

# Dell OptiPlex 5270 All-in-One

## Service Manual



កំណត់ចំណាំ ការប្រុងប្រយ័ត្ន និងការព្រមានប្រាប់

 **ចំណាំ:** កំណត់ចំណាំចម្លងព័ត៌មានសំខាន់ៗដែលអាចទទួលបានពីលោកអ្នក នៅក្នុងការប្រើប្រាស់ផលិតផលរបស់អ្នកកាន់តែប្រសើរឡើង ។

 **ប្រយ័ត្ន:** ការប្រុងប្រយ័ត្នចម្លងព័ត៌មានទូទៅត្រូវបានរៀបចំឡើងដើម្បីជួយអ្នកកាន់ច្រើន និងប្រាប់អ្នកអំពីរបៀបប្រើប្រាស់ផលិតផលទាំងអស់នេះ ។

 **ការព្រមាន:** ការព្រមានចម្លងព័ត៌មានសំខាន់ៗដែលអាចបណ្តាលឱ្យមានការខូចខាតដល់ទ្រព្យសម្បត្តិ របួសរបើមធ្ងន់ ឬក៏សេចក្តីស្លាប់ ។

© 2018 - 2019 Dell Inc. ឬក្រុមហ៊ុនបុគ្គលិកដ៏ធំរបស់ខ្លួន។ រក្សាសិទ្ធិស្របច្បាប់។ Dell, EMC និងទិដ្ឋភាពសញ្ញាពាណិជ្ជកម្មផ្សេងទៀតគឺជាទិដ្ឋភាពពាណិជ្ជកម្មរបស់ក្រុមហ៊ុន Dell Inc. ឬក្រុមហ៊ុនបុគ្គលិកដ៏ធំរបស់ខ្លួន។ ទិដ្ឋភាពពាណិជ្ជកម្មផ្សេងទៀតអាចជាទិដ្ឋភាពពាណិជ្ជកម្មនៃម្ចាស់កម្មសិទ្ធិរៀងខ្លួន។

<b>1</b>	<b>ការធ្វើការនៅលើកុំព្យូទ័ររបស់អ្នក.....</b>	<b>6</b>
	ការណែនាំពីសុវត្ថិភាព.....	6
	ការបិទកុំព្យូទ័ររបស់អ្នក - ប្រព័ន្ធប្រតិបត្តិការ Windows 10.....	6
	មុននឹងធ្វើការនៅខាងក្នុងកុំព្យូទ័ររបស់អ្នក.....	6
	រក្សាយុតិវិធីការនៅខាងក្នុងកុំព្យូទ័ររបស់អ្នក.....	7
<b>2</b>	<b>បច្ចេកវិទ្យា និងសមាសភាគ.....</b>	<b>8</b>
	DDR4.....	8
	លក្ខណៈពិសេសរបស់ USB.....	10
	HDMI.....	11
<b>3</b>	<b>Major components of your system.....</b>	<b>13</b>
<b>4</b>	<b>ការដោះ និងការដំឡើងសមាសភាគធាតុ.....</b>	<b>15</b>
	ឧបករណ៍ដែលបានណែនាំ.....	15
	Screw size list.....	16
	System board layout.....	17
	Rubber feet.....	18
	Removing the rubber feet.....	18
	Installing the rubber feet.....	19
	Cable cover - optional.....	20
	Removing the cable cover.....	20
	Installing the cable cover.....	21
	Stand .....	22
	Removing the stand.....	22
	Installing the stand.....	23
	Back cover.....	24
	Removing the back cover.....	24
	Installing the back cover.....	24
	Hard drive.....	25
	Removing the hard drive assembly.....	25
	Installing the hard drive assembly.....	26
	Memory module.....	27
	Removing the memory module.....	27
	Installing the memory module.....	28
	System board shield.....	29
	Removing the system board shield.....	29
	Installing the system board shield.....	30
	Intel Optane.....	31
	Removing the Intel Optane card.....	31
	Installing the Intel Optane card.....	32
	Solid State Drive -SSD.....	33
	Removing the SSD card.....	33
	Installing the SSD card.....	34

Solid State Drive -2230.....	35
Removing the 2230 SSD card.....	35
Installing the 2230 SSD card.....	36
WLAN card.....	37
Removing the WLAN card.....	37
Installing the WLAN card.....	39
System fan.....	41
Removing the system fan.....	41
Installing the system fan.....	42
Heat sink.....	43
Removing the heat sink - UMA.....	43
Installing the heat sink - UMA.....	45
Pop-Up Camera.....	46
Removing the pop-up camera.....	46
Installing the pop-up camera.....	49
Coin cell battery.....	51
Removing the coin cell battery.....	51
Installing the coin cell battery.....	52
Processor.....	53
Removing the processor.....	53
Installing the processor.....	54
Base cover.....	55
Removing the base cover.....	55
Installing the base cover.....	57
Power supply unit - PSU.....	58
Removing the power supply unit -PSU.....	58
Installing the power supply unit -PSU.....	61
Power supply unit fan - PSU fan.....	62
Removing the power supply unit fan -PSU fan.....	62
Installing the power supply unit -PSU fan.....	64
Input and Output bracket.....	66
Removing the Input and Output bracket.....	66
Installing the Input and Output bracket.....	68
System board.....	70
Removing the system board.....	70
Installing the system board.....	72
Speakers.....	74
Removing the speakers.....	74
Installing the speakers.....	76
Power button board.....	78
Removing the power button board.....	78
Installing the power button board.....	79
Microphones.....	81
Removing the microphones.....	81
Installing the microphones.....	83
Input and Output board.....	85
Removing the Input and Output board.....	85
Installing the input and output board.....	87
Headset port.....	89
Removing the headset port.....	89

Installing the headset port.....	90
Antennas.....	91
Removing the antennas.....	91
Installing the antennas.....	93
Display panel.....	95
Removing the display panel.....	95
Installing the display panel.....	97
Display cable.....	99
Removing the display cable.....	99
Installing the display cable.....	100
Middle frame.....	101
Removing the middle frame.....	101
Installing the middle frame.....	103
<b>5 ករណីប្រយោជន៍បញ្ហាដើម្បីព្យាបាលសំបុក.....</b>	<b>106</b>
ការវិនិច្ឆ័យលើកម្រិតប្រព័ន្ធប្រតិបត្តិការដែលបានកែលម្អ - ការវិនិច្ឆ័យ ePSA.....	106
ការដំឡើងការវិនិច្ឆ័យ ePSA.....	106
Diagnostics.....	106
Camera status indicator.....	107
LCD built in self test - BIST.....	107
<b>6 ការទទួលយកកំណត់.....</b>	<b>109</b>
ការទំនាក់ទំនងមកក្រុមហ៊ុន Dell.....	109



- 5. បើកអេក្រង់។
- 6. ចុច និងសង្កត់ប៊ូតុងតាមលំដាប់ដូចខាងលើ ដើម្បីធ្វើជាប្រព័ន្ធនៃប្រព័ន្ធ។

 **ប្រយ័ត្ន:** ដើម្បីការពារកុំឱ្យកាំរស្មីអ៊ូលត្រា និងស្បែករបស់អ្នកត្រូវបានព្រមព្រៀងជាមួយអ្នកផ្តល់សេវា **#8**។

 **ប្រយ័ត្ន:** ដើម្បីជៀសវាងការបញ្ចេញនាមសញ្ជាតិស្រុក ឬស្រុកដទៃទៀត ដោយប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រង ឬដោយប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រងដទៃទៀត ដែលបានលាយបញ្ចូលគ្នាជាមួយប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ។

- 7. រង្វះ ExpressCards ឬ Smart Cards ដែលបានដំឡើងណាមួយនៅលើប្រព័ន្ធរបស់អ្នក។

## ក្រោយពីធ្វើការនៅខាងក្នុងកុំព្យូទ័ររបស់អ្នក

បន្ទាប់ពីអ្នកបានបញ្ចប់ដំណើរការដោះស្រាយបញ្ហា ត្រូវប្រាកដថាអ្នកបានតភ្ជាប់ប្រព័ន្ធ ភាគ និងស្បែកក្រៅណាមួយមុននឹងបើកកុំព្យូទ័ររបស់អ្នក។

 **ប្រយ័ត្ន:** ដើម្បីជៀសវាងការទទួលបានកុំព្យូទ័រ ត្រូវប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ **Dell** ដែលអ្នកប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ កុំប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រដទៃទៀតដែលបានដំឡើងលើកុំព្យូទ័ររបស់អ្នក។

1. ភ្ជាប់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រដោយប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ ឬប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រដទៃទៀត និងប្រើប្រាស់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ ExpressCard។
2. ភ្ជាប់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ ឬប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រដទៃទៀតទៅនឹងកុំព្យូទ័ររបស់អ្នក។

 **ប្រយ័ត្ន:** ដើម្បីភ្ជាប់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ ឬប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រដទៃទៀតទៅនឹងប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ បន្ទាប់មកត្រូវតែភ្ជាប់ប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រ។

3. ភ្ជាប់កុំព្យូទ័ររបស់អ្នក និងប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័រដទៃទៀតទៅនឹងប្រព័ន្ធគ្រប់គ្រងកុំព្យូទ័ររបស់អ្នកដទៃទៀត។
4. បើកកុំព្យូទ័ររបស់អ្នក។

## បច្ចេកវិទ្យា និងសមាសភាគ

ឯកសារនេះរៀបរាប់លម្អិតអំពីបច្ចេកវិទ្យា និងសមាសភាគដែលមាននៅក្នុងប្រព័ន្ធនេះ។

**ប្រភេទ :**

- DDR4
- លក្ខណៈពិសេសរបស់ USB
- HDMI

## DDR4

DDR4 (double data rate fourth generation) memory is a higher-speed successor to the DDR2 and DDR3 technologies and allows up to 512 GB in capacity, compared to the DDR3's maximum capacity of 128 GB per DIMM. DDR4 synchronous dynamic random-access memory is keyed differently from both SDRAM and DDR to prevent the user from installing the wrong type of memory into the system.

DDR4 needs 20 percent less or just 1.2 volts, compared to DDR3 which requires 1.5 volts of electrical power to operate. DDR4 also supports a new, deep power-down mode that allows the host device to go into standby without needing to refresh its memory. Deep power-down mode is expected to reduce standby power consumption by 40 to 50 percent.

## Key Specifications

The following table lists the specifications' comparison between DDR3 and DDR4:

**Table 1. DDR3 vs DDR4**

Feature/Option	DDR3	DDR4	DDR 4 Advantages
Chip Densities	512 Mb-8 Gb	4 Gb-16 Gb	Larger DIMM capacities
Data rates	800 Mb/s-2133 Mb/s	1600 Mb/s-3200 Mb/s	Migration to higher speed I/O
Voltage	1.5 V	1.2 V	Reduced memory power demand
Low voltage standard	Yes (DDR3L at 1.35V)	Anticipated at 1.05V	Memory Power Reductions
Internal banks	8	16	Higher data rates
Bank groups (BG)	0	4	Faster burst accesses
VREF inputs	2 —DQs and CMD/ADDR	1 — CMD/ADDR	VREFDQ Now Internal
tCK — DLL Enabled	300 Mhz-800 Mhz	667Mhz-1.6Ghz	Higher data rates
tCK — DLL Disabled	10MHz – 125MHz (optional)	Undefined to 125MHz	DLL-off now fully supported
Read Latency	AL+CL	AL+CL	Expanded values
Write Latency	AL+CWL	AL+CWL	Expanded values
DQ Driver (ALT)	40Ω	48Ω	Optimal for PtP Applications
DQ Bus	SSTL15	POD12	Less I/O Noise and Power
RTT Values (in Ω)	120,60,40,30,20	240,120,80,60,48,40,34	Support for higher data rates
RTT not allowed	READ Bursts	Disables during READ Bursts	Ease of use
ODT Modes	Nominal, Dynamic	Nominal, Dynamic, Park	Add'l Control Mode; OTF Value Change
ODT Control	ODT Signaling Required	ODT Signaling Not Required	Ease of ODT Control; Allows Non-ODT Routing, PtP Apps

Feature/Option	DDR3	DDR4	DDR 4 Advantages
Multi-Purpose Register	Four Registers – 1 Defined, 3 RFU	Four Registers – 3 Defined, 1 RFU	Provides Additional Specialty Readout
DIMM Types	RDIMM, LRDIMM, UDIMM, SODIMM	RDIMM, LRDIMM, UDIMM, SODIMM	
DIMM Pins	240 (R, LR, U); 204 (SODIMM)	288 (R, LR, U); 260 (SODIMM)	
RAS	ECC	CRC, Parity, Addressability, GDM	More RAS features; improved data integrity

## DDR4 Details

There are subtle differences between DDR3 and DDR4 memory modules, as listed below.

### Key notch difference

The key notch on a DDR4 module is in a different location from the key notch on a DDR3 module. Both notches are on the insertion edge, but the notch location on the DDR4 is slightly different, to prevent the module from being installed into an incompatible board or platform.

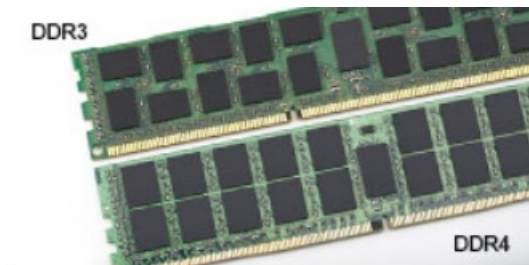


Figure 1. Notch difference

### Increased thickness

DDR4 modules are slightly thicker than DDR3, to accommodate more signal layers.

