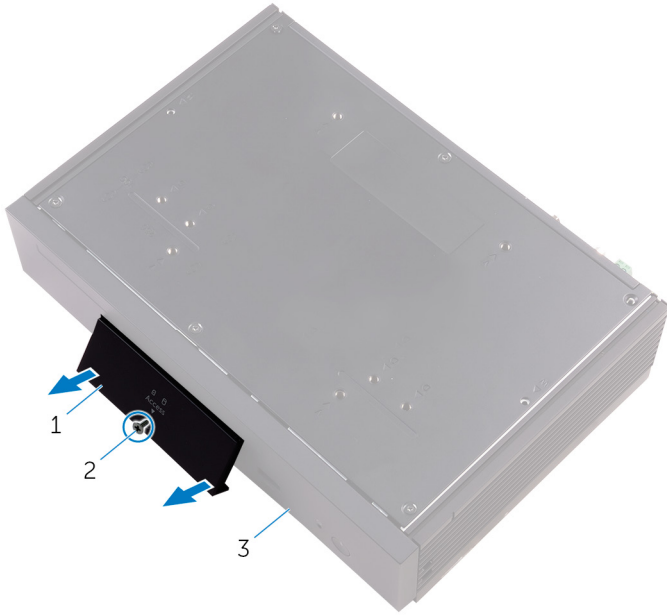
 **CAUTION:** To avoid data loss, do not remove the hard drive while the Embedded Box PC is in sleep or on state.

## Procedure

 **NOTE:** Embedded Box PC is shipped with either hard drive or solid-state drive, depending on the configuration ordered.

- 1 Loosen the captive screw that secures the hard-drive door to the chassis.

**2** Remove the hard-drive door from the chassis.



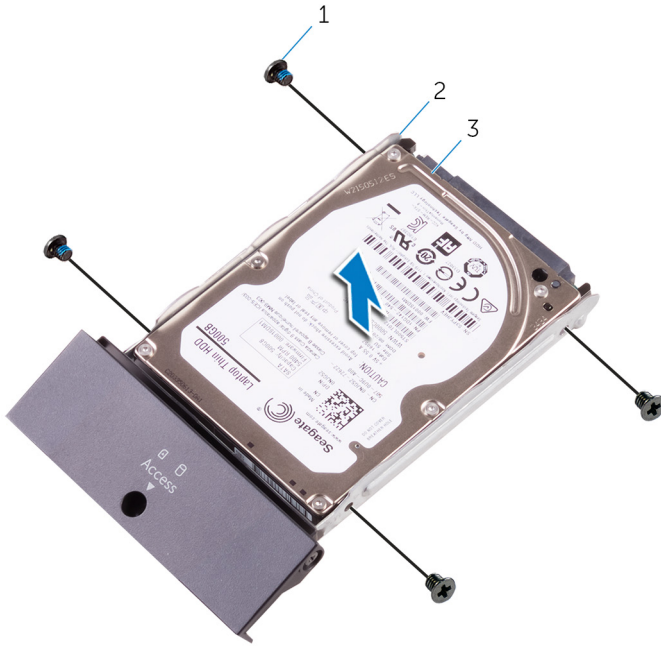
1 hard-drive door

2 M2x3 captive screw

3 chassis

**3** Remove the screws that secure the hard-drive bracket to the hard drive.

4 Remove the hard drive from the hard-drive bracket.





1 M3x3 screws (4)  
3 hard drive

2 hard-drive bracket

# Replacing the hard drive

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 **CAUTION:** Hard drives are fragile. Exercise care when handling the hard drive.

## Procedure


- 1 Align the screw holes on the hard-drive bracket with the screw holes on the hard drive.
- 2 Replace the screws that secure the hard-drive bracket to the hard drive.
- 3 Replace the hard-drive door into the chassis.
- 4 Tighten the captive screw that secures the hard-drive door to the chassis.

# Removing the solid-state drive

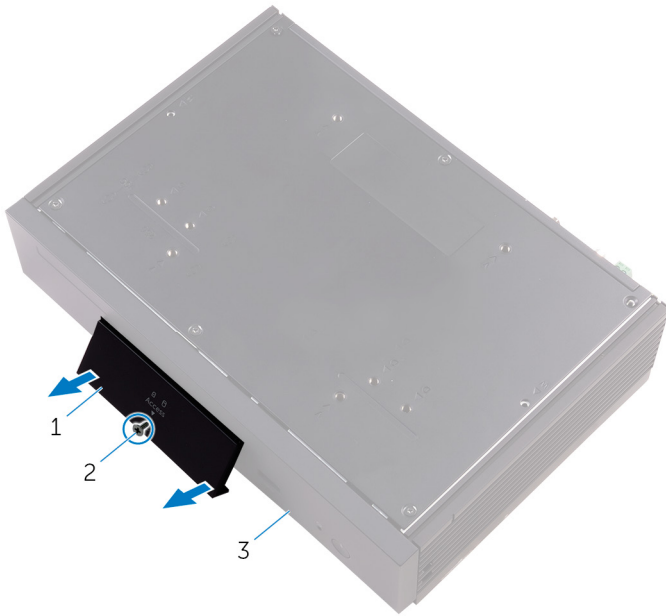
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-  **WARNING:** Before working inside your Embedded Box PC, read the safety information that shipped with your Embedded Box PC and follow the steps in [Before working inside your Embedded Box PC](#). After working inside your Embedded Box PC, follow the steps in [After working inside your Embedded Box PC](#). For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).
-  **CAUTION:** Solid-state drives are fragile. Exercise care when handling the solid-state drive.
-  **CAUTION:** To avoid data loss, do not remove the solid-state drive while the Embedded Box PC is in sleep or on state.

## Procedure

-  **NOTE:** Embedded Box PC is shipped with either hard drive or solid-state drive, depending on the configuration ordered.
- 1 Loosen the captive screw that secures the hard-drive door to the chassis.

- 2 Remove the hard-drive door from the chassis.

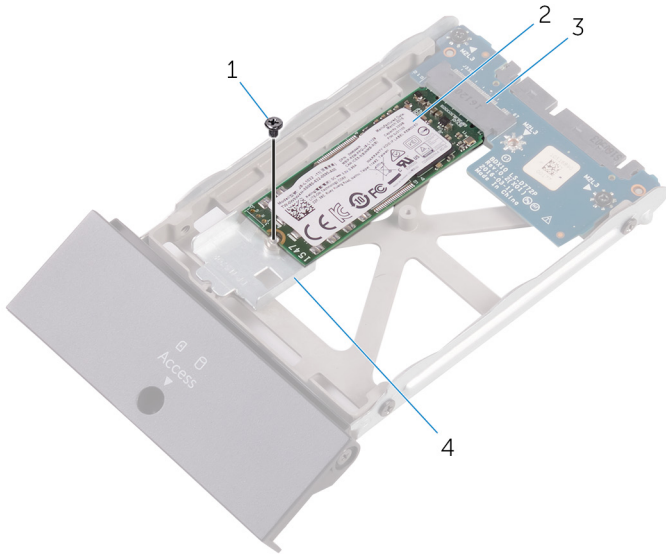


1 hard-drive door  
3 chassis

2 M2x3 captive screw

- 3 Remove the screw that secures the solid-state drive to the solid-state drive bracket.




- 4 Remove the solid-state drive from the solid-state drive slot.



- |   |                        |   |                           |
|---|------------------------|---|---------------------------|
| 1 | M2x3 screw             | 2 | solid-state drive         |
| 3 | solid-state drive slot | 4 | solid-state drive bracket |

# Replacing the solid-state drive

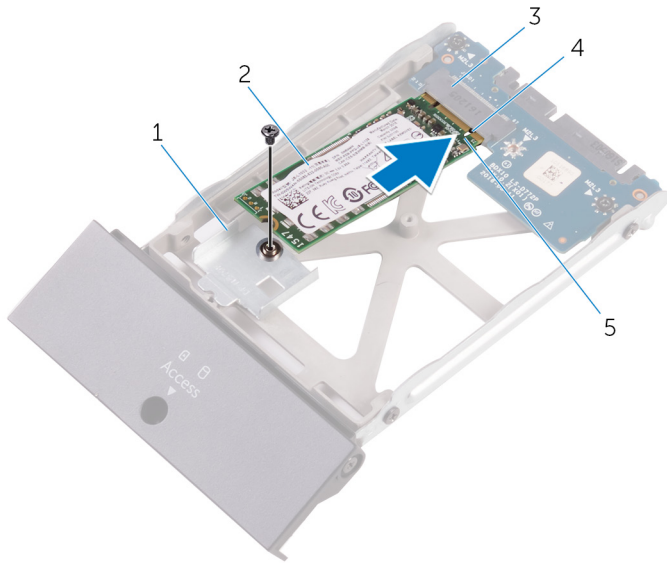
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-  **CAUTION:** Solid-state drives are fragile. Exercise care when handling the solid-state drive.
-  **CAUTION:** To avoid data loss, do not remove the solid-state drive while the Embedded Box PC is in sleep or on state.

## Procedure

- 1 Align the notch on the solid-state drive with the tab on the solid-state drive slot.
- 2 Slide the solid-state drive firmly into the slot and align the screw hole on the solid-state drive with the screw hole on the solid-state drive bracket.

- 3** Replace the screw that secures the solid-state drive to the solid-state drive bracket.



- |   |                           |   |                   |
|---|---------------------------|---|-------------------|
| 1 | solid-state drive bracket | 2 | solid-state drive |
| 3 | solid-state drive slot    | 4 | tab               |
| 5 | notch                     |   |                   |

- 4** Place the hard-drive door into the chassis.
- 5** Tighten the captive screw that secures the hard-drive door to the chassis.

# Removing the interposer board

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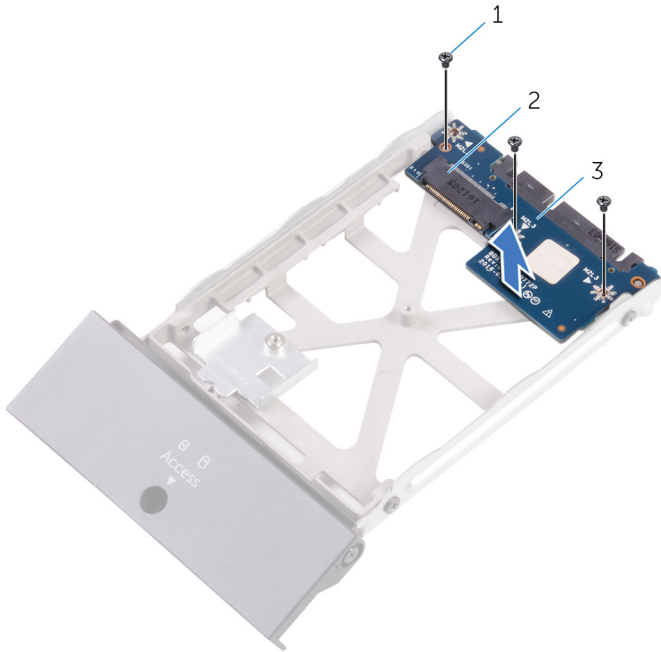
## Prerequisites

Remove the [solid-state drive](#).