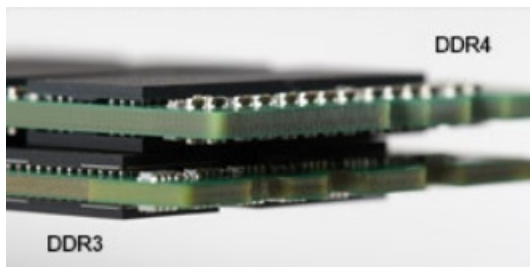


Figure 2. Thickness difference

### Curved edge

DDR4 modules feature a curved edge to help with insertion and alleviate stress on the PCB during memory installation.

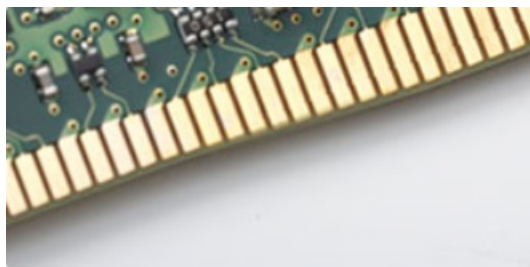


Figure 3. Curved edge

# លក្ខណៈពិសេសរបស់ USB

Universal Serial Bus ឬ USB ត្រូវបានបង្កើតឡើងនៅឆ្នាំ 1996 ។ វាបានជួយសម្រួលដល់ទំនាក់ទំនងរវាងកុំព្យូទ័រ និងគ្រឿងឧបករណ៍ខាងក្រៅ ដូចជា ម៉ោង ក្តារចុច ប្រាយវីខាងក្រៅ និងម៉ាស៊ីនច្រើន។

សូមមើលតារាងខាងក្រោមដែលបង្ហាញពីការវិវឌ្ឍន៍ USB ។

## តារាង 2. ការវិវឌ្ឍន៍ USB

ប្រភេទ	អត្រាបញ្ជូនទិន្នន័យ	ប្រភេទ	ឆ្នាំផលិត
USB 2.0	480 Mbps	High Speed	2000
USB 3.0/USB 3.1 ជំនាន់ទី 1	5 Gbps	Super Speed	2010
USB 3.1 ជំនាន់ទី 2	10 Gbps	Super Speed	2013

## USB 3.0/USB 3.1 ជំនាន់ទី 1 (SuperSpeed USB)

អស់រយៈពេលជាច្រើនឆ្នាំ USB 2.0 ត្រូវបានភ្ជាប់មកជាមួយដោយការកែលម្អដែលលក់បានចំនួនប្រមាណ 6 ពាន់លានឧបករណ៍ ប៉ុន្តែមានការទាមទារលើសហេតុអ្វីកុំព្យូទ័រកាន់តែលឿនជាងមុន កម្រិតបញ្ជូនកាន់តែច្រើន។ USB 3.0/USB 3.1 ជំនាន់ទី 1 ក្នុងក្រោយអាយុ ឆ្លើយតបទៅនឹងការទាមទាររបស់អតិថិជន ដោយបានតម្លើងល្បឿនទិន្នន័យថ្មីគឺ 10 ដង លឿនជាងជំនាន់មុនរបស់ខ្លួន។ ជាសង្ខេប លក្ខណៈពិសេសនៃ USB 3.1 ជំនាន់ 1 គឺមានដូចខាងក្រោម៖

- អត្រាបញ្ជូនទិន្នន័យខ្ពស់ជាងមុន (រហូតដល់ 5 Gbps)
- បង្កើតកំលាំងតំបន់ស៊ីមេនត និងបង្កើនខ្លួនទាមទារលើសម្រាប់អាយុឧបករណ៍ដែលត្រូវការថាមពលខ្លាំង
- មុខងារត្រប់គ្រងថាមពលថ្មី
- ការផ្ទេរទិន្នន័យ Full-duplex និងគាំទ្រប្រភេទបញ្ជូនថ្មីផ្សេងៗ
- អាចប្រើជាមួយនឹង USB 2.0 ដែលត្រូវគ្នា
- ថ្លៃ និងឧបករណ៍ក្លាយថ្មី

ប្រធានបទខាងក្រោមឆ្លើយតបទៅនឹងសំណួរដែលបានសួរជាញឹកញាប់អំពី USB 3.0/USB 3.1 ជំនាន់ 1។

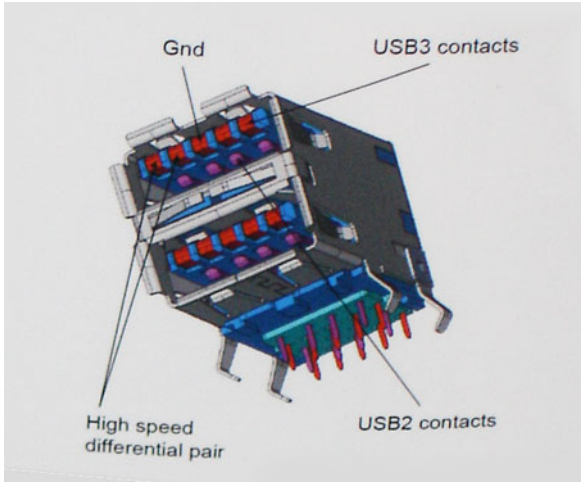


## ល្បឿន

បច្ចុប្បន្ន មានម៉ូតូល្បឿន 3 ដែលកំណត់ដោយ USB 3.0/USB 3.1 ជំនាន់ទី 1 ដាក់លាក់ក្នុងក្រោយបំផុត។ នោះគឺ Super-Speed, Hi-Speed និង Full-Speed។ ម៉ូតូ SuperSpeed ថ្មីមានល្បឿនបញ្ជូនទិន្នន័យ 4.8Gbps ។ ខណៈដែល លក្ខណៈពិសេសនៃក្រុមម៉ូតូ Hi-Speed និង Full-Speed USB ដែលត្រូវបានស្គាល់ជាទូទៅថា USB 2.0 និង 1.1 ម៉ូតូដែលយើងកំណត់ដោយការក្នុងល្បឿនទិន្នន័យ 480Mbps និង 12Mbps និងត្រូវការអ្វីៗត្រូវបានប្រើប្រាស់ជាមួយនឹងឧបករណ៍ជំនាន់មុនដែលត្រូវគ្នា។

USB 3.0/USB 3.1 ជំនាន់ទី 1 ធ្វើការបានខ្ពស់ជាង អាស្រ័យដោយការផ្លាស់ប្តូរបច្ចេកទេសដូចខាងក្រោម៖

- បណ្តាញភ្ជាប់ បន្ថែមមួយ (bus) ដែលត្រូវបានបន្ថែម រួមទៅនឹងឆ្នូល USB 2.0 ដែលមានស្រាប់ (សូមមើលរូបភាពខាងក្រោម)។
- USB 2.0 ពីមុនមានថ្លៃប្រមូល (ថ្លៃចេញ, ថ្លៃដី, និងថ្លៃទិន្នន័យ មួយគ្នា សម្រាប់បញ្ជូនទិន្នន័យផ្សេងគ្នា) USB 3.0 / USB 3.1 ជំនាន់ទី 1 ដាក់បន្ថែមថ្លៃចំនួន 4 បន្ថែមទៀត សំរាប់ថ្លៃបញ្ជូនចេញ បំពេញខ្នាត 2 គូ (ចេញទទួល និងចេញបញ្ជូន) សម្រាប់ការប្រមូលគ្នាសម្រាប់ការកត់ត្រា ថ្លៃ 8 នៅក្នុងឧបករណ៍ភ្ជាប់ និងការភ្ជាប់។
- USB 3.0 / USB 3.1 ជំនាន់ទី 1 ប្រើ អន្តរកម្ម ថ្លៃទិន្នន័យទិសដៅ ជាជាងការរៀបចំពាក់កណ្តាលស្នូលដែលប្រើលើ USB 2.0 ។ ការធ្វើបែបនេះបង្កើនកម្រិតបញ្ជូនតាមទ្រឹស្តី 10 ដង។



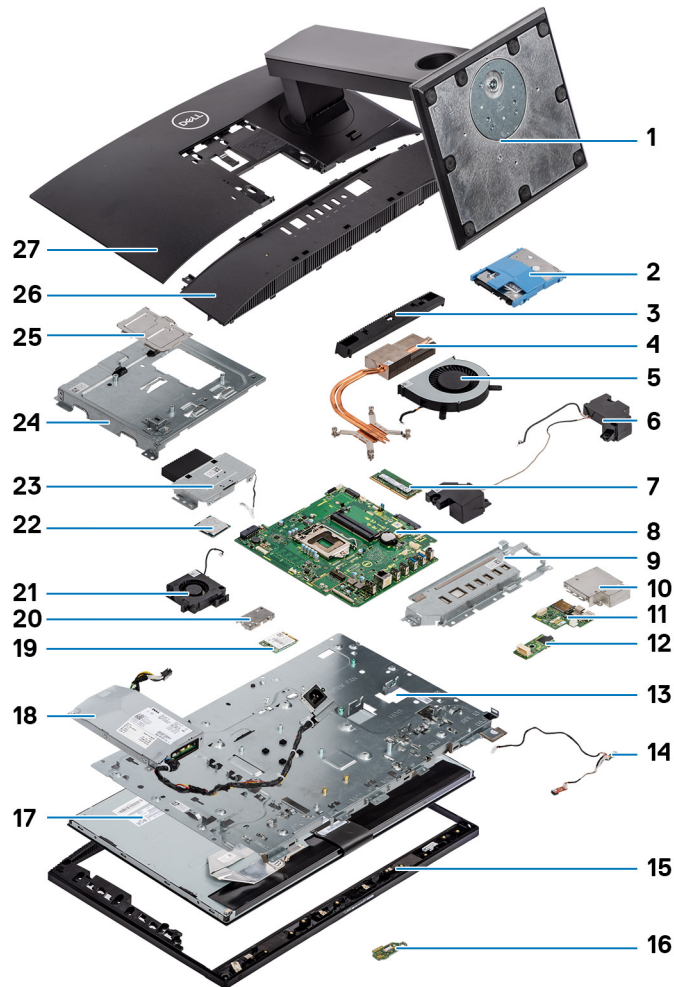


- **Automotive Connection System** - New cables and connectors for automotive video systems, designed to meet the unique demands of the motoring environment while delivering true HD quality

## Advantages of HDMI


- Quality HDMI transfers uncompressed digital audio and video for the highest, crispest image quality.
- Low -cost HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner
- Audio HDMI supports multiple audio formats from standard stereo to multichannel surround sound
- HDMI combines video and multichannel audio into a single cable, eliminating the cost, complexity, and confusion of multiple cables currently used in A/V systems
- HDMI supports communication between the video source (such as a DVD player) and the DTV, enabling new functionality

## Major components of your system



1. Stand
2. Hard drive
3. Camera assembly cover
4. Heat sink
5. System fan
6. Speakers
7. Memory module
8. System board
9. Input and Output bracket
10. Input and Output board shield
11. Input and Output board
12. Headset port
13. Middle frame
14. Microphones
15. Display assembly base
16. Power button board
17. Display panel

18. Power supply unit - PSU
19. WLAN card
20. WLAN card shield
21. Power supply unit fan - PSU fan
22. Processor
23. Pop-up camera assembly
24. System board shield
25. DIMM door
26. Base cover
27. Back cover

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

## ការដោះ និងការដំឡើងសមាសភាគនានា

### ប្រភេទ :

- ឧបករណ៍ដែលបានណែនាំ
- Screw size list
- System board layout
- Rubber feet
- Cable cover - optional
- Stand
- Back cover
- Hard drive
- Memory module
- System board shield
- Intel Optane
- Solid State Drive -SSD
- Solid State Drive -2230
- WLAN card
- System fan
- Heat sink
- Pop-Up Camera
- Coin cell battery
- Processor
- Base cover
- Power supply unit - PSU
- Power supply unit fan - PSU fan
- Input and Output bracket
- System board
- Speakers
- Power button board
- Microphones
- Input and Output board
- Headset port
- Antennas
- Display panel
- Display cable
- Middle frame