## Procedure

- 1 Remove the screws that secure the interposer board to the solid-state drive card bracket.

2 Remove the interposer board from the solid-state drive card bracket.



- 1 M2x3 screws (3)
- 3 interposer board

2 solid-state drive slot

# Replacing the interposer board

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## Procedure

- 1 Align the screw holes on the interposer board with the screw holes on the solid-state drive card bracket.
- 2 Replace the screws that secure the interposer board to the solid-state drive card bracket.

## Post-requisites

Replace the [solid-state drive](#).

# Removing the solid-state drive card bracket

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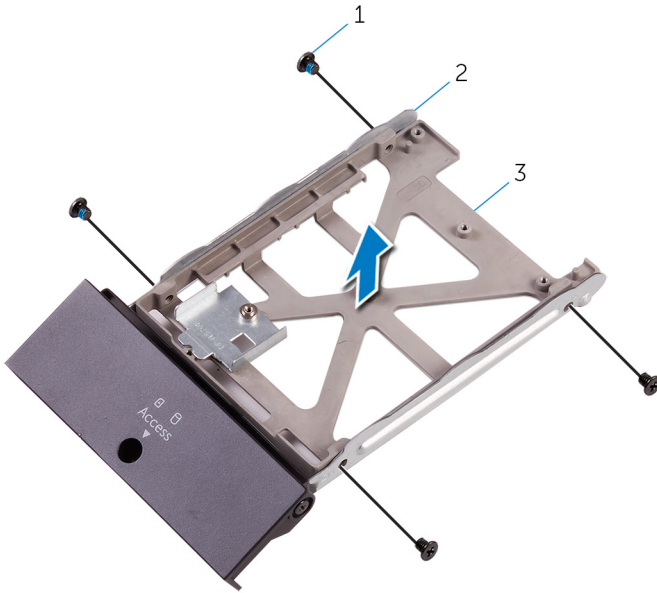
## Prerequisites

- 1 Remove the [solid-state drive](#).
- 2 Remove the [interposer board](#).

## Procedure

- 1 Remove the screws that secure the solid-state drive card bracket to the hard-drive bracket.

2 Remove the solid-state drive card bracket from the hard-drive bracket.



1 M3x3 screws (4)

2 hard-drive bracket

3 solid-state drive card  
bracket

# Replacing the solid-state drive card bracket

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## Procedure

- 1 Align the screw holes on the solid-state drive card bracket with the screw holes on the hard-drive bracket.
- 2 Replace the screws that secure the solid-state drive card bracket to the hard-drive bracket.

## Post-requisites

- 1 Replace the [interposer board](#).
- 2 Replace the [solid-state drive](#).

# Removing the SIM card

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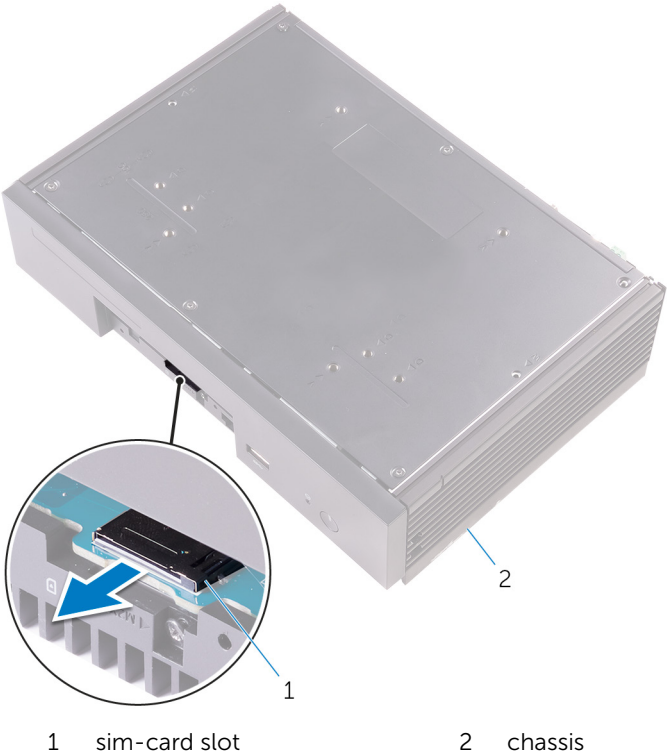


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## Procedure

- 1 Loosen the captive screw that secures the hard-drive door to the chassis.
- 2 Remove the hard-drive door from the chassis.
- 3 Push the SIM card to release it from the SIM-card slot.

4 Remove the SIM card from the SIM-card slot.



# Replacing the SIM card

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## Procedure

- 1 Place the SIM card in the SIM-card slot.
- 2 Push the SIM card into the SIM-card slot.
- 3 Replace the hard-drive door into the chassis.
- 4 Tighten the captive screw that secures the hard-drive door to the chassis.

# Removing the memory module

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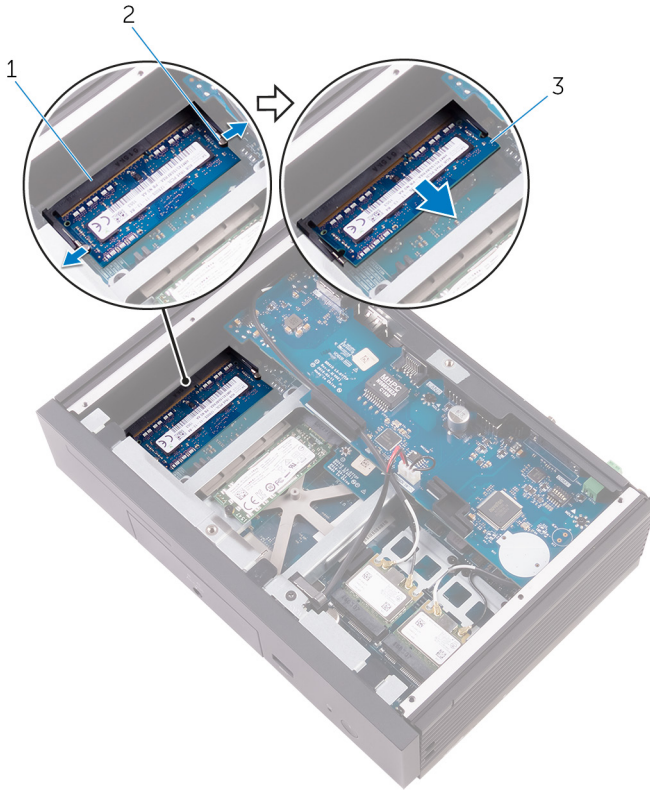
## Prerequisites

Remove the [back cover](#).

## Procedure

- 1 Use your fingertips to carefully spread apart the securing-clips on each end of the memory-module slot until the memory module pops up.

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



1 memory-module slot

2 securing clips (2)

3 memory module

# Replacing the memory module

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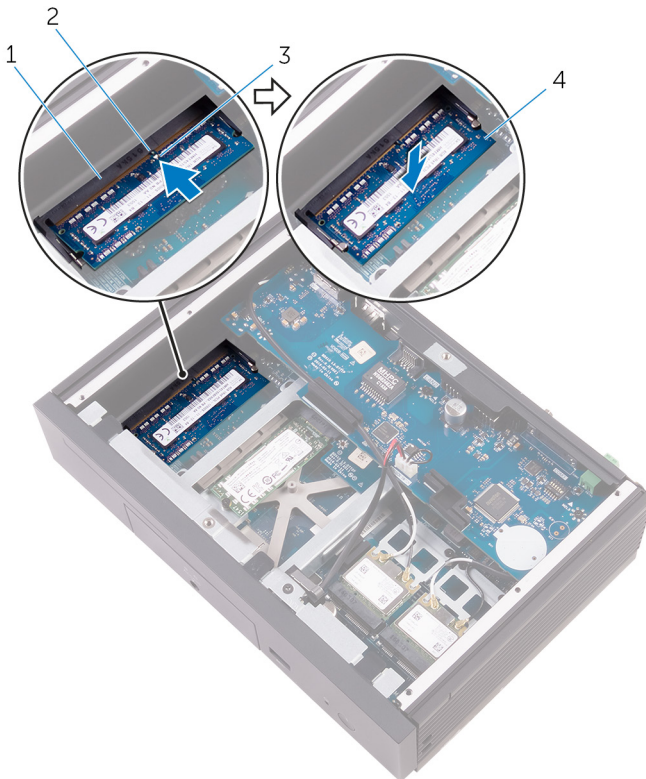
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## Procedure

- 1 Align the notch on the memory module with the tab on the memory-module slot.

- Slide the memory module firmly into the slot at an angle and press the memory module down until it clicks into place.

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



1 memory-module slot

3 notch

2 tab

4 memory-module

## Post-requisites

Replace the [back cover](#).

# Removing the WLAN card

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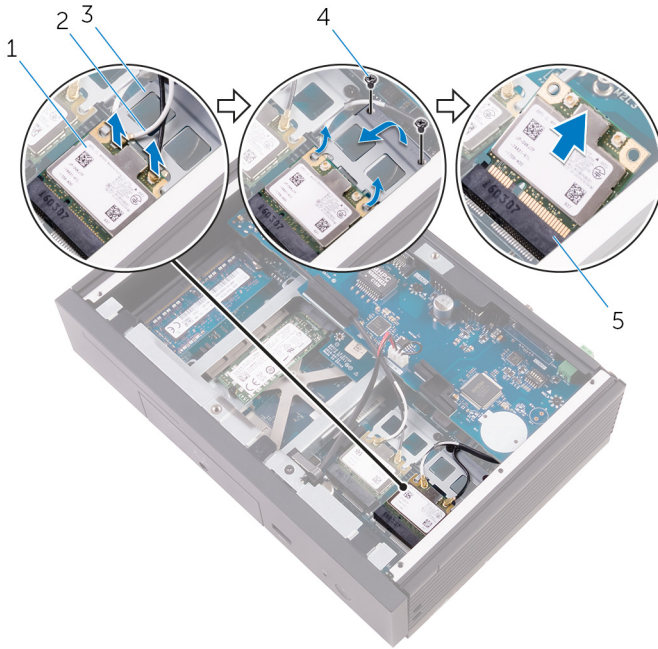
## Prerequisites

Remove the [back cover](#).

## Procedure

- 1 Remove the WLAN-antenna cables connected to the WLAN card.
- 2 Remove the screws that secure the WLAN-card bracket to the system board.
- 3 Remove the WLAN-card bracket from the screw holes of the WLAN card.

4 Slide and remove the WLAN card from the mPCIE2 slot.



1 WLAN card

2 WLAN-antenna cables (2)

3 WLAN-card bracket

4 M2x3 screws (2)

5 mPCIE2 slot

# Replacing the WLAN card

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## Procedure



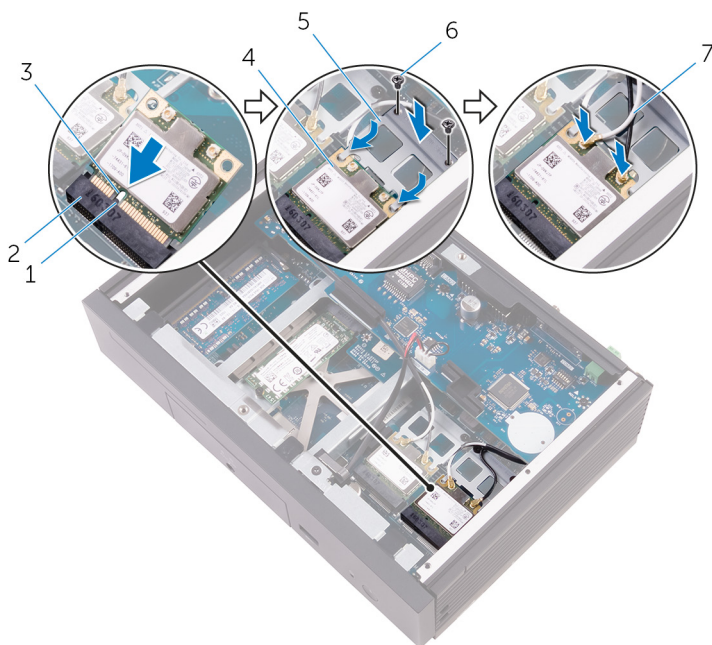
**NOTE:** To avoid damage to the WLAN card, do not place any cables under it.

- 1 Align the notch on the WLAN card with the tab on the mPCIExpress slot.
- 2 Insert the WLAN card at an angle into the mPCIExpress slot.
- 3 Insert the WLAN-card bracket into the screw holes of the WLAN card.
- 4 Align the screw holes on the WLAN-card bracket with the screw holes on the system board.
- 5 Replace the screws that secure the WLAN-card bracket to the system board.

**6** Connect the WLAN-antenna cables to the WLAN card.

The following table provides the antenna-cable color scheme for the WLAN card supported by the Embedded Box PC.

Connectors on the WLAN card	Antenna-cable color
Main (white triangle)	White and gray
Auxiliary (black triangle)	Black and gray



- 1 tab
- 2 mPCIE2 slot
- 3 notch
- 4 WLAN card
- 5 WLAN-card bracket
- 6 M2x3 screws (2)
- 7 WLAN-antenna cables (2)

## Post-requisites

Replace the [back cover](#).

# Removing the WWAN card

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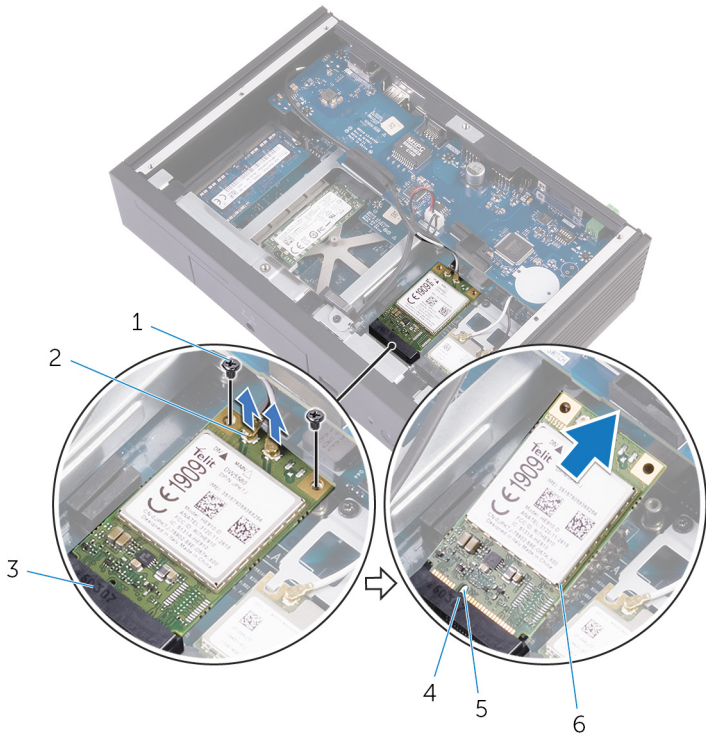
## Prerequisites

Remove the [back cover](#).

## Procedure

- 1 Remove the WWAN-antenna cables connected to the WWAN card.
- 2 Remove the screws that secure the WWAN card to the system board.

3 Remove the WWAN card from the mPCIE1 slot.



- 1 M2x3 screws (2)
- 3 mPCIE1 slot
- 5 notch

- 2 WWAN-antenna cables (2)
- 4 tab
- 6 WWAN card

# Replacing the WWAN card

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## Procedure



**NOTE:** To avoid damage to the WWAN card, do not place any cables under it.

- 1 Connect the antenna cables to the WWAN card.  
The following table provides the antenna-cable color scheme for the WWAN card supported by the Embedded Box PC.

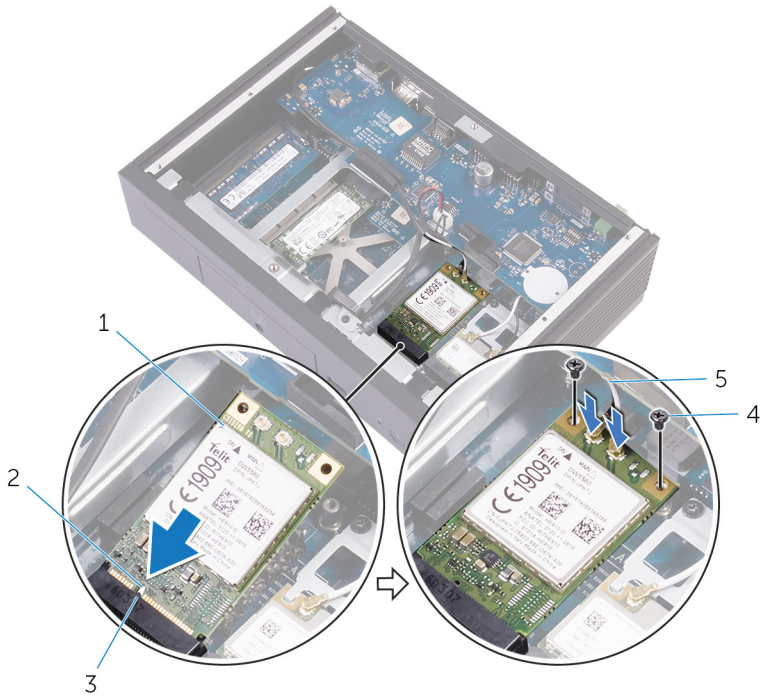
---

Connectors on the WWAN card	Antenna-cable color
Main (white triangle)	White and gray
Auxiliary (black triangle)	Black and gray

---

- 2 Align the notch on the WWAN card with the tab on the mPCIExpress slot.
- 3 Insert the WWAN card at an angle into the mPCIExpress slot.
- 4 Align the screw holes on the WWAN card with the screw holes on the system board.

- 5 Replace the screws that secure the WWAN card to the system board.



- 1 WWAN card
- 3 tab
- 5 antenna cables

- 2 notch
- 4 M2x3 screws (2)

## Post-requisites

Replace the [back cover](#).

# Removing the CANbus cable

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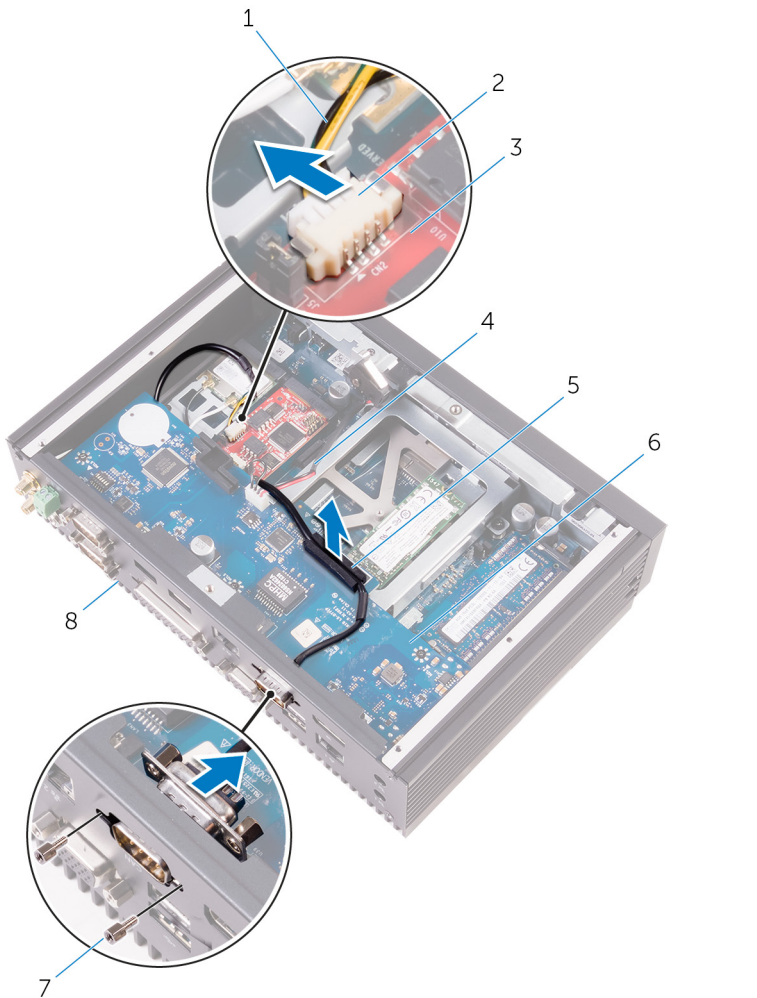
## Prerequisites

Remove the [back cover](#).