### ឧបករណ៍ដែលបានណែនាំ




ទម្រង់ការក្នុងឯកសារនេះត្រូវបានរៀបចំឡើងដើម្បីធានាបាននូវភាពងាយស្រួលក្នុងការដំឡើង








- ទូរណ៍វិសម័ត Phillips #0
- ទូរណ៍វិសម័ត Phillips #1
- ប្រដាប់កាត់ប្លាស្ទិក

**i** ចំណាំ: ទូរណ៍វិសម័ត #0 ត្រូវប្រើប្រាស់នៅ 0-1 ហើយទូរណ៍វិសម័ត #1 ត្រូវប្រើប្រាស់នៅ 2-4

# Screw size list

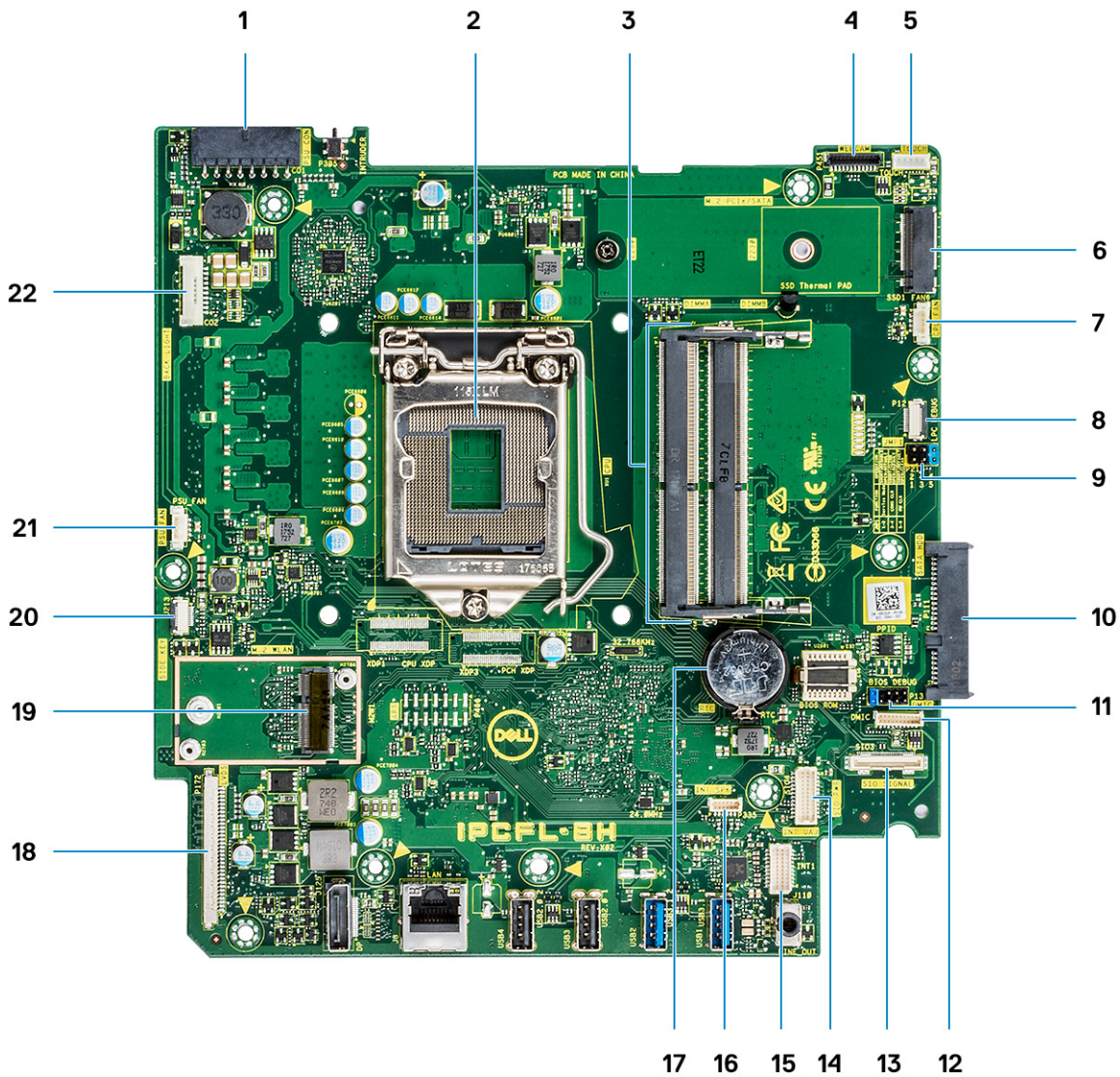
Table 3. OptiPlex 5270 All-in-One

Component	Screw type	Quantity	Screw image
Cable cover	M3x9	1	
System board shield	M3x5	5	
Solid-state drive/Intel Optane card	M2x2.5	1	
WLAN card shield	M2x2.5	2	
WLAN card	M2x2.5	1	
System fan	M3 x5	3	
Pop-up camera assembly	M3x5	2	
Pop-up camera bezel	M3x5	5	
Base cover	M3x5	4	
PSU cable	M3x5	1	
Power supply unit—PSU	M3x5	1	
Power supply unit fan—PSU fan	M3x5	2	
Input and Output bracket	M3x5	3	
System board	M3x5	9	
Speakers	M3 4+7.1 XZN	4	
Power button board	M3x5	1	

Component	Screw type	Quantity	Screw image
Microphone	M2x2.5	2	
Input and Output board shield	M3x5	2	
Input and Output board	M2.5x3.5	2	
Headset port	M3x5	1	
Antennas	M2x2.5	2	
Display panel	M3x5	8	
Middle frame	M3x5	11	

## System board layout

OptiPlex 5270 All-in-One



- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. PSU power connector</li> <li>3. Memory slots</li> <li>5. Touch screen cable connector</li> <li>7. System fan connector</li> <li>9. Service mode jumper/Password clear jumper/CMOS clear jumper</li> <li>11. SPI header</li> <li>13. SIO signal connector</li> <li>15. UAJ connector</li> <li>17. Coin cell battery</li> <li>19. M.2 WLAN slot</li> <li>21. PSU fan connector</li> </ol> | <ol style="list-style-type: none"> <li>2. Processor</li> <li>4. Webcam connector</li> <li>6. M.2 PCIe/SATA slot</li> <li>8. LPC_Debug</li> <li>10. SATA HDD slot</li> <li>12. DMIC connector</li> <li>14. SIO power connector</li> <li>16. INT_SPK connector</li> <li>18. LVDS connector</li> <li>20. Power board button connector</li> <li>22. Back light connector</li> </ol> |
|---|---|

## Rubber feet

### Removing the rubber feet

1. Follow the procedure in [Before working inside your computer.](#)

2. Remove the [Stand](#).
3. Pry the rubber feet at the bottom edge from the display assembly base and pull it out.



## Installing the rubber feet

1. Align the rubber feet with the slots on the display assembly base and push it firmly in place.

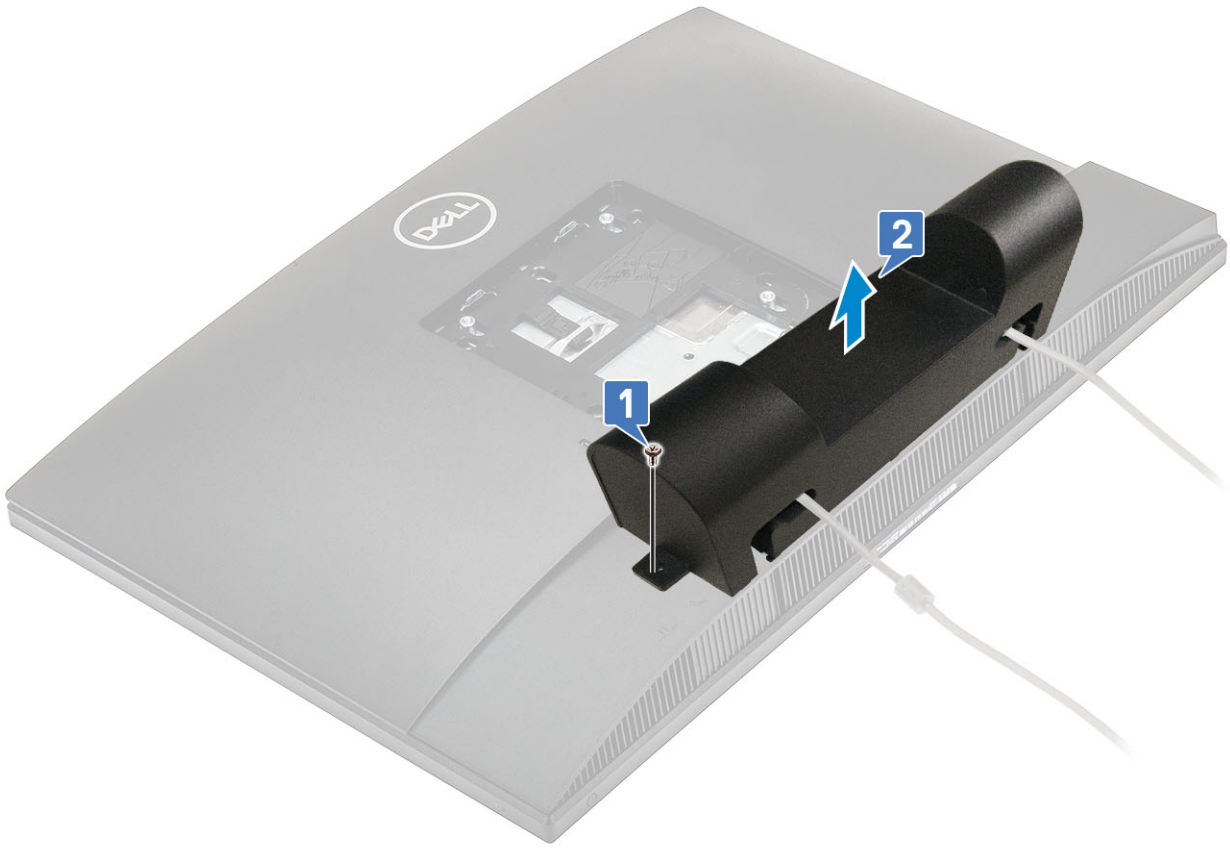


2. Install the [Stand](#).
3. Follow the procedure in [After working inside your computer](#)

## Cable cover - optional

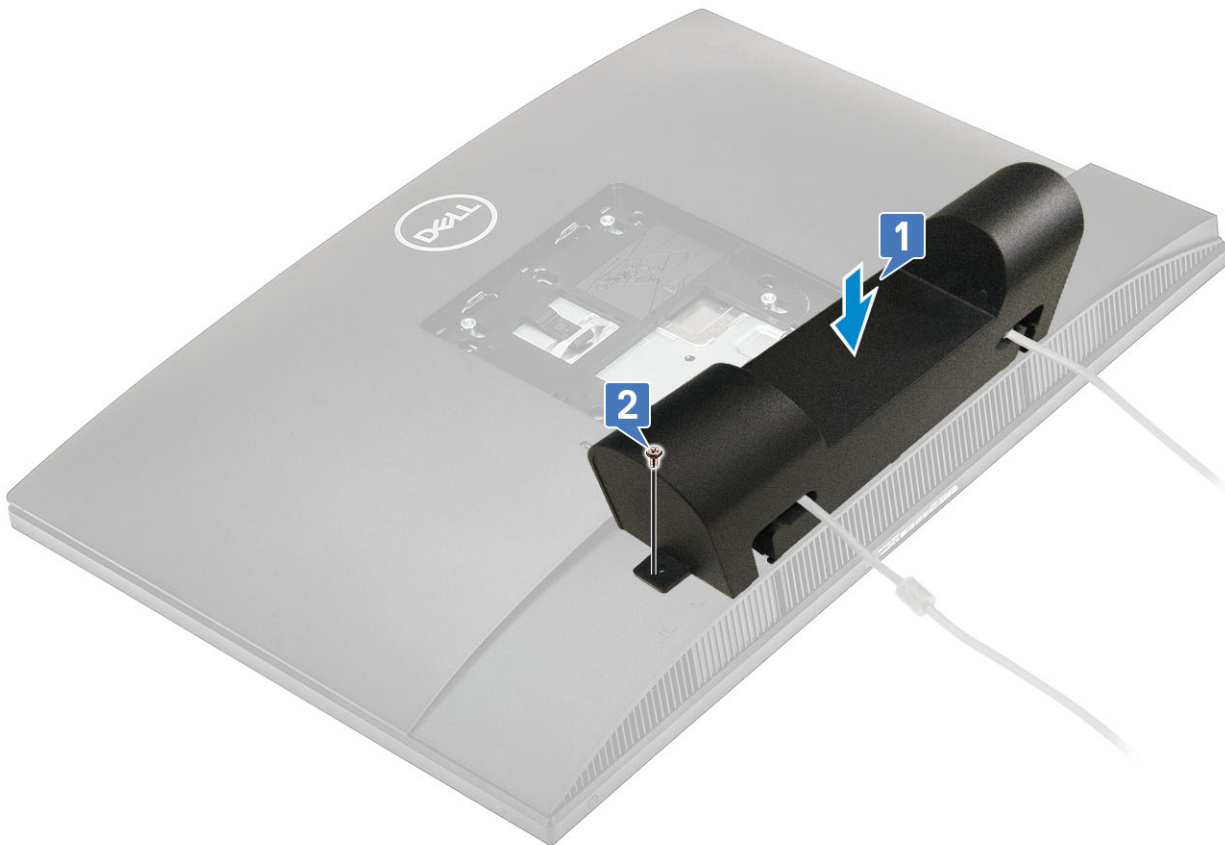
### Removing the cable cover

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [Stand](#).
3. Remove the single (M3x9) screw that secures the cable cover to the base cover [1].
4. Lift the cable cover off the base cover [2].



## Installing the cable cover

1. Place the cable cover on the base cover [1].
2. Replace the single (M3x9) screw the secures the cable cover to the base cover [2].



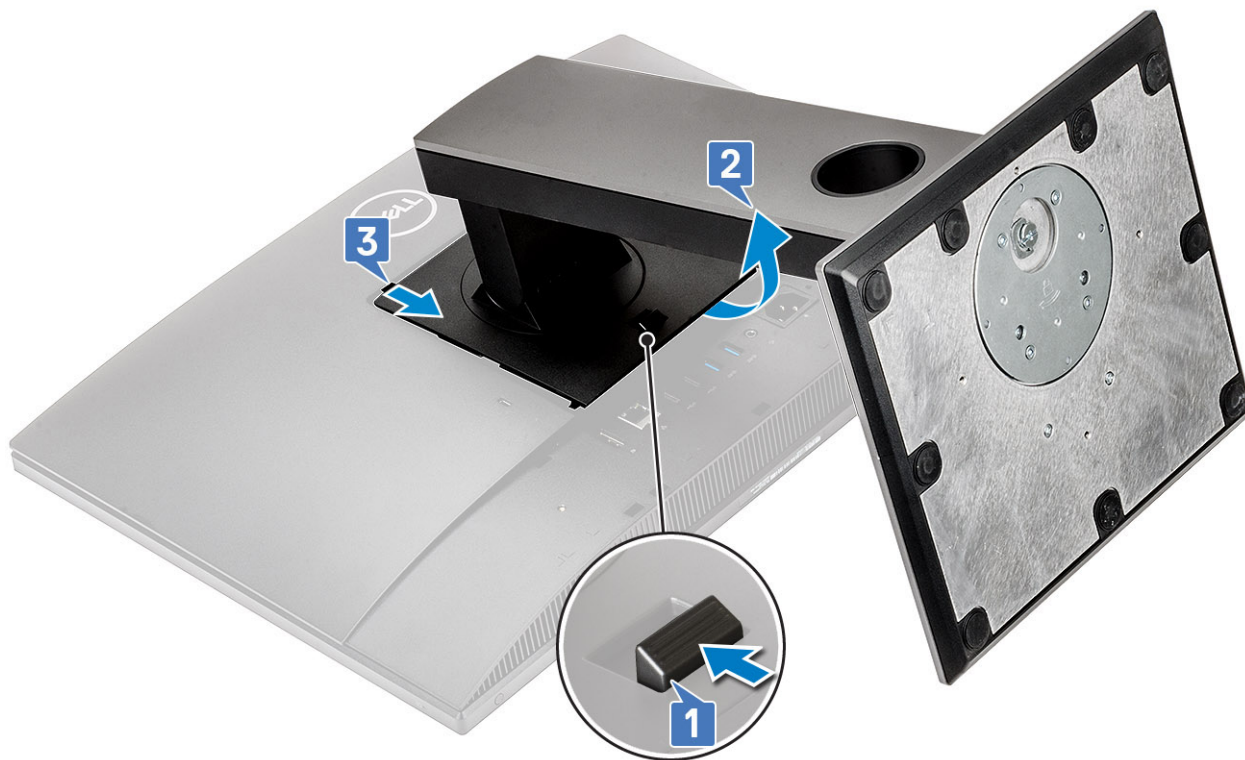
3. Install the [Stand](#).
4. Follow the procedure in [After working inside your computer](#)

## Stand

### Removing the stand

The following procedure applies only to systems that are shipped with a Height adjustable stand (HAS) stand :

1. Follow the procedure in [Before working inside your computer](#).
2. To avoid damaging the display, place the system on a flat, soft, and clean surface .
3. To remove the stand:
  - a) Press and slide the release tab forward on the cover [1].
  - b) Hold the tab in the release position and lift the stand upward [2].
  - c) Slide downward to lift the stand off the back cover [3].