## Procedure

- 1 Remove the CANbus cable from the connector on the CANbus card.
- 2 Remove CANbus cable from the cable-routing guide on the IET board.

- 3** Remove the hexagonal screws that secure the CANbus cable to the I/O plate.



- |   |                        |   |                        |
|---|------------------------|---|------------------------|
| 1 | CANbus cable           | 2 | CANbus connector       |
| 3 | CANbus card            | 4 | intrusion-switch cable |
| 5 | cable-routing guide    | 6 | IET board              |
| 7 | 4-40UNCx6.3 screws (2) | 8 | I/O plate              |

- 4** Remove the CANbus cable from the Embedded Box PC.

# Replacing the CANbus cable

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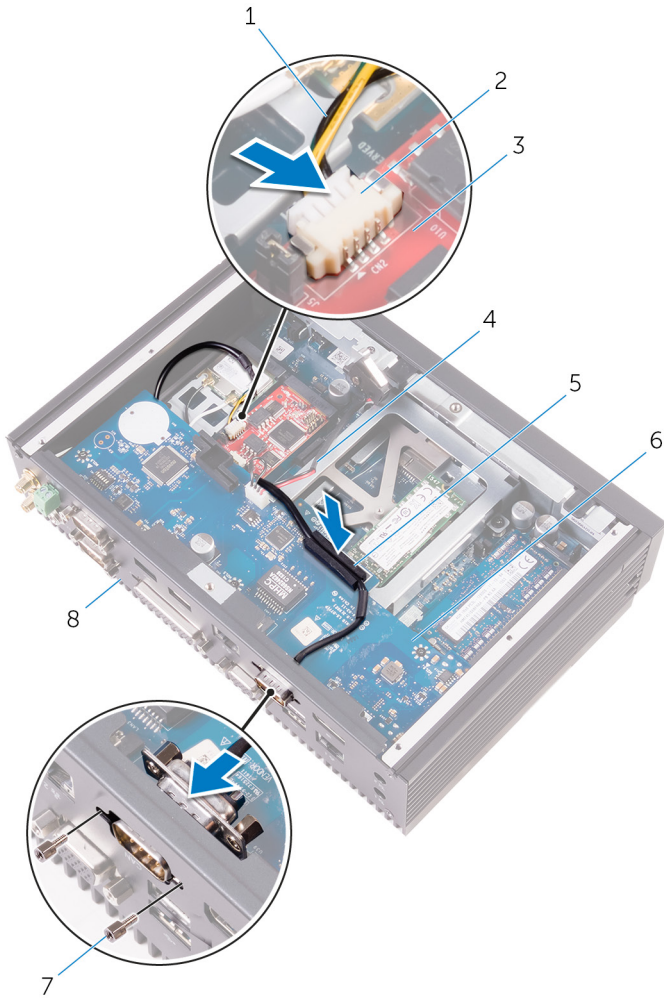


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## Procedure

- 1 Insert the CANbus port into the CANbus slot on the I/O plate.
- 2 Replace the hexagonal screws that secure the CANbus port to the I/O plate.

**3** Route the CANbus cable above the intrusion-switch cable.



- |   |                        |   |                        |
|---|------------------------|---|------------------------|
| 1 | CANbus cable           | 2 | CANbus connector       |
| 3 | CANbus card            | 4 | intrusion-switch cable |
| 5 | cable-routing guide    | 6 | IET board              |
| 7 | 4-40UNCx6.3 screws (2) | 8 | I/O plate              |

**4** Slide the CANbus cable to the connector on the CANbus card.

# Post-requisites

Replace the [back cover](#).

# Removing the CANbus card

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## Prerequisites

Remove the [back cover](#).

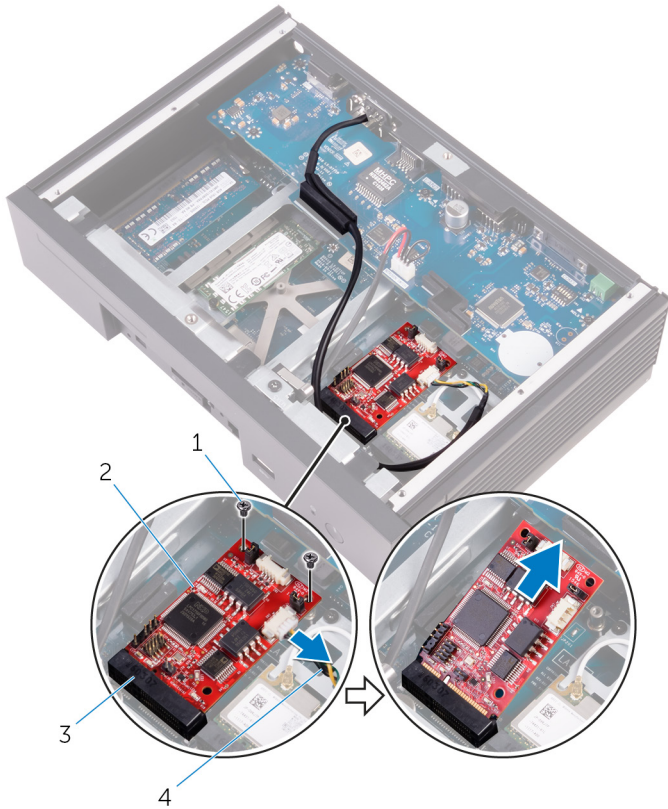
## Procedure



**NOTE:** The CANbus card can be installed in either mPCIe slot one or mPCIe slot two.

- 1 Remove the CANbus cable from the connector on the CANbus card.
- 2 Remove the screws that secure the CANbus card to the system board.

**3** Remove the CANbus card from the mPCIE1 slot.



1 M2x3 screws (2)

3 mPCIE1 slot

2 CANbus card

4 CANbus cable

# Replacing the CANbus card

---

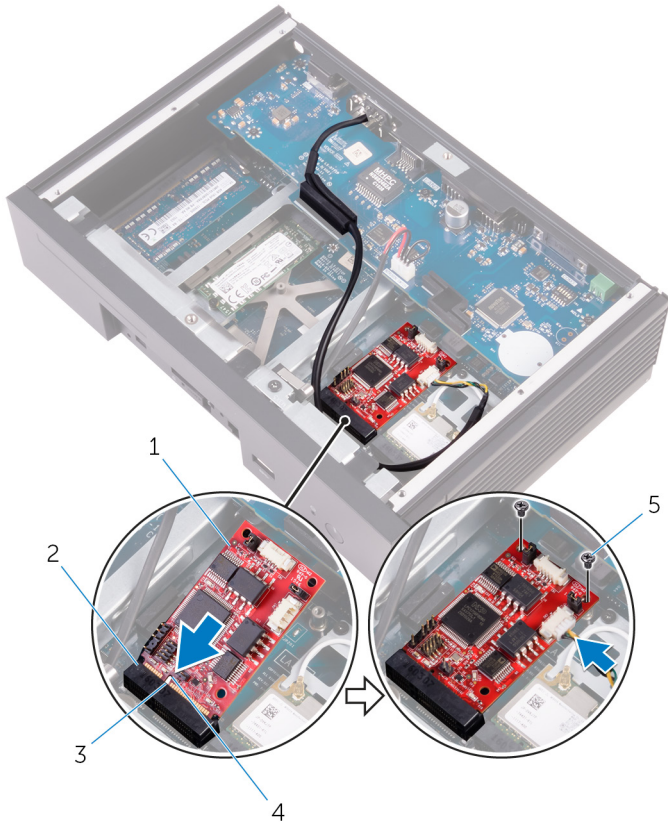


**WARNING:** Before working inside your Embedded Box PC, read the safety information that shipped with your Embedded Box PC and follow the steps in [Before working inside your Embedded Box PC](#). After working inside your Embedded Box PC, follow the steps in [After working inside your Embedded Box PC](#). For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).

## Procedure

- 1 Align the notch on the CANbus card with the tab on the mPCIExpress1 slot.
- 2 Insert the CANbus card at an angle into the mPCIExpress1 slot.
- 3 Align the screw holes on the CANbus card with the screw holes on the system board.

- 4 Replace the screws that secure the CANbus card to the system board.



- |   |                 |   |             |
|---|-----------------|---|-------------|
| 1 | CANbus card     | 2 | mPCIe1 slot |
| 3 | tab             | 4 | notch       |
| 5 | M2x3 screws (2) |   |             |

## Post-requisites

Replace the [back cover](#).

# Removing the intrusion switch

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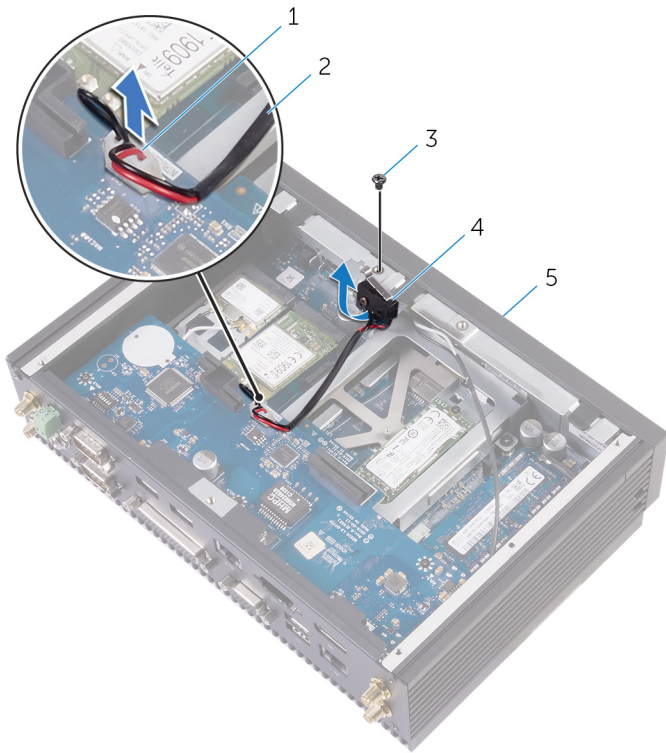
## Prerequisites

Remove the [back cover](#).

## Procedure

- 1 Remove the intrusion-switch cable from intrusion-switch connector on the IET board.

- 2** Remove the screw that secures the intrusion-switch bracket to the chassis.