## Installing the stand

The following procedure applies only to systems that are shipped with a Height adjustable stand (HAS) stand :

1. To install the stand :
  - a) Align the tabs on the stand [1].
  - b) Snap the stand into place on the back cover [2].

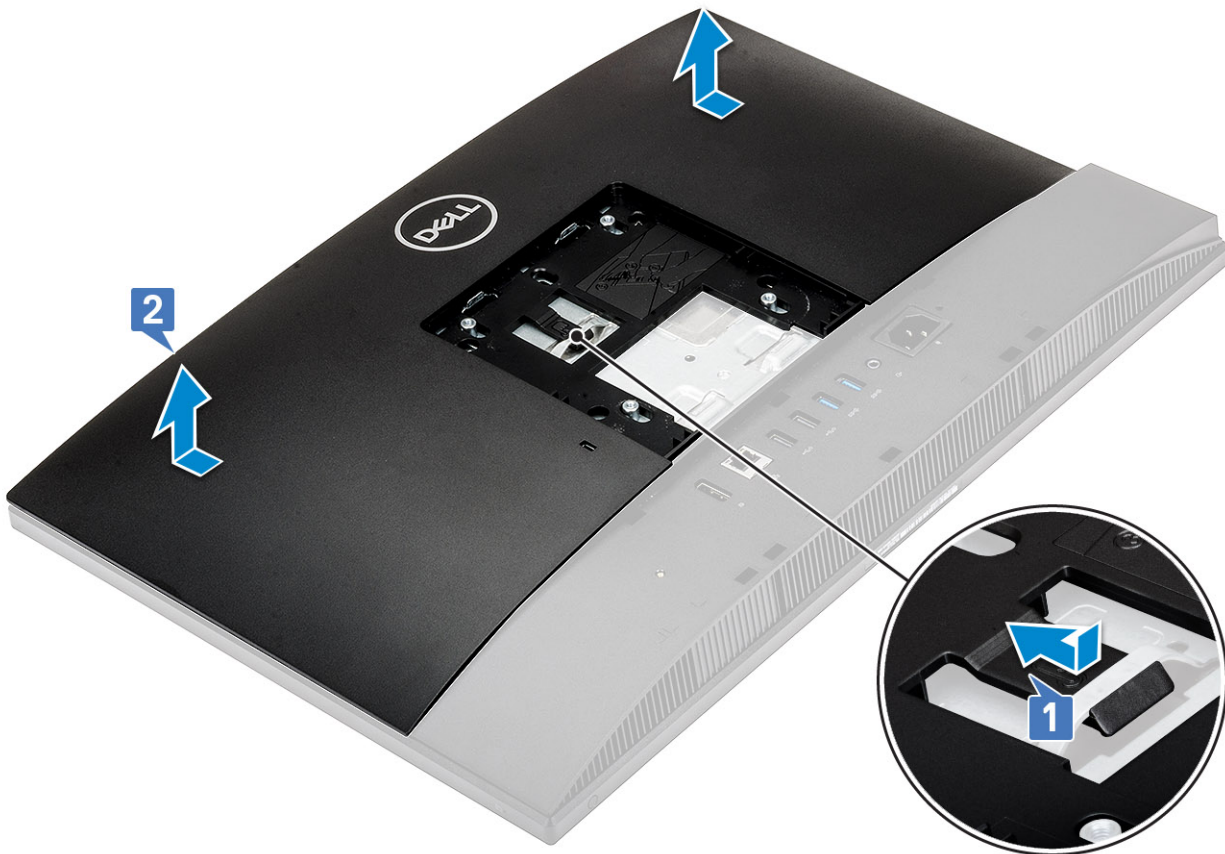


2. Follow the procedure in [After working inside your computer](#)

## Back cover

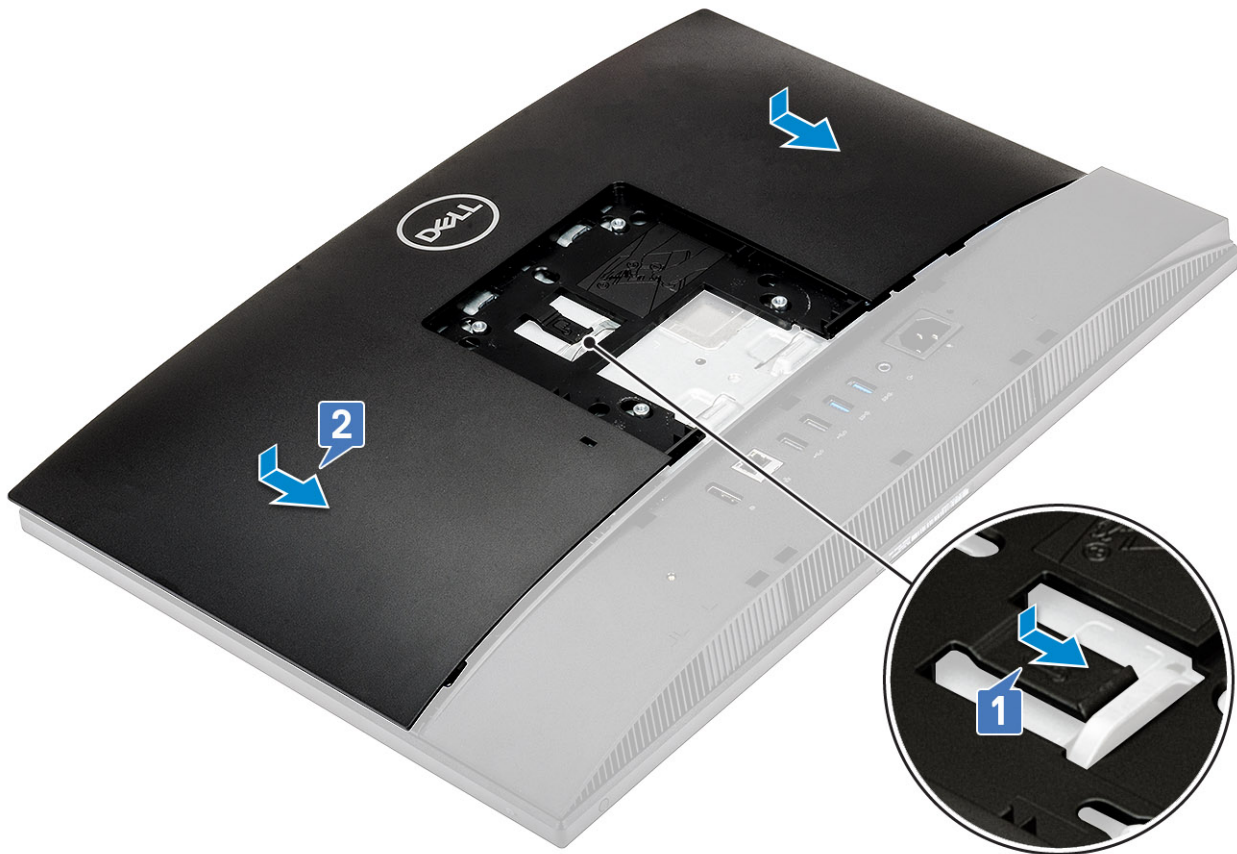
### Removing the back cover

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [Stand](#).
3. Press and hold the tab on the back cover to release it from the latch on the system-board shield and slide the back cover in the direction shown to release it from the middle frame [1].
4. Lift the back cover from the middle frame and the system-board shield [2].



### Installing the back cover

1. Place the back cover on the system.
2. Press and hold the tab [1], and align the notches on the back cover with the slots on the middle frame.
3. Slide the back cover in the direction shown to lock the back cover tab under the latch on the system-board shield [2].

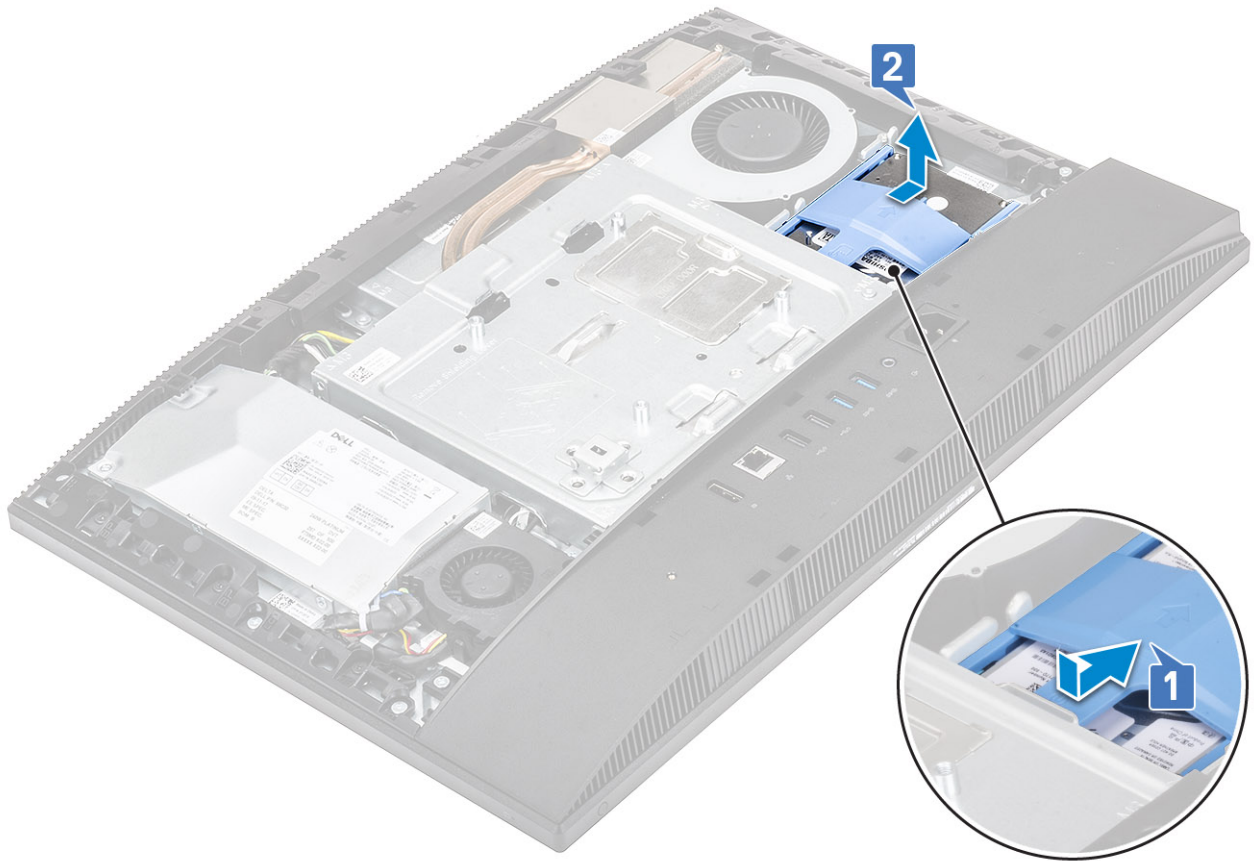


4. Install the [Stand](#).
5. Follow the procedure in [After working inside your computer](#).

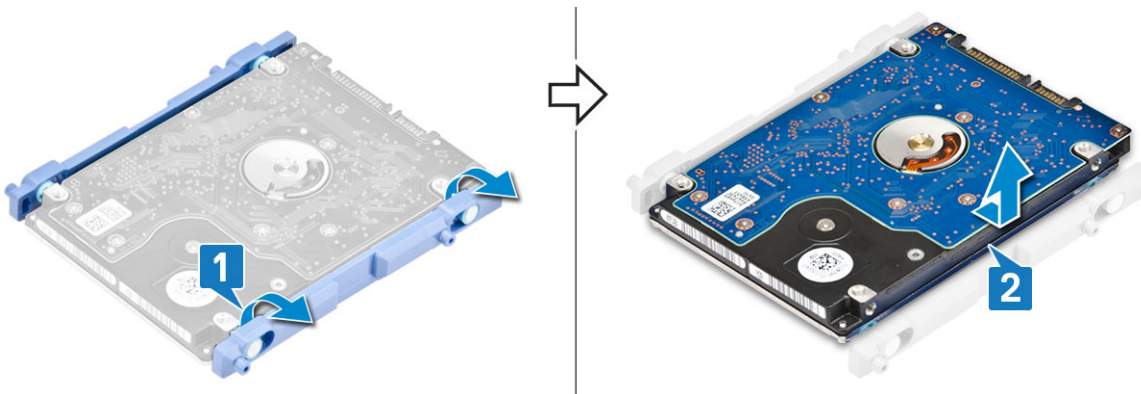
## Hard drive

### Removing the hard drive assembly

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
3. To remove the hard drive assembly:
  - a) Press down the tab securing the hard drive assembly to the system board shield [1].
  - b) Slide and lift the hard drive assembly from the slot on the display assembly base [2].