- |   |                        |   |                            |
|---|------------------------|---|----------------------------|
| 1 | intrusion-switch cable | 2 | intrusion-switch connector |
| 3 | M3x5 countersunk screw | 4 | intrusion switch           |
| 5 | chassis                |   |                            |

- 3** Remove the intrusion switch from the Embedded Box PC.

# Replacing the intrusion switch

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## Procedure

- 1 Replace the screw that secures the intrusion-switch bracket to the chassis.
- 2 Slide the intrusion-switch cable into the connector on the system board.

## Post-requisites

Replace the [back cover](#).

# Removing the I/O plate

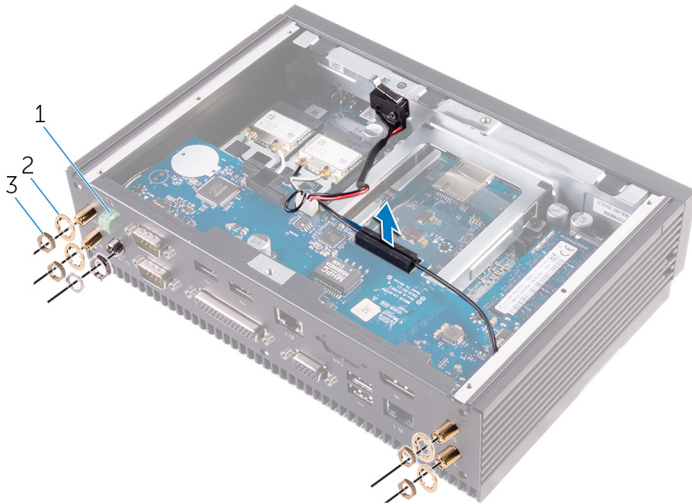
**!** **WARNING:** Before working inside your Embedded Box PC, read the safety information that shipped with your Embedded Box PC and follow the steps in [Before working inside your Embedded Box PC](#). After working inside your Embedded Box PC, follow the steps in [After working inside your Embedded Box PC](#). For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).

## Prerequisites

Remove the [back cover](#).

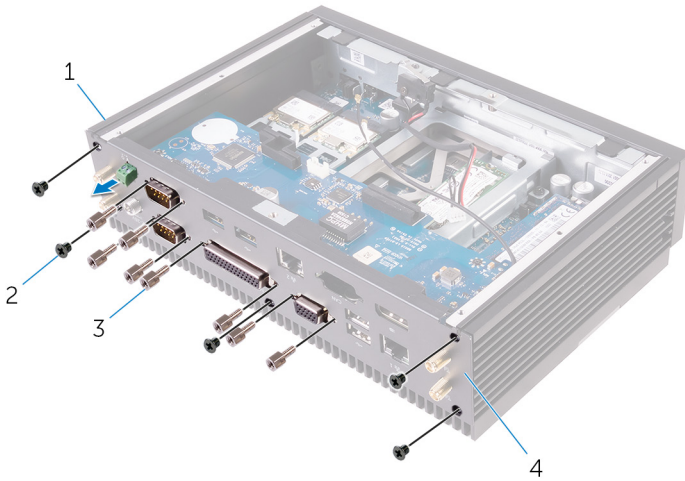
## Procedure

- 1 Remove the nuts and washers that secure the power and antenna connectors to the chassis.




- |   |                         |   |             |
|---|-------------------------|---|-------------|
| 1 | remote power switch kit | 2 | washers (5) |
| 3 | nuts (5)                |   |             |

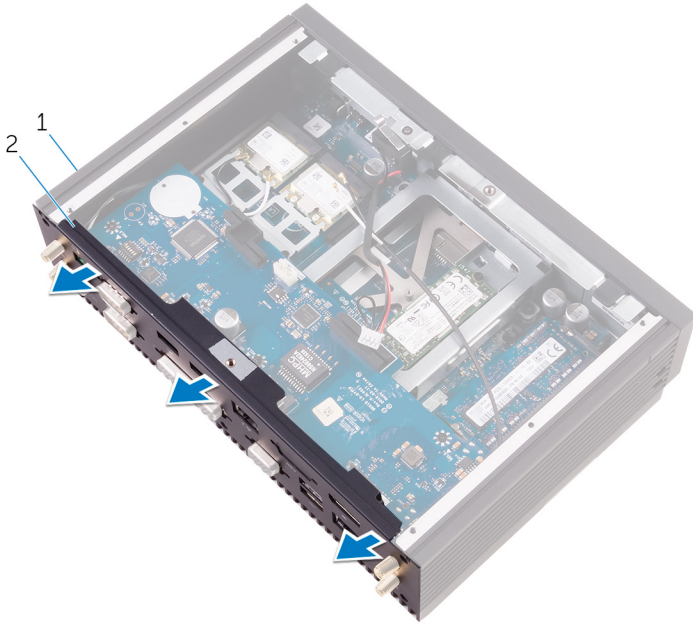
- 2 Remove the hexagonal screws that secure the VGA port, Multi-Function port, and the COM ports to the I/O plate.
- 3 Remove the screws that secure the I/O plate to the chassis.



- |   |                        |   |                             |
|---|------------------------|---|-----------------------------|
| 1 | chassis                | 2 | M3x5 countersunk screws (5) |
| 3 | 4-40UNCx6.3 screws (8) | 4 | I/O plate                   |

 **NOTE:** Ensure that you have removed the remote power-switch connector from the I/O plate.

4 Remove the I/O plate away from the chassis.




1 chassis


2 I/O plate

# Replacing the I/O plate

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## Procedure

- 1 Replace the power connector and antenna-cable connectors into the ports.
  -  **NOTE:** When replacing the antenna-cable connectors into the ports, ensure that the cable color matches with the color indicated behind the I/O plate.
- 2 Align the screw holes on the I/O plate with the screw holes on the chassis.
- 3 Replace the screws that secure the I/O plate to the chassis.
- 4 Replace the hexagonal screws that secure the VGA port, Multi-Function port, and the COM ports to the I/O plate.
- 5 Replace the nuts and washers that secure the power connector and antenna-cable connectors to the I/O plate.

## Post-requisites

Replace the [back cover](#).

# Removing the WLAN-antenna connectors

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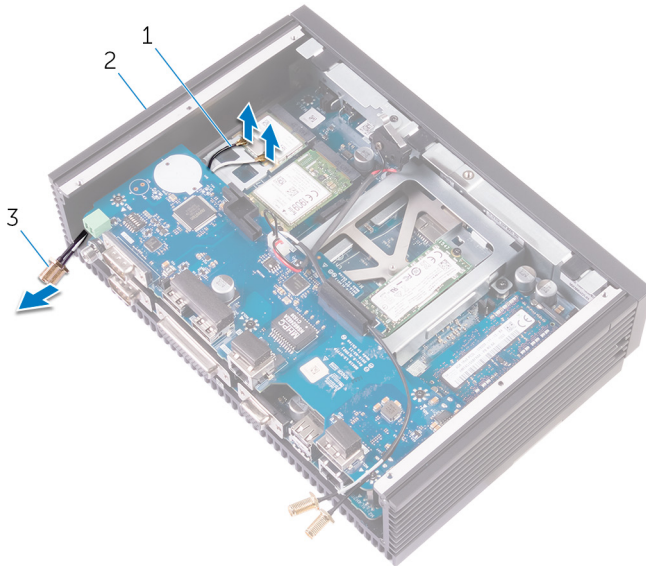
## Prerequisites

- 1 Remove the [back cover](#).
- 2 Remove the [I/O plate](#).

## Procedure

- 1 Remove the WLAN-antenna cables from the WLAN card.
- 2 Remove the WLAN-antenna connectors from the WLAN-cable slot.

**3** Remove the WLAN-antenna cable from the chassis.



- 1 WLAN-antenna cables (2)
- 2 chassis
- 3 WLAN-antenna connectors (2)

# Replacing the WLAN-antenna connectors

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## Procedure

- 1 Insert the WLAN-antenna connectors into the WLAN-cable port on the I/O plate.



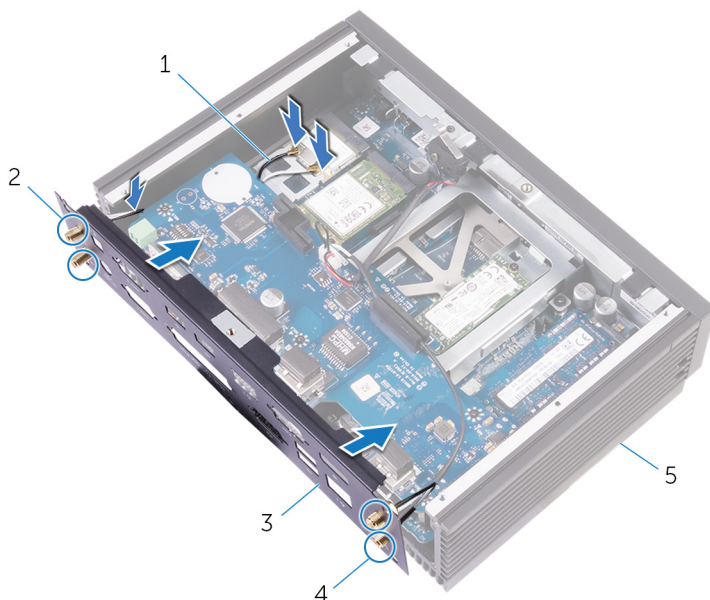
**NOTE:** Ensure that the WLAN-antenna cable color matches with the color indicated behind the I/O plate.

- 2 Route the WLAN-antenna cable between the IET board and system board.

- 3 Connect the WLAN-antenna cables to the WLAN card.

The following table provides the antenna-cable color scheme for the WLAN card supported by the Embedded Box PC.

Connectors on the WLAN card	Antenna-cable color
Main (white triangle)	White and gray
Auxiliary (black triangle)	Black and gray



- |   |                   |   |                             |
|---|-------------------|---|-----------------------------|
| 1 | WLAN antennas (2) | 2 | WLAN-antenna connectors (2) |
| 3 | I/O plate         | 4 | WWAN-antenna connectors (2) |
| 5 | chassis           |   |                             |

## Post-requisites

- 1 Remove the [I/O plate](#).
- 2 Replace the [back cover](#).