4. To remove the hard drive bracket:
- a) Pry the tabs on hard drive bracket from its slots on the hard drive [1].
  - b) Slide the hard drive, and lift it away from the bracket [2].

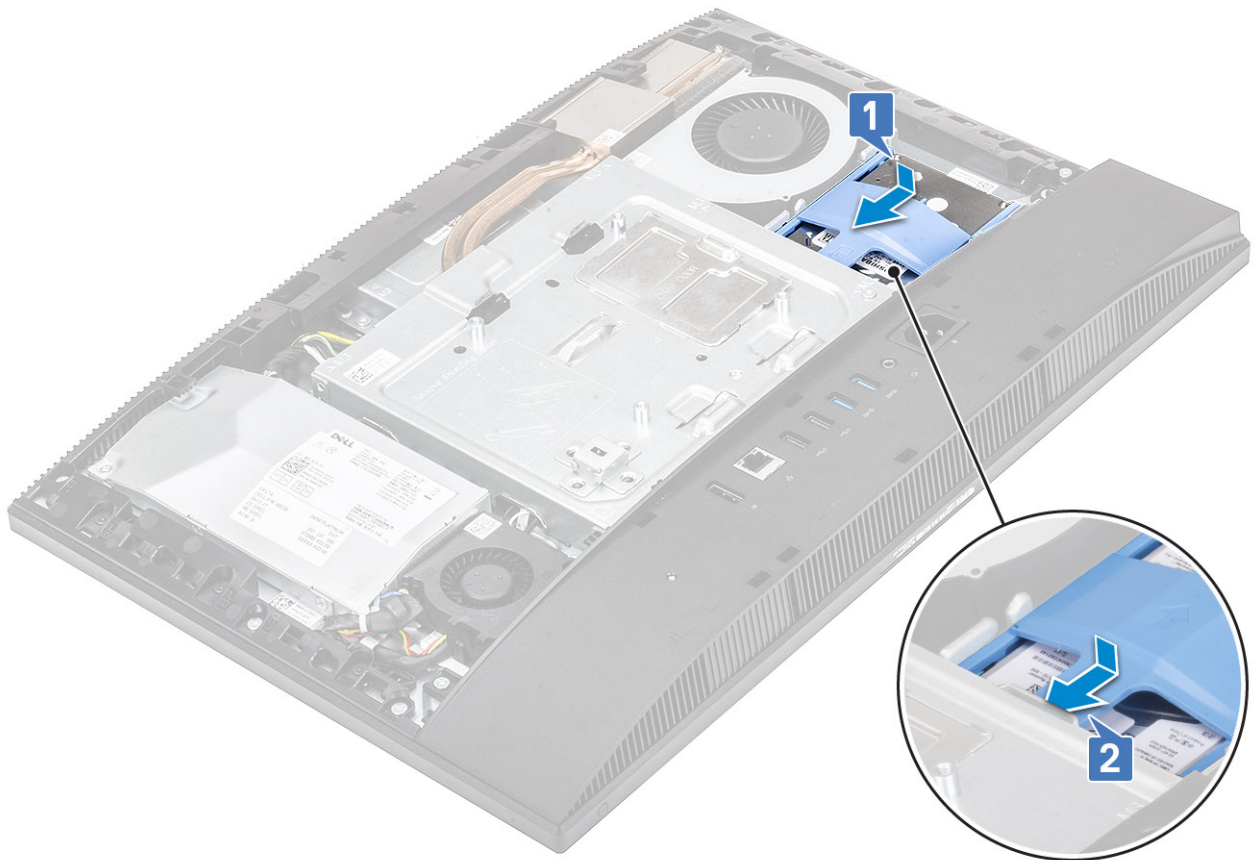


## Installing the hard drive assembly

1. To install the hard drive bracket:
- a) Align the tabs on the hard drive bracket with the slots on the hard drive [1].
  - b) Flex the hard drive bracket, and replace the remaining tabs on the hard drive bracket with the slots on the hard drive [2].



2. To install the hard drive assembly:
  - a) Place the hard drive assembly into the slot [1].
  - b) Slide it to lock the blue tab on the hard drive assembly to the metal tab on the display assembly base [2].



3. Install the following components:
  - a) [Back cover](#)
  - b) [Stand](#)
4. Follow the procedure in [After working inside your computer](#).

## Memory module

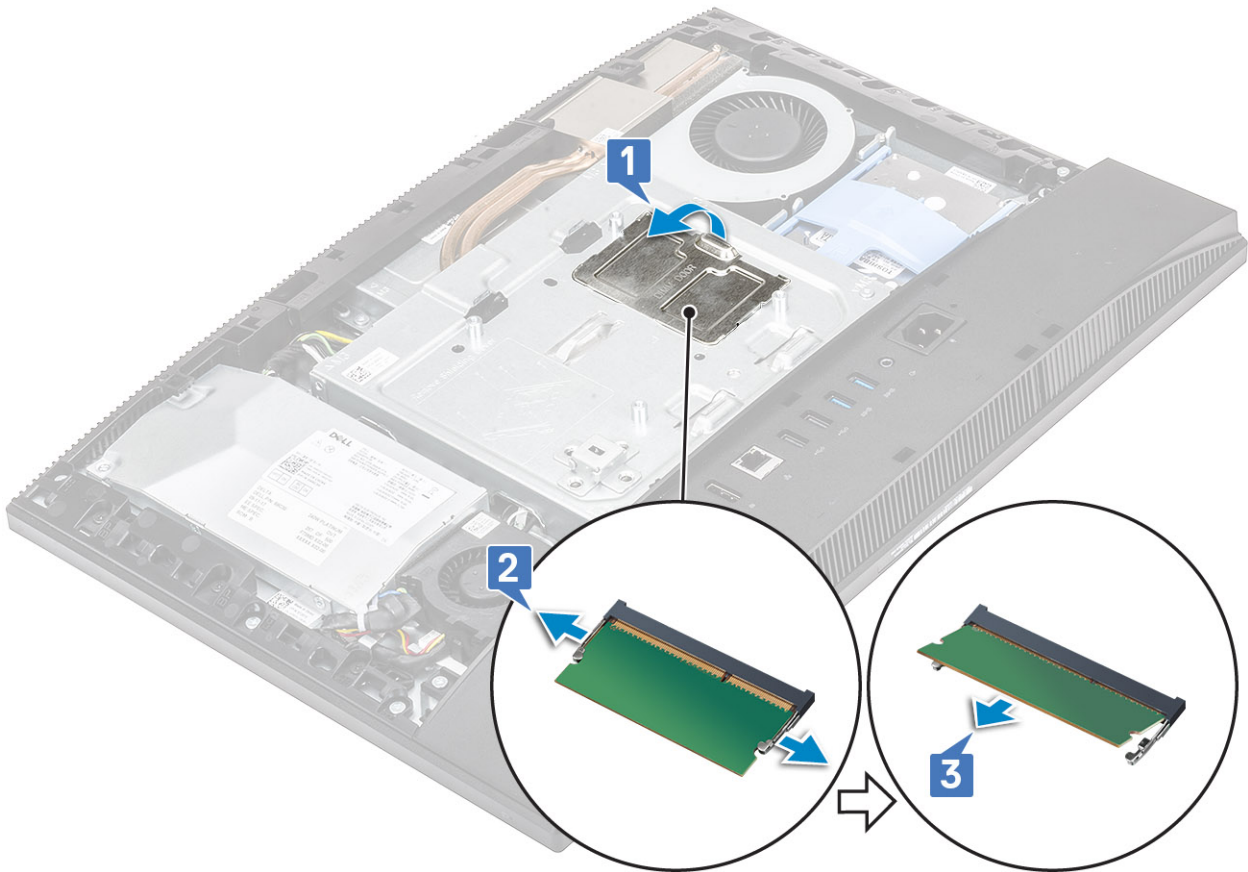
### Removing the memory module

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:

- a) Stand
- b) Back cover

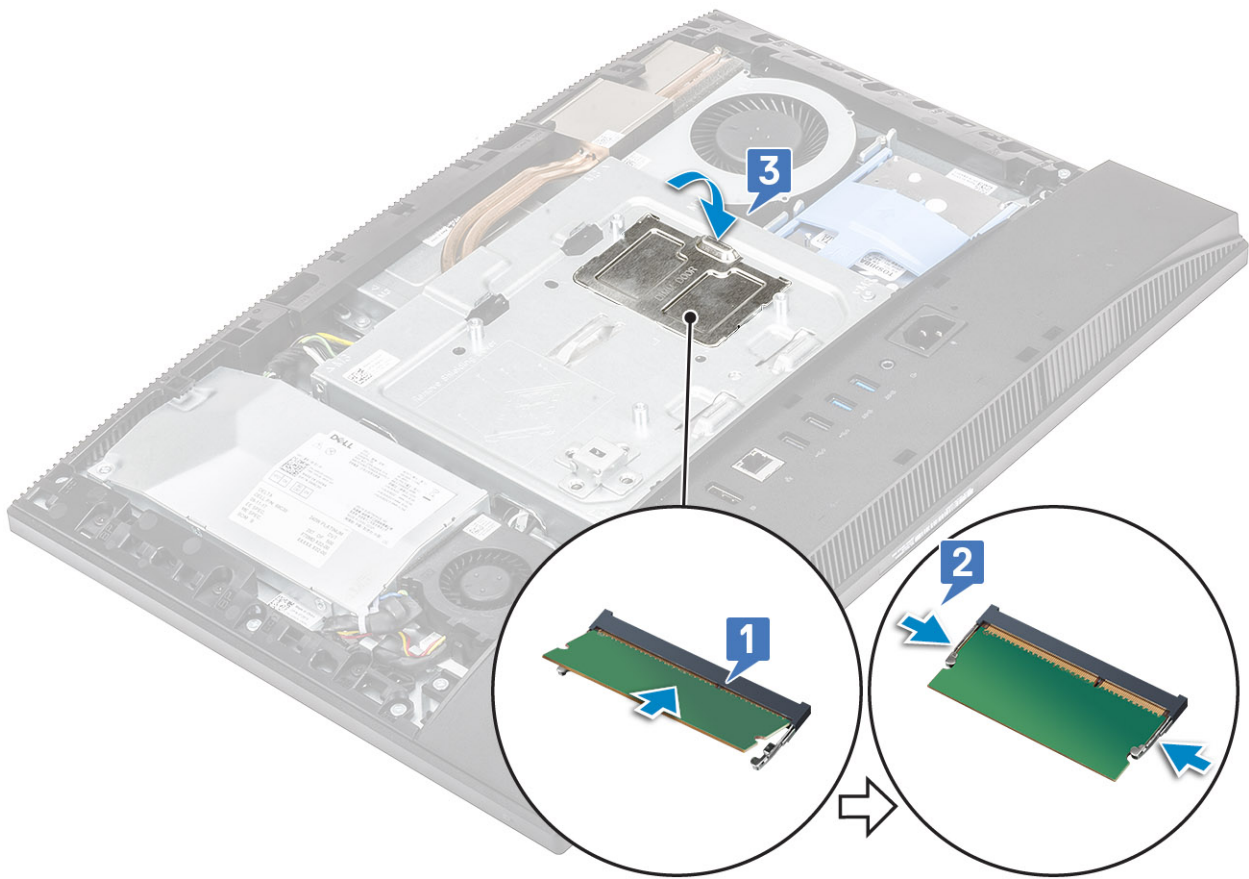
3. To locate the memory module on the system board, pry open the DIMM door on the system board shield [1].
4. Pry the retention clips at each end of the memory module slot until the memory module pops up [2].
5. Lift the memory module from the memory module slot [3].

**NOTE:** Depending on the configuration ordered, your system may have up to two memory modules installed on the system board.



## Installing the memory module

1. Align the notch on the memory module with the tab on the memory module slot, and slide it firmly into the slot at an angle [1].
2. Press the memory module down until it clicks into place [2].
3. Align the tabs on the DIMM door with the slots on the system board shield and snap it into place [3].

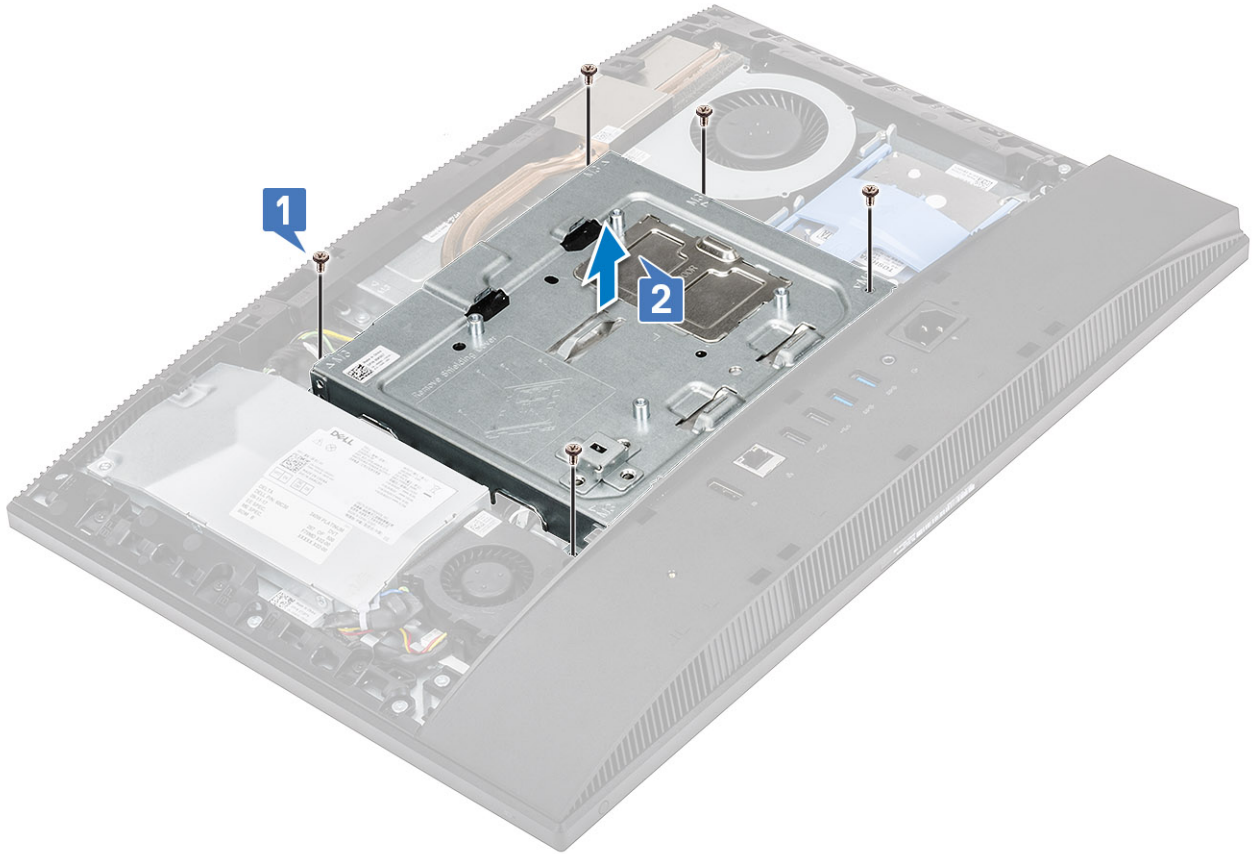


4. Install the following components:
  - a) [Back cover](#)
  - b) [Stand](#)
5. Follow the procedure in [After working inside your computer](#).

## System board shield

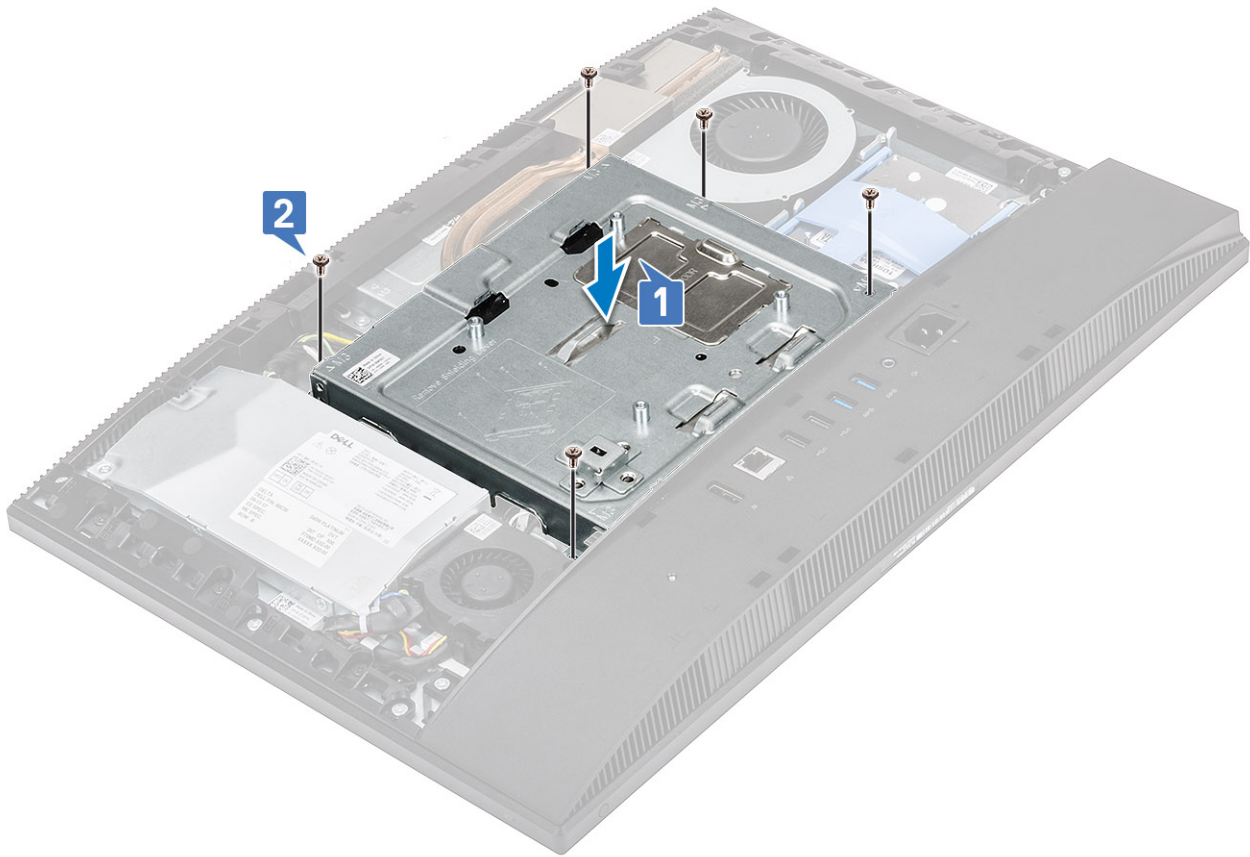
### Removing the system board shield

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
3. Remove the five (M3x5) screws that secure the system board shield to the display assembly base [1].
4. Lift the system board shield off the display assembly base [2].



## Installing the system board shield

1. Place the system board shield on system board.
2. Align the slots on the system board shield with the slots on the display assembly base [1].
3. Replace the five screws (M3x5) that secure the system-board shield to the display assembly base [2].

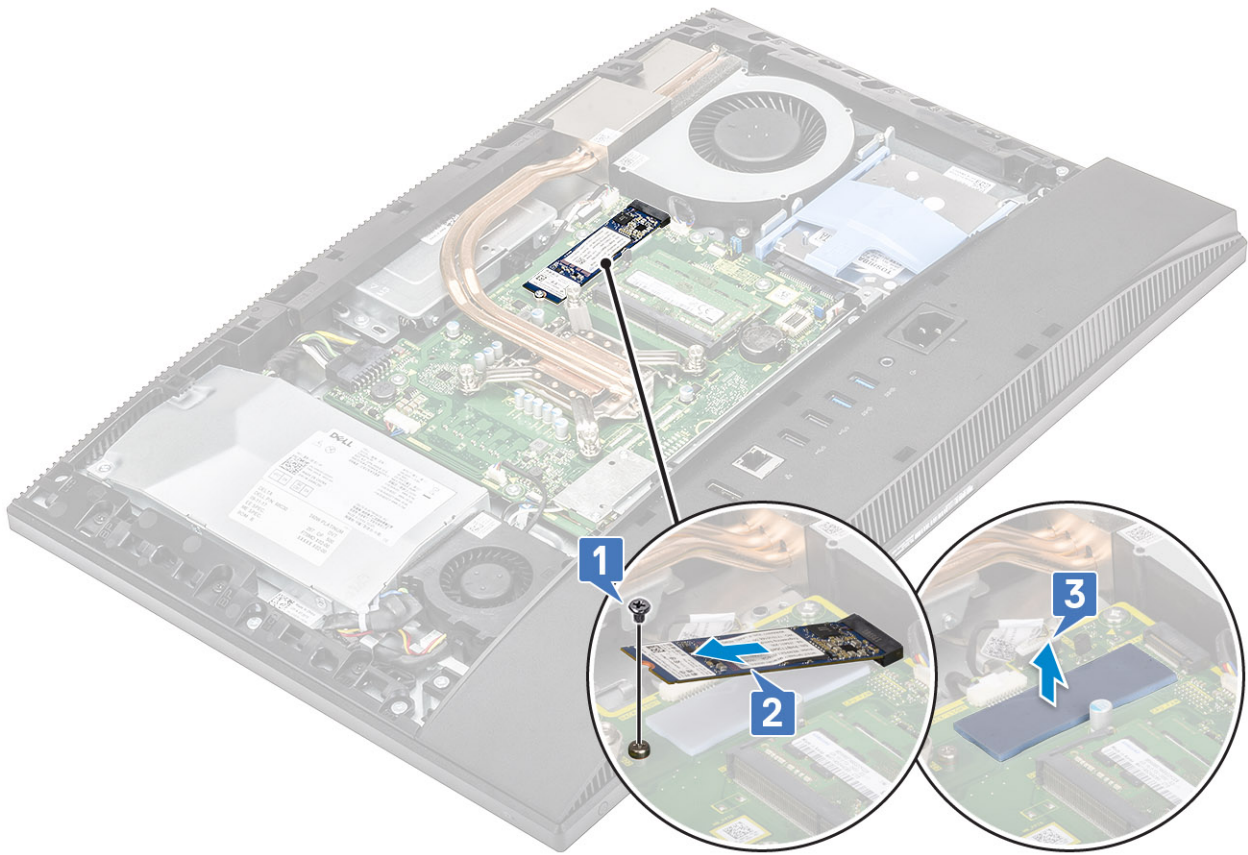


4. Install the following components:
  - a) [Back cover](#)
  - b) [Stand](#)
5. Follow the procedure in [After working inside your computer](#).

## Intel Optane

### Removing the Intel Optane card

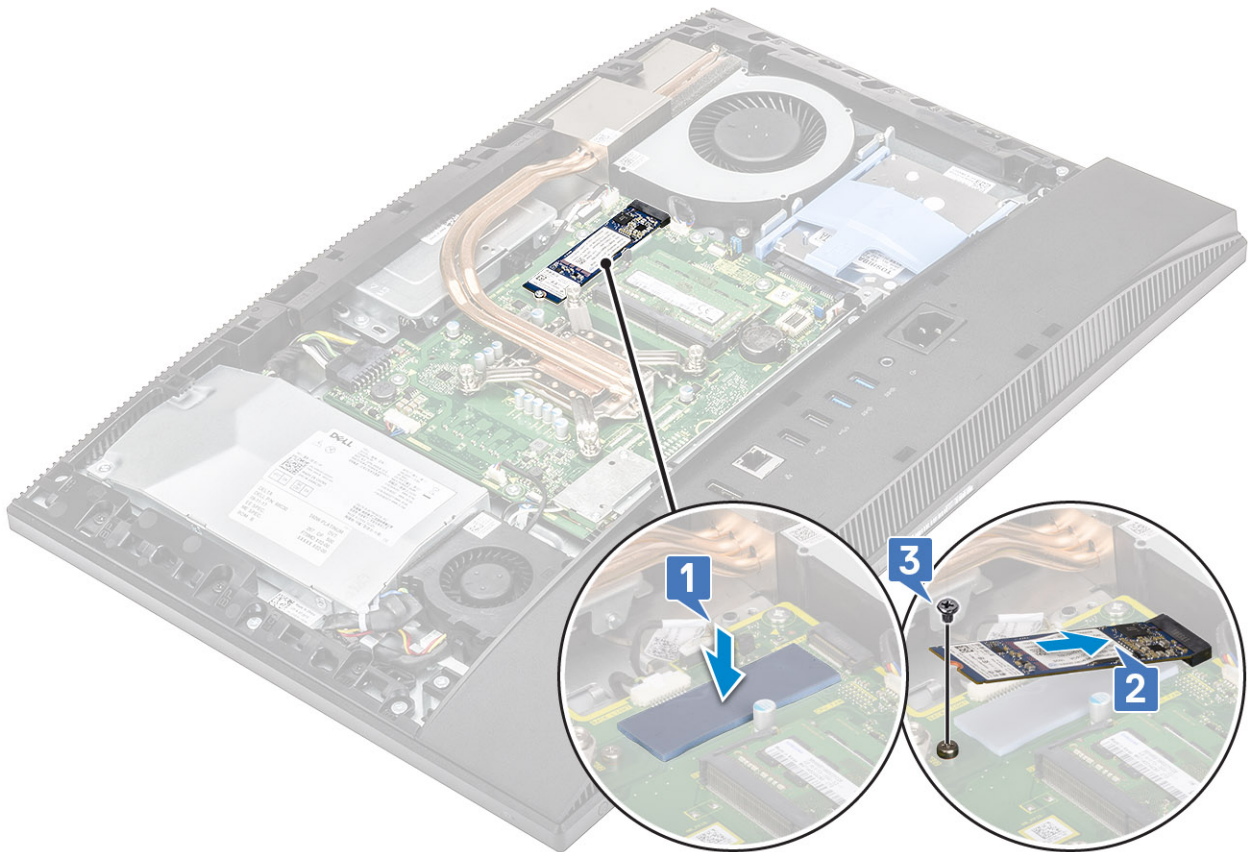
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
3. Remove the screw (M2x2.5) that secures the Intel Optane card to the system board [1].
4. Slide and remove the Intel Optane card from the card slot on the system board [2].
5. Remove the thermal pad [3].



## Installing the Intel Optane card

1. Replace the thermal pad on the rectangular outline marked on the system board [1].
2. Insert the Intel Optane card into the card slot on the system board [2].
3. Replace the screw (M2x2.5) that secures the Intel Optane card to the system board [3].