# Removing the WWAN-antenna connectors

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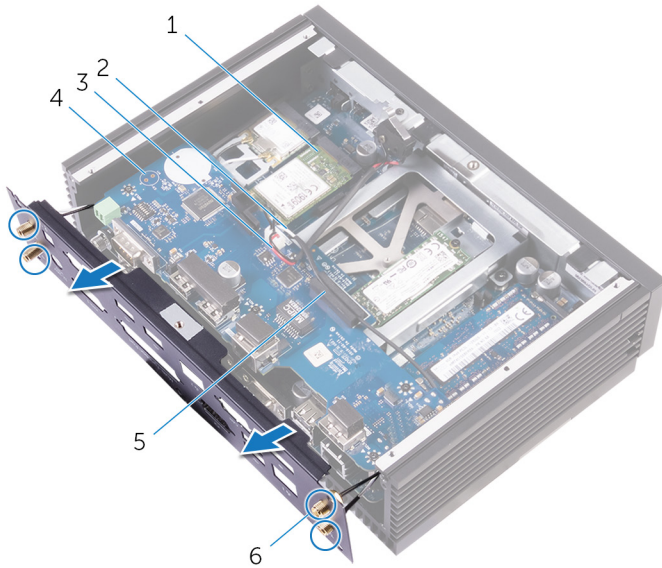
## Prerequisites

- 1 Remove the [back cover](#).
- 2 Remove the [I/O plate](#).

## Procedure

- 1 Remove the WWAN-antenna cables from the WWAN card.
- 2 Remove the WWAN-antenna cables from the cable-routing guide on the IET board.

**3** Remove the WWAN-antenna connectors from the Embedded Box PC.



- |   |                        |   |                         |
|---|------------------------|---|-------------------------|
| 1 | WWAN card              | 2 | WWAN-antenna cables (2) |
| 3 | intrusion-switch cable | 4 | IET board               |
| 5 | cable-routing guide    | 6 | WWAN-antenna connectors |

# Replacing the WWAN-antenna connectors

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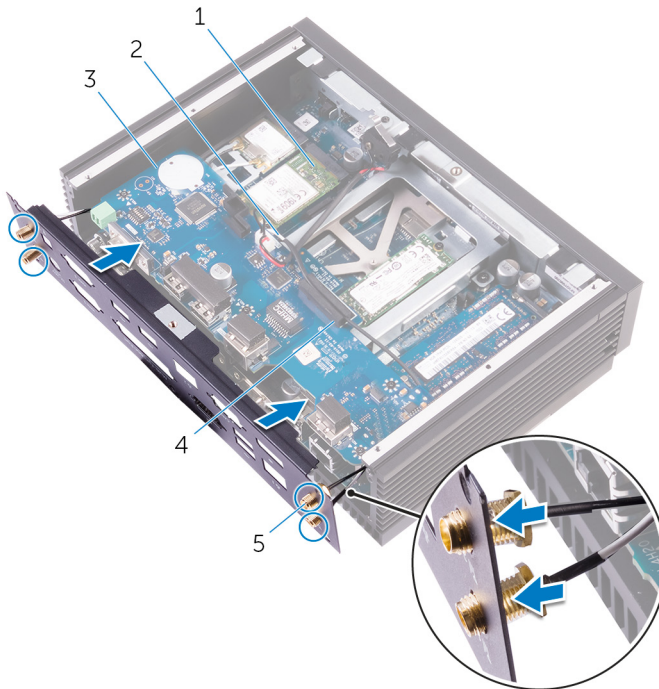
## Procedure

- 1 Insert the WWAN-antenna connectors into the WWAN-cable port on the I/O plate.



**NOTE:** Ensure that the WWAN-antenna cable color matches with the color indicated behind the I/O plate.

- 2 Route the WWAN-antenna cables along the cable-routing guide on the IET board.



- |   |                             |   |                         |
|---|-----------------------------|---|-------------------------|
| 1 | WWAN card                   | 2 | WWAN-antenna cables (2) |
| 3 | IET board                   | 4 | cable-routing guide     |
| 5 | WLAN-antenna connectors (2) |   |                         |

- 3 Connect the WWAN-antenna cables to the WWAN card.  
The following table provides the antenna-cable color scheme for the WWAN card supported by the Embedded Box PC.

Connectors on the WWAN card	Antenna-cable color
Main (white triangle)	White and gray
Auxiliary (black triangle)	Black and gray

## Post-requisites

- 1 Replace the [I/O plate](#).

2 Replace the [back cover](#).

# Removing the IET board

---



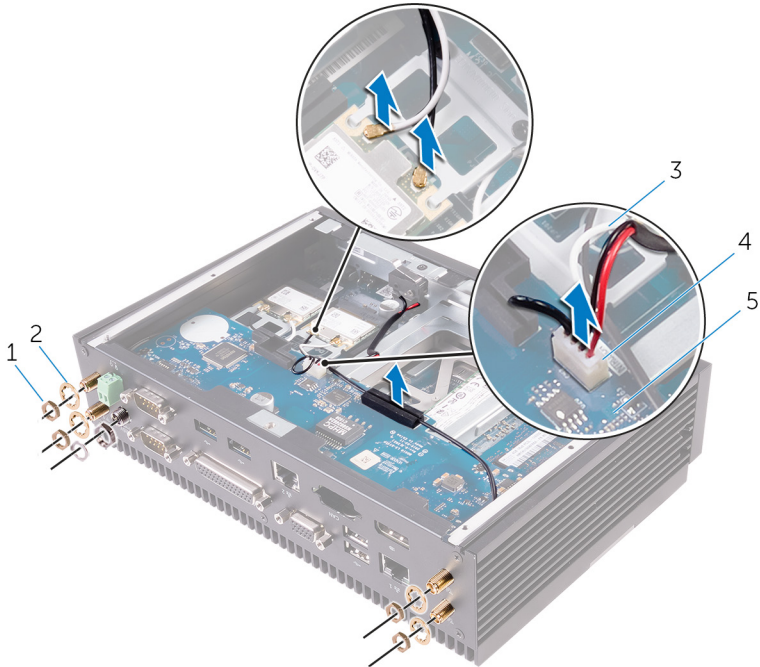
**WARNING:** Before working inside your Embedded Box PC, read the safety information that shipped with your Embedded Box PC and follow the steps in [Before working inside your Embedded Box PC](#). After working inside your Embedded Box PC, follow the steps in [After working inside your Embedded Box PC](#). For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the [back cover](#).
- 2 Remove the [I/O plate](#).

# Procedure

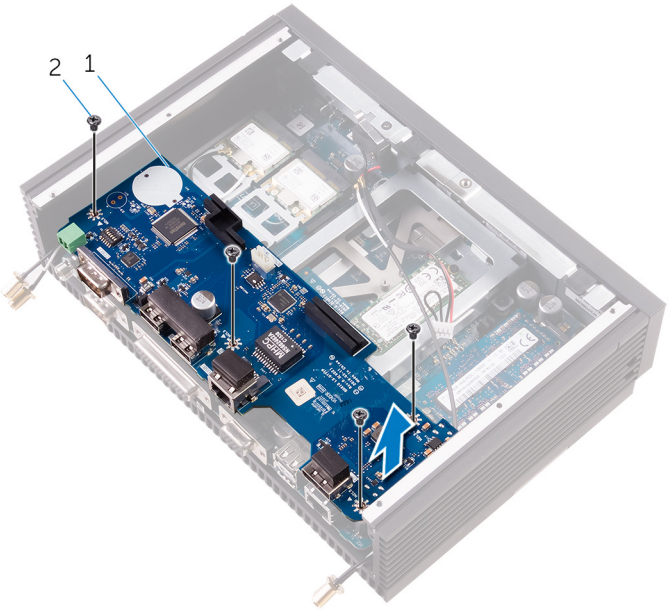
- 1 Remove the intrusion-switch cable from the intrusion-switch connector on the IET board.



- |   |                        |   |                            |
|---|------------------------|---|----------------------------|
| 1 | nuts (5)               | 2 | washers (5)                |
| 3 | intrusion-switch cable | 4 | intrusion-switch connector |
| 5 | IET board              |   |                            |

- 2 Remove the screws that secure the IET board to the system board.

**3** Remove the IET board from the IET-board connector from the side where the memory-module is located.



1 IET board

2 M2L5 screws (4)

# Replacing the IET board

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## Procedure

- 1 Push the IET board into the IET-board connector.
- 2 Replace the screws that secure the IET board to the system board.
- 3 Slide the intrusion-switch cable to the intrusion-switch connector on the IET board.

## Post-requisites

- 1 Replace the [I/O plate](#).
- 2 Replace the [back cover](#).

# Removing the top cover

---



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## Prerequisites

- 1 Remove the [back cover](#).
- 2 Remove the [hard drive](#) or [solid-state drive](#).

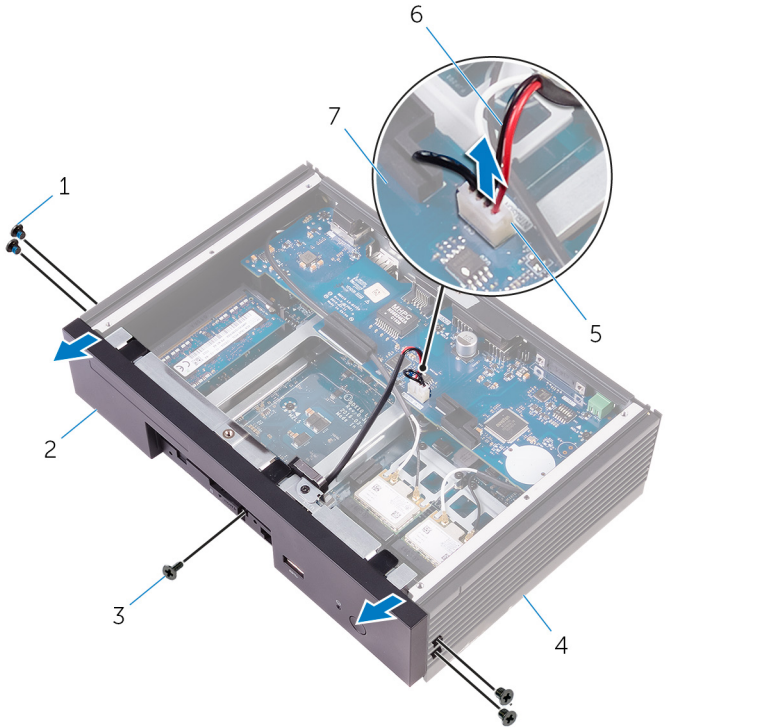
## Procedure

- 1 Remove the intrusion-switch cable from intrusion-switch connector on the IET board.
- 2 Remove the screws that secure the top cover to the chassis.



**NOTE:** Ensure that the screw located near the SIM-card slot is removed.

**3** Remove the top cover away the chassis.



- |   |                             |   |                        |
|---|-----------------------------|---|------------------------|
| 1 | M3x5 countersunk screws (4) | 2 | top cover              |
| 3 | M2x5 screw                  | 4 | chassis                |
| 5 | intrusion-switch connector  | 6 | intrusion-switch cable |
| 7 | IET board                   |   |                        |

# Replacing the top cover

---



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## Procedure


- 1 Place the top cover into the chassis.
- 2 Replace the screws that secure the top cover to the chassis.
- 3 Connect the intrusion-switch cable to the intrusion-switch connector on the IET board.


## Post-requisites

- 1 Replace the [hard drive](#) or [solid-state drive](#).
- 2 Replace the [back cover](#).

# Removing the coin-cell battery

---

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 **CAUTION:** Removing the coin-cell battery resets the BIOS setup program's settings to default. It is recommended that you note the BIOS setup program's settings before removing the coin-cell battery.

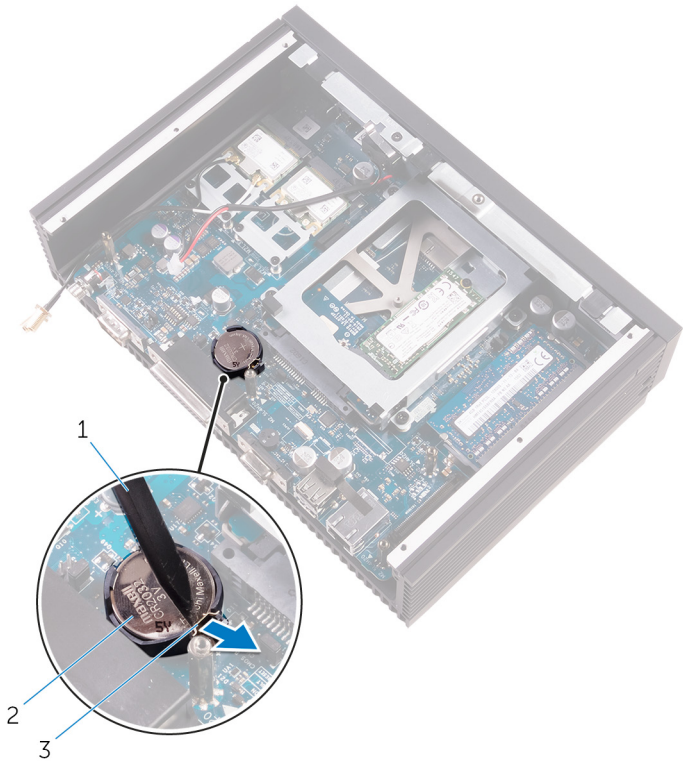
## Prerequisites

- 1 Remove the [back cover](#).
- 2 Remove the [I/O plate](#).
- 3 Remove the [IET board](#).

## Procedure

- 1 Using a plastic scribe, press the battery-release lever away from the coin-cell battery until the coin-cell battery is released from the coin-cell battery socket.

2 Remove the coin-cell battery from its socket.



1 plastic scribe

2 coin-cell battery

3 battery-release lever

# Replacing the coin-cell battery

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## Procedure

With the positive-side facing up, snap the coin-cell battery into the battery socket on the system board.

## Post-requisites

- 1 Replace the [IET board](#).
- 2 Replace the [I/O plate](#).
- 3 Replace the [back cover](#).

# Removing the system board

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**NOTE:** Your Embedded Box PC's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.



**NOTE:** Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.



**NOTE:** Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect the cables correctly after you replace the system board.

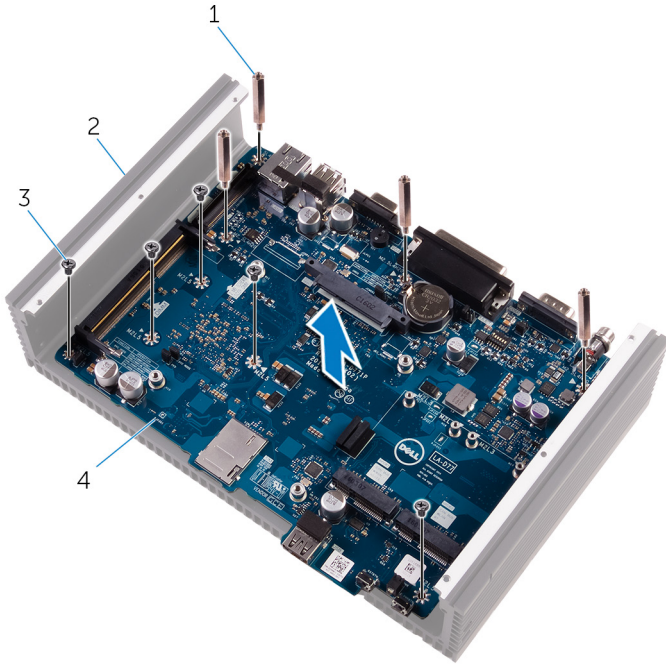
## Prerequisites

- 1 Remove the [back cover](#).
- 2 Remove the [hard drive](#) or [solid-state drive](#).
- 3 Remove the [SIM card](#).
- 4 Remove the [memory module](#).
- 5 Remove the [WLAN card](#) or [CANbus card](#).
- 6 Remove the [WWAN card](#) or [CANbus card](#).
- 7 Remove the [intrusion switch](#).
- 8 Remove the [CANbus cable](#).
- 9 Remove the [I/O plate](#).
- 10 Remove the [top cover](#).
- 11 Remove the [IET board](#).

## Procedure

- 1 Remove the screws that secure the system board to the chassis.

2 Remove the system board from the chassis.



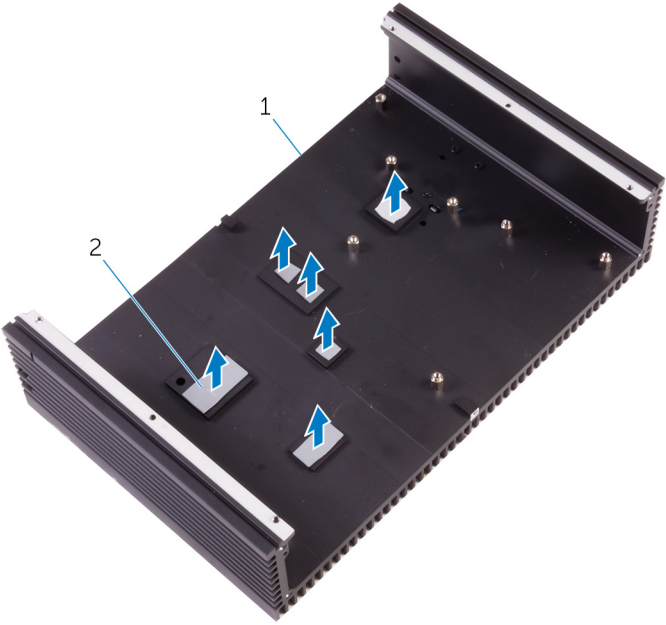
1 STDF (L20) HEX, M2.5x4 screws (4)

2 chassis

3 M2x5 screws (5)

4 system board

3 Remove the thermal pads from the chassis.



1 chassis

2 thermal pads (6)

# Replacing the system board

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## Procedure

- 1 Replace the thermal pads on the chassis.
- 2 Place the system board on the chassis.
- 3 Align the screw holes on the system board with the screw holes on the chassis.
- 4 Replace the screws that secure the system board to the chassis.

## Post-requisites

- 1 Replace the [JET board](#).
- 2 Replace the [top cover](#).
- 3 Replace the [I/O plate](#).
- 4 Replace the [CANbus cable](#).
- 5 Replace the [intrusion switch](#).
- 6 Replace the [CANbus card](#) or [WWAN card](#).
- 7 Replace the [CANbus card](#) or [WLAN card](#).
- 8 Replace the [memory module](#).
- 9 Replace the [SIM card](#).
- 10 Replace the [hard drive](#) or [solid-state drive](#).

- 11 Replace the [back cover](#).

## Entering the Service Tag in the BIOS setup program

- 1 Turn on or restart the Embedded Box PC.
- 2 Press F2 when the Dell logo is displayed to enter the BIOS setup program.
- 3 Navigate to the **Main** tab and enter the Service Tag in the **Service Tag Input** field.

# Removing the Dell logo board

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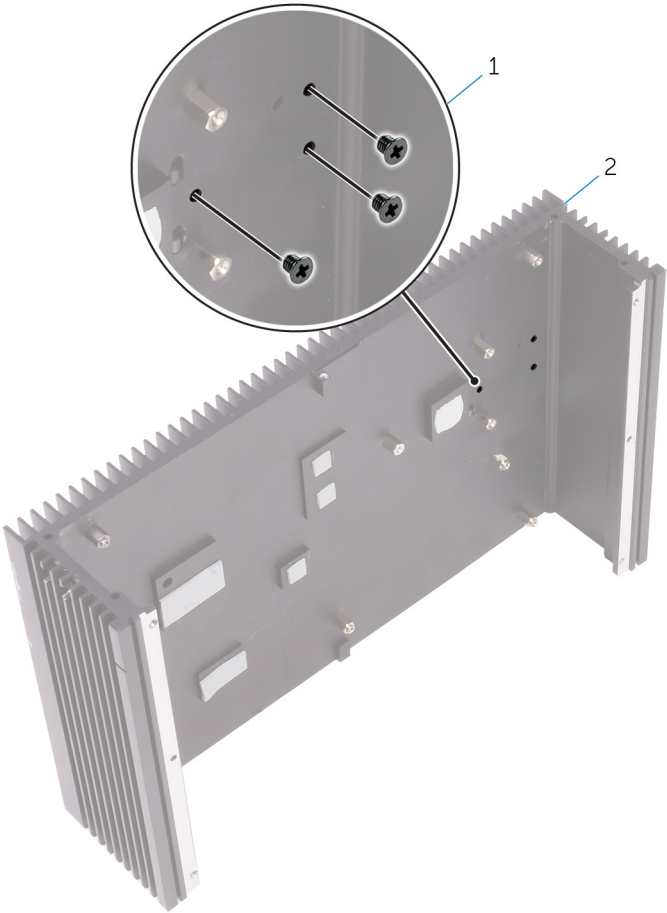
**WARNING:** Before working inside your Embedded Box PC, read the safety information that shipped with your Embedded Box PC and follow the steps in [Before working inside your Embedded Box PC](#). After working inside your Embedded Box PC, follow the steps in [After working inside your Embedded Box PC](#). For more safety best practices, see the Regulatory Compliance home page at [www.dell.com/regulatory\\_compliance](http://www.dell.com/regulatory_compliance).