**(i) NOTE: Intel Optane modules must be installed with a thermal pad.**



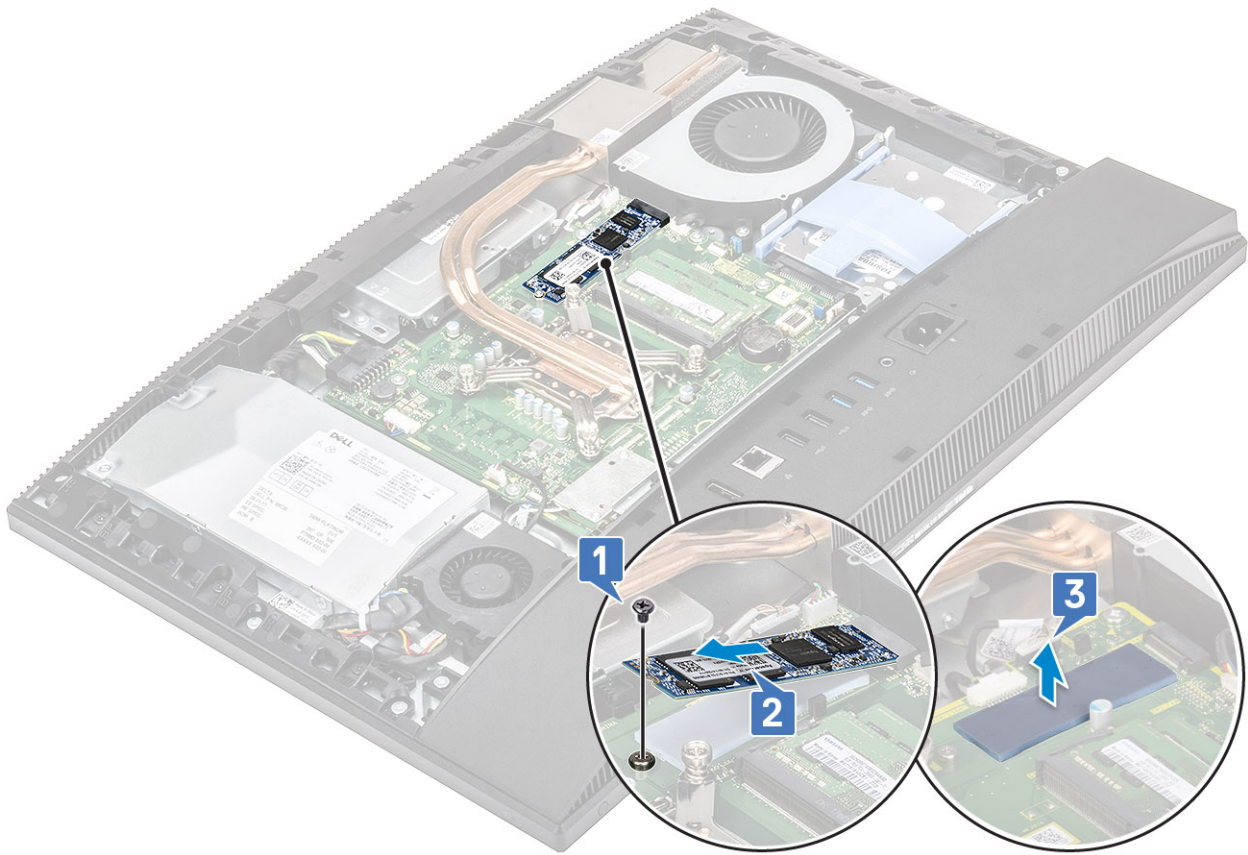
4. Install the following components:
  - a) [System board shield](#)
  - b) [Back cover](#)
  - c) [Stand](#)
5. Follow the procedure in [After working inside your computer](#).

## Solid State Drive -SSD

### Removing the SSD card

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
3. Remove the screw (M2x2.5) that secures the SSD card to the system board [1].
4. Slide and remove the SSD card from the card slot on the system board [2].
5. Remove the thermal pad [3].

**i** **NOTE:** M.2 PCIe SSD with capacity over 512G (512G/1TB/2TB) must be installed with a thermal pad. M.2 SATA SSD and M.2 PCIe SSD with 128G and 256G do not require a thermal pad.

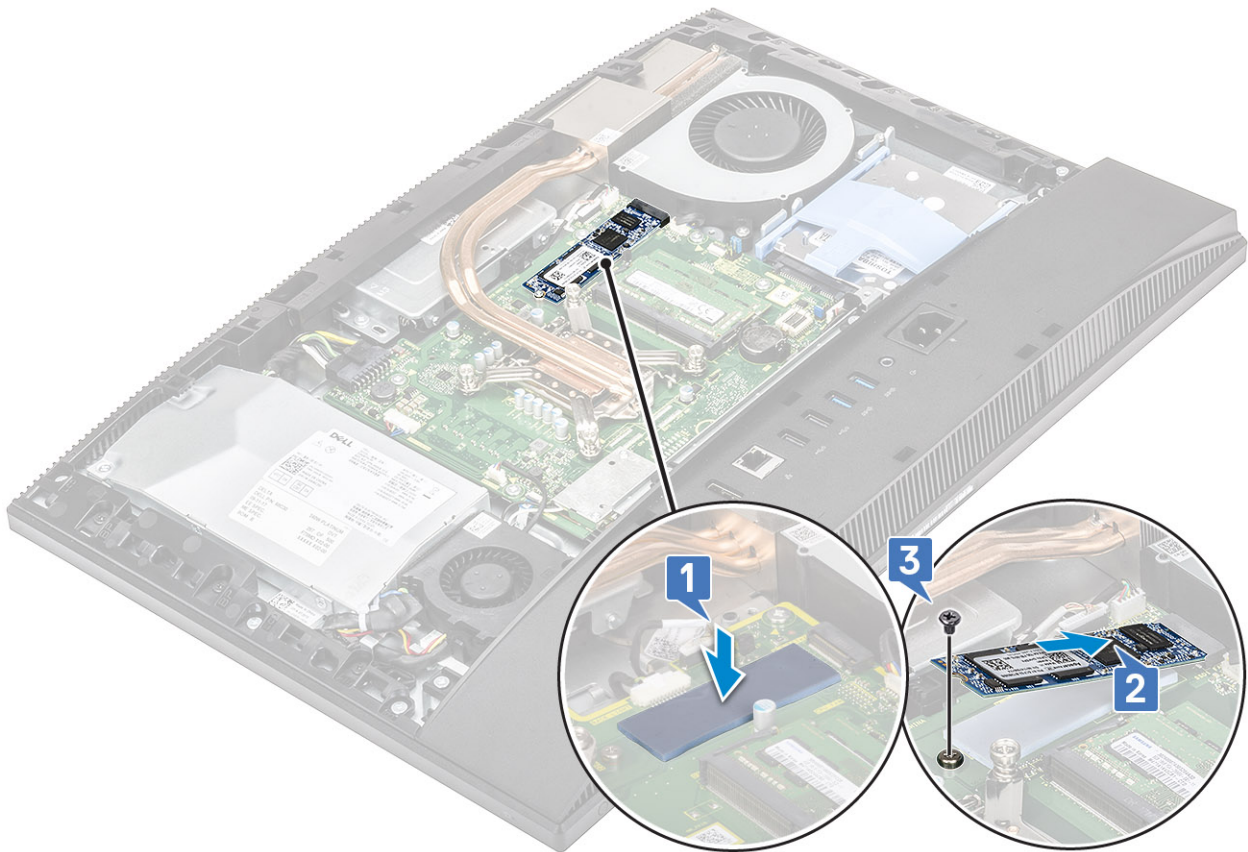


## Installing the SSD card

1. Replace the thermal pad on the rectangular outline marked on the system board [1].

**i** **NOTE: M.2 PCIe SSD with capacity over 512G (512G/1TB/2TB) must be installed with a thermal pad. M.2 SATA SSD and M.2 PCIe SSD with 128G and 256G do not require a thermal pad.**

2. Insert the SSD card into the card slot on the system board [2].
3. Replace the screw (M2x2.5) that secures the SSD card to the system board [3].

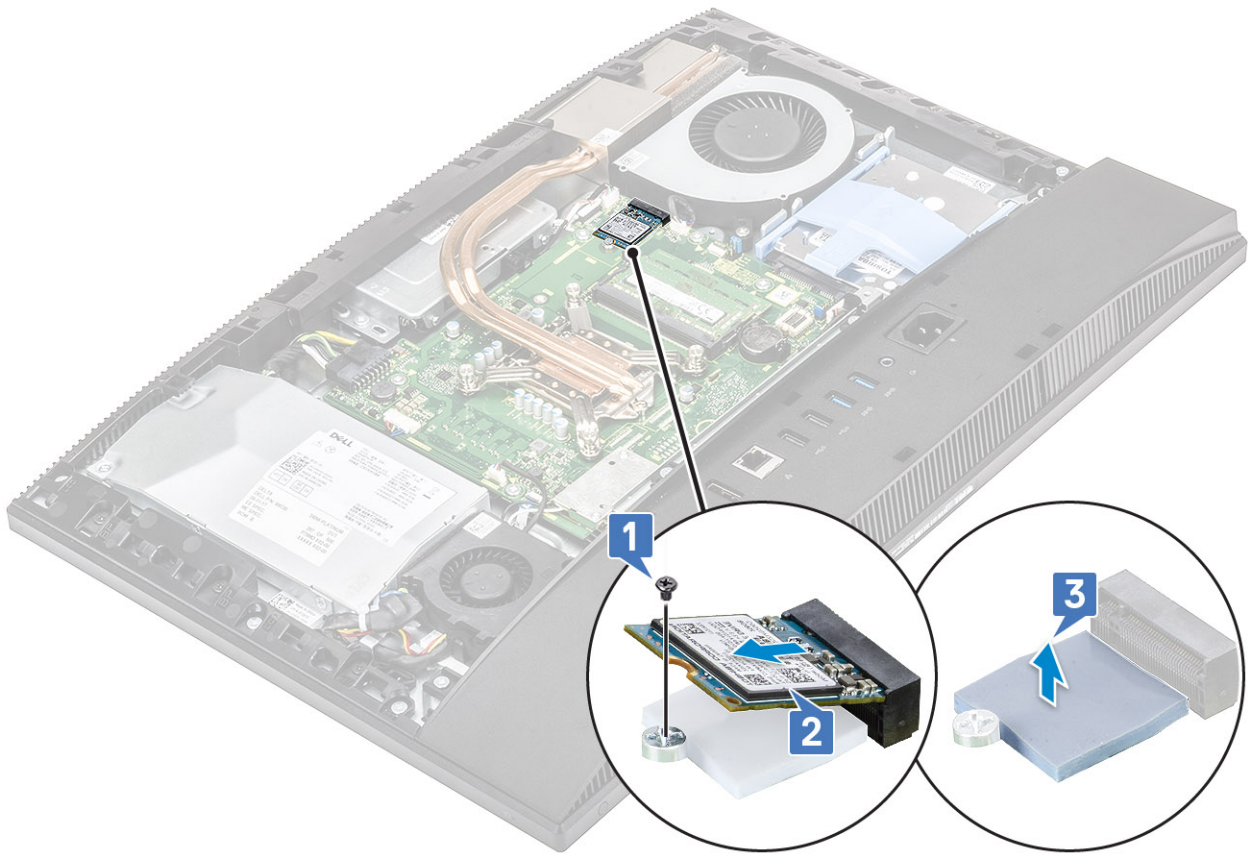


4. Install the following components:
  - a) [System board shield](#)
  - b) [Back cover](#)
  - c) [Stand](#)
5. Follow the procedure in [After working inside your computer](#).

## Solid State Drive -2230

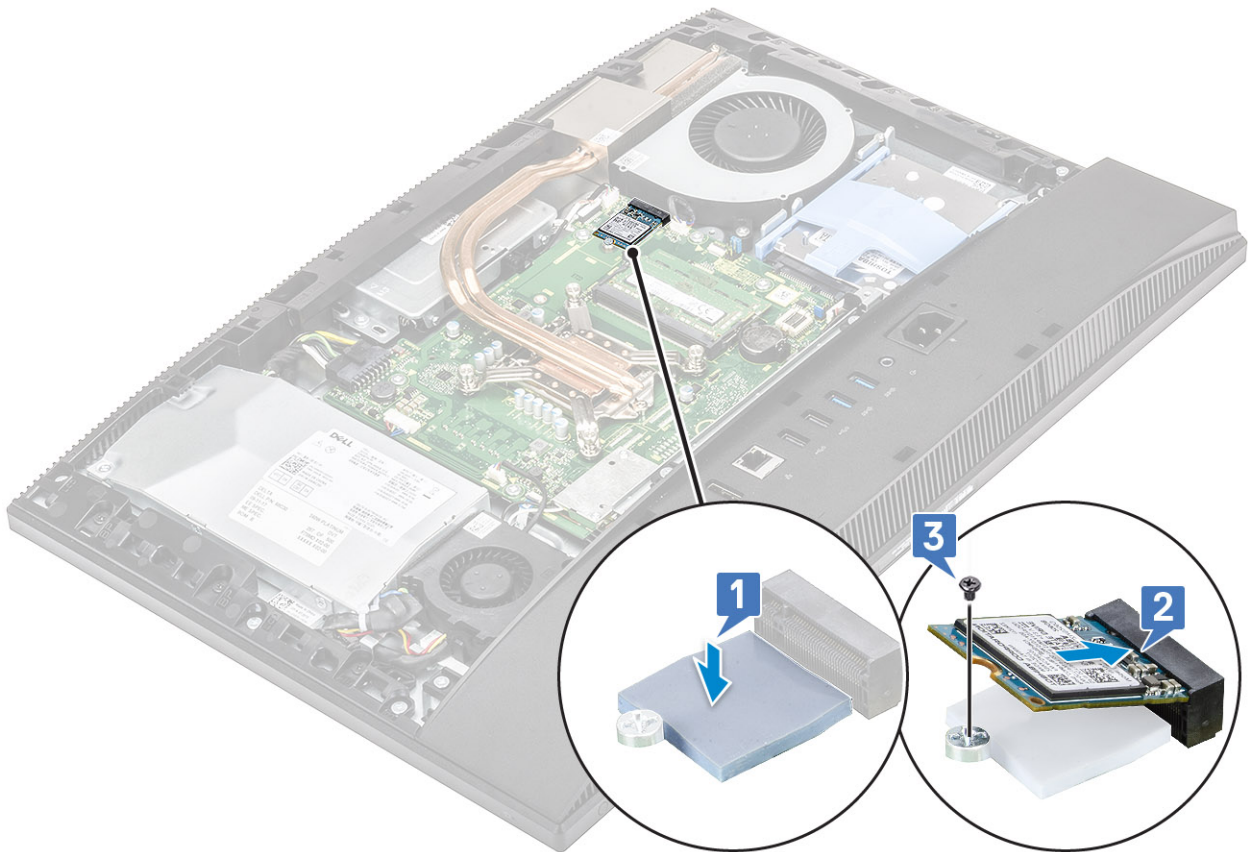
### Removing the 2230 SSD card

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
3. Remove the screw (M2x2.5) that secures the SSD card to the system board [1].
4. Slide and remove the SSD card from the card slot on the system board [2].
5. Remove the thermal pad [3].