## Prerequisites

- 1 Remove the [back cover](#).
- 2 Remove the [hard drive](#) or [solid-state drive](#).
- 3 Remove the [SIM card](#).
- 4 Remove the [CANbus card](#).
- 5 Remove the [WLAN card](#).
- 6 Remove the [WWAN card](#).
- 7 Remove the [intrusion switch](#).
- 8 Remove the [CANbus cable](#).
- 9 Remove the [WLAN-antenna connectors](#).
- 10 Remove the [WWAN-antenna connectors](#).
- 11 Remove the [I/O plate](#).
- 12 Remove the [top cover](#).
- 13 Remove the [IET board](#).
- 14 Remove the [system board](#).

# Procedure

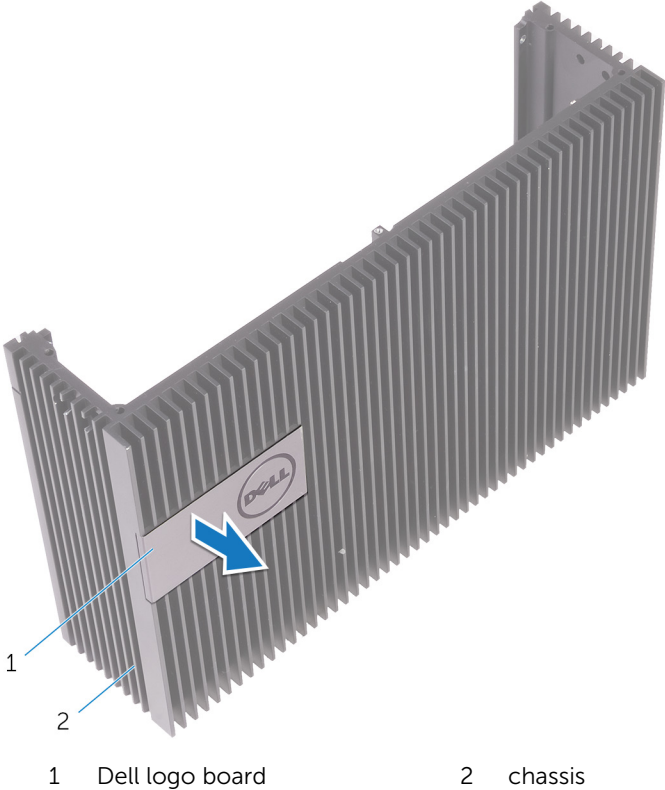
1 Remove the screws that secure the Dell logo board to the chassis.



1 M2x5 screws (3)

2 chassis

2 Remove the Dell logo board from the chassis.



# Replacing the Dell logo board

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## Procedure

- 1 Place the Dell logo board into the chassis.
- 2 Replace the screws that secure the Dell logo board to the chassis.

## Post-requisites

- 1 Replace the [system board](#).
- 2 Replace the [IET board](#).
- 3 Replace the [top cover](#).
- 4 Replace the [I/O plate](#).
- 5 Replace the [WWAN-antenna connectors](#).
- 6 Replace the [WLAN-antenna connectors](#).
- 7 Replace the [CANbus cable](#).
- 8 Replace the [intrusion switch](#).
- 9 Replace the [WWAN card](#).
- 10 Replace the [WLAN card](#).
- 11 Replace the [CANbus card](#).
- 12 Replace the [SIM card](#).
- 13 Replace the [hard drive](#) or [solid-state drive](#).
- 14 Replace the [back cover](#).

# BIOS setup program

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## Entering BIOS setup program

Before turning on the Embedded Box PC, connect the keyboard, mouse, and monitor to the Embedded Box PC, or connect the Embedded Box PC through the KVM session or use Dell Wyse Cloud Client Manager (CCM) or Dell Command | Monitor (DCM) to update the BIOS configuration.

- 1 Turn on (or restart) the Embedded Box PC.
- 2 During POST, when the DELL logo is displayed, watch for the F2 prompt to appear, and then press F2 immediately.



**NOTE:** The F2 prompt indicates that the keyboard is initialized. This prompt can appear very quickly, so you must watch for it, and then press F2. If you press F2 before the F2 prompt, this keystroke is lost. If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, restart the Embedded Box PC and try again.

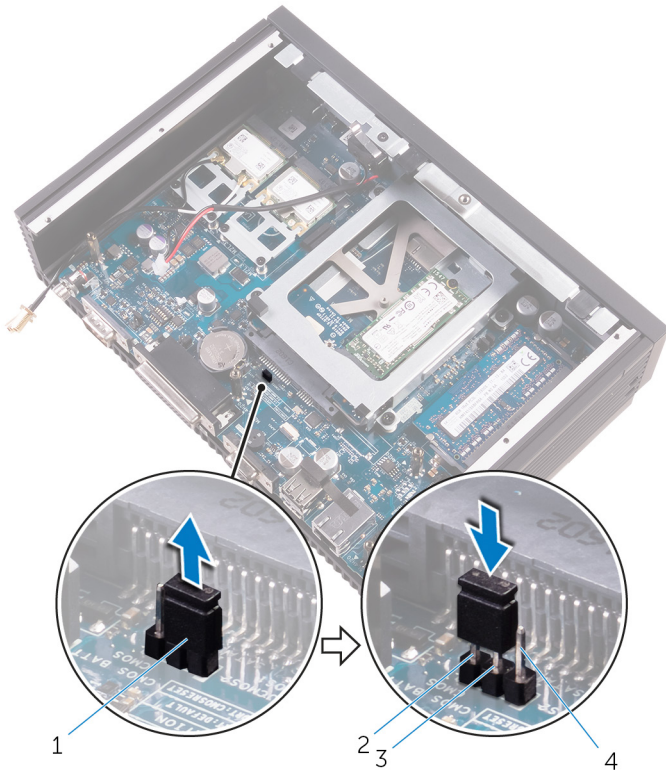
## Clearing CMOS settings



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- 1 Remove the [back cover](#) and [IET board](#).
- 2 Locate the CMOS jumper (CMOS) on the system board. See "[System-board components](#)".
- 3 Remove the jumper plug from pins 1 and 2 and place it on pins 2 and 3.
- 4 Wait for approximately five seconds.

- 5 Remove the jumper plug from pins 2 and 3 and replace it back on pins 1 and 2.



- 1 jumper plug
- 3 pin 2

- 2 pin 1
- 4 pin 3

- 6 Replace the [IET board](#) and [back cover](#).

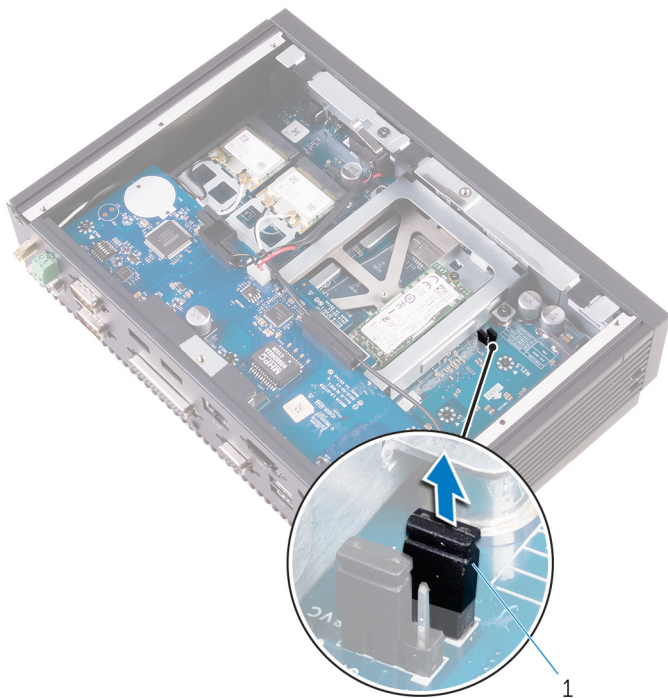
## Clearing forgotten passwords

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**NOTE:** The computer must be disconnected from the electrical outlet to clear the password setting.

- 1 Remove the [back cover](#).
- 2 Locate the password reset jumper (PWD) on the system board. See "[System-board components](#)".
- 3 Remove the jumper plug.
- 4 Wait for approximately five seconds to clear the password setting.
- 5 Turn on the Embedded Box PC.  
A message appears on your computer, indicating that the passwords are cleared.
- 6 Turn off the Embedded Box PC.
- 7 Replace the jumper plug.



1 jumper plug

- 8 Replace the [back cover](#).

# Technology and components

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## Power

The Dell Embedded Box PC is shipped with the 12-26V DC power adapter.

## Processor

The Dell Embedded Box PC is shipped with Intel Atom E3825, Intel Atom E3827, and Intel Atom E3845 processor.

## Mechanical

The Embedded Box PC is optimized for fanless design, and easy wall/panel and DIN Rail Mount use. It provides easy access to connectors and switches. The Embedded Box PC also supports Dell branded and Unbranded OEM ready front cover badge versions.

Feature	Description
Primary unit	<ul style="list-style-type: none"><li>• Optimized for Fanless design</li><li>• Optimized for easy wall/panel and DIN Rail Mount use</li><li>• Easy access to connectors and switches</li><li>• Dell branded and Unbranded OEM ready front cover badge versions</li></ul>
Operating temperature	<ul style="list-style-type: none"><li>• Operating (hard drive): 0°C to 40°C (32°F to 104°F)</li><li>• Operating (solid-state drive): 0°C to 50°C (32°F to 122°F)</li><li>• Non-operating (storage): -40°C to 65°C (-40°F to 149°F)</li></ul>
Humidity	<ul style="list-style-type: none"><li>• Operating: 10% to 90% (non-condensing)</li></ul>

Feature	Description
	<ul style="list-style-type: none"> <li>Non-operating (storage): 5% to 95% (non-condensing)</li> </ul>
Environmental	Base device: Dust-resistant IP30
Mounting	<ul style="list-style-type: none"> <li>Wall-mount bracket</li> <li>DIN Rail options</li> <li>Mechanism for securing system on DIN rail</li> </ul>

## Peripherals

The following peripherals are available in the Embedded Box PC:

- Wall-mount bracket
- DIN rail
- Power connector kit
- Multi-Function port
- Mobile Broadband card
- Mobile WLAN card
- CANbus card
- Power adapter

## WLAN/WWAN

The following WLAN and WWAN cards are optionally offered in the Embedded Box PC:

- Dual-band 802.11b/g/n/ac+Bluetooth 4.1 LE
- Dell Wireless DW5580 HSPA+

## Zigbee

The Zigbee USB module is a wireless mesh module for Dell Embedded Box PC.

# CANbus

The CANBus daughter card is an optional accessory for Embedded Box PC.