## Installing the 2230 SSD card

1. Replace the thermal pad on the rectangular outline marked on the system board [1].
2. Insert the SSD card into the card slot on the system board [2].
3. Replace the screw (M2x2.5) that secures the SSD card to the system board [3].

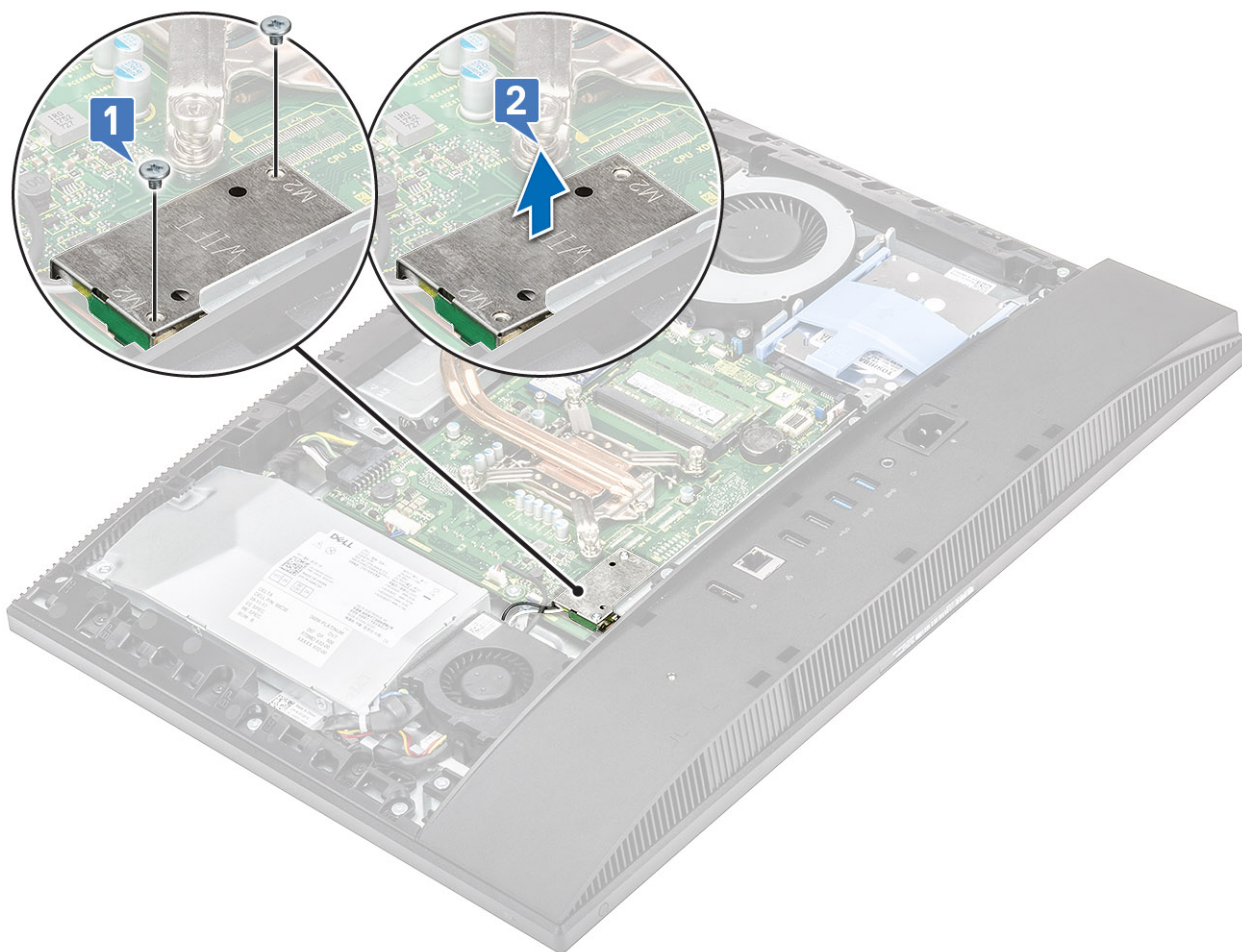


4. Install the following components:
  - a) [System board shield](#)
  - b) [Back cover](#)
  - c) [Stand](#)
5. Follow the procedure in [After working inside your computer](#).

## WLAN card

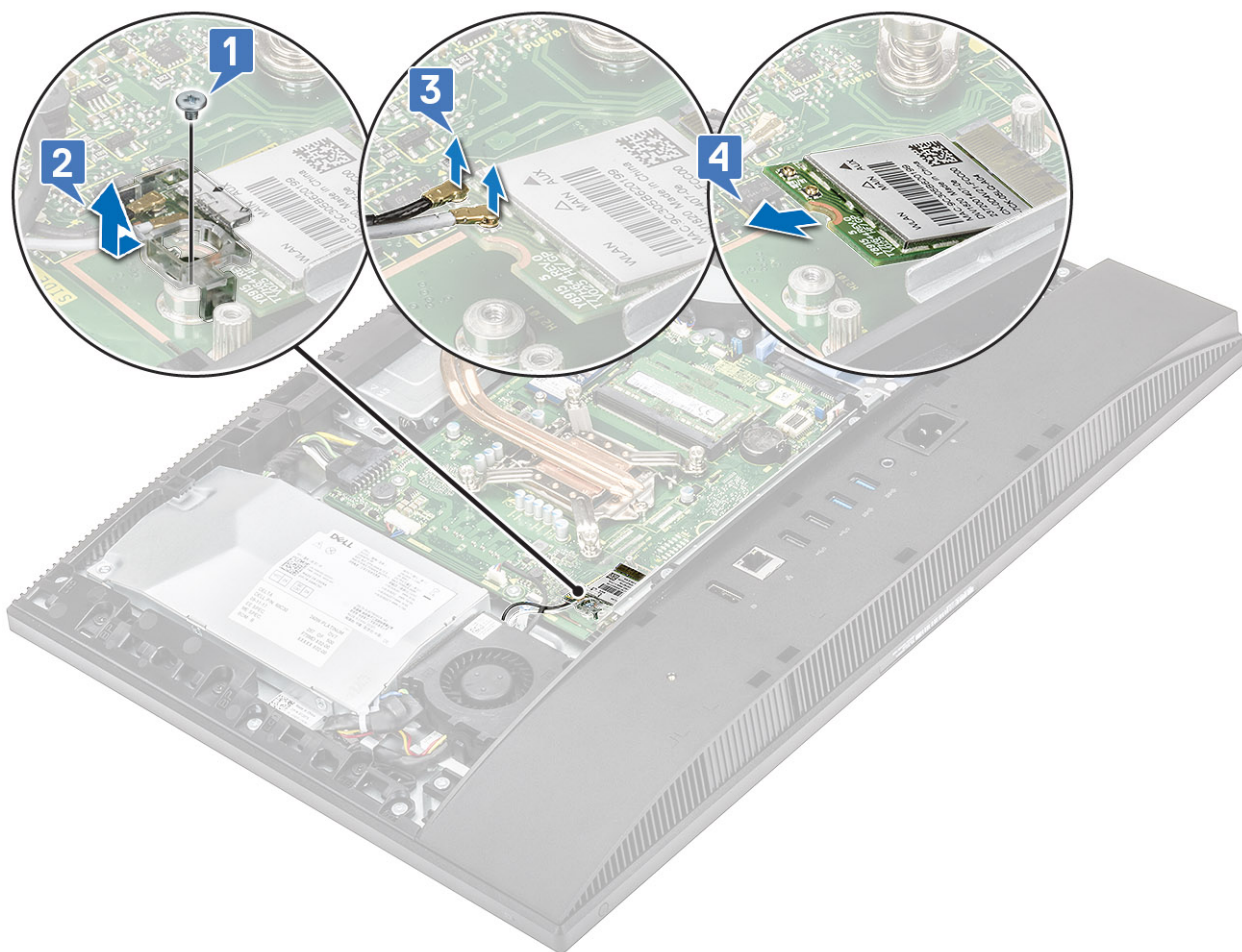
### Removing the WLAN card

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
3. To remove the WLAN card shield:
  - a) Remove the two screws (M2x2.5) that secure the WLAN card shield to the system board [1].
  - b) Remove the WLAN card shield from the system board [2].



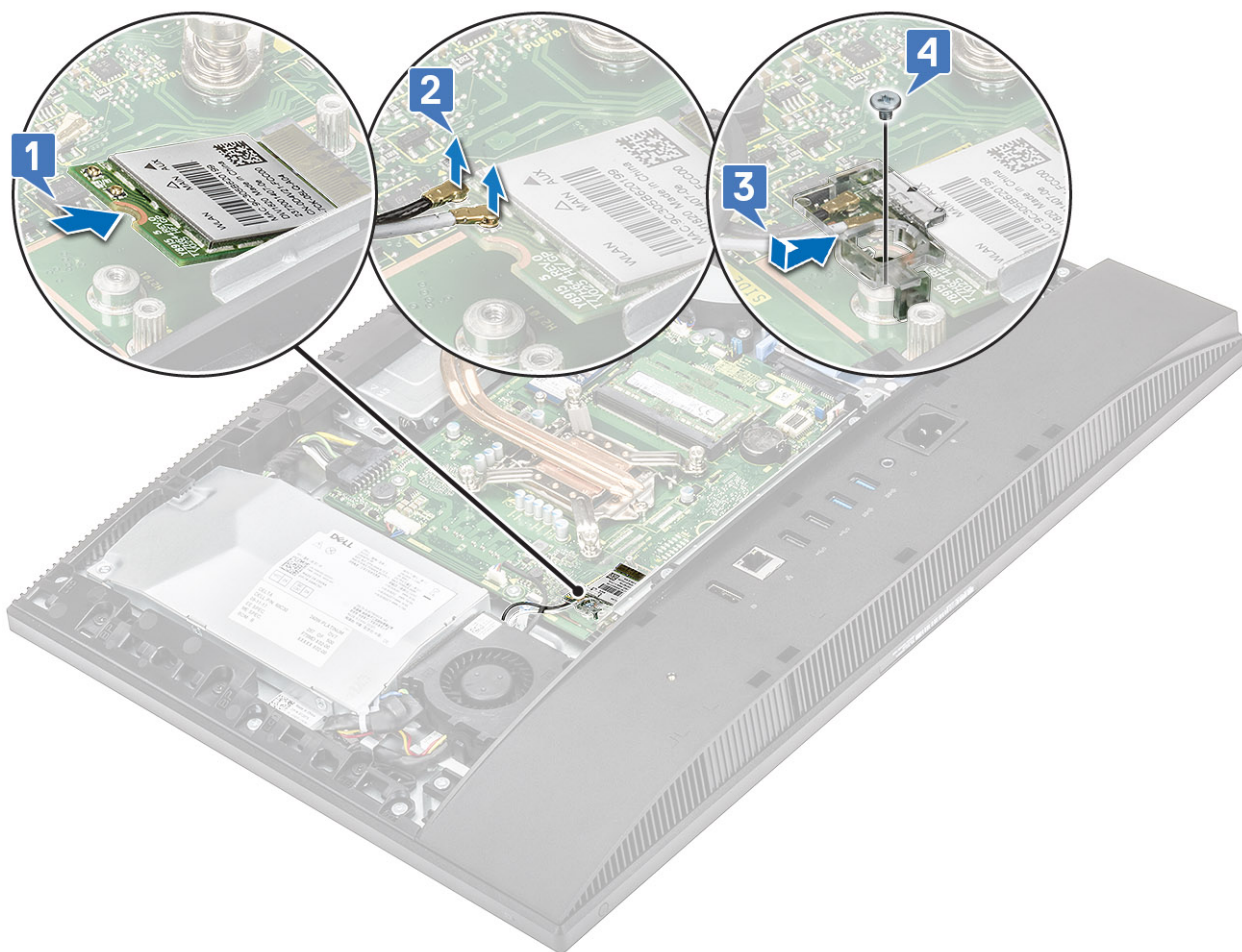
**4.** To remove the WLAN card:

- a) Remove the screw (M2x2.5) that secures the WLAN card bracket and the WLAN to the system board [1].
- b) Slide and lift the WLANs card bracket off the WLAN card [2].
- c) Disconnect the antenna cables from the WLAN card [3].
- d) Slide and remove the WLAN card out of the WLAN card slot [4].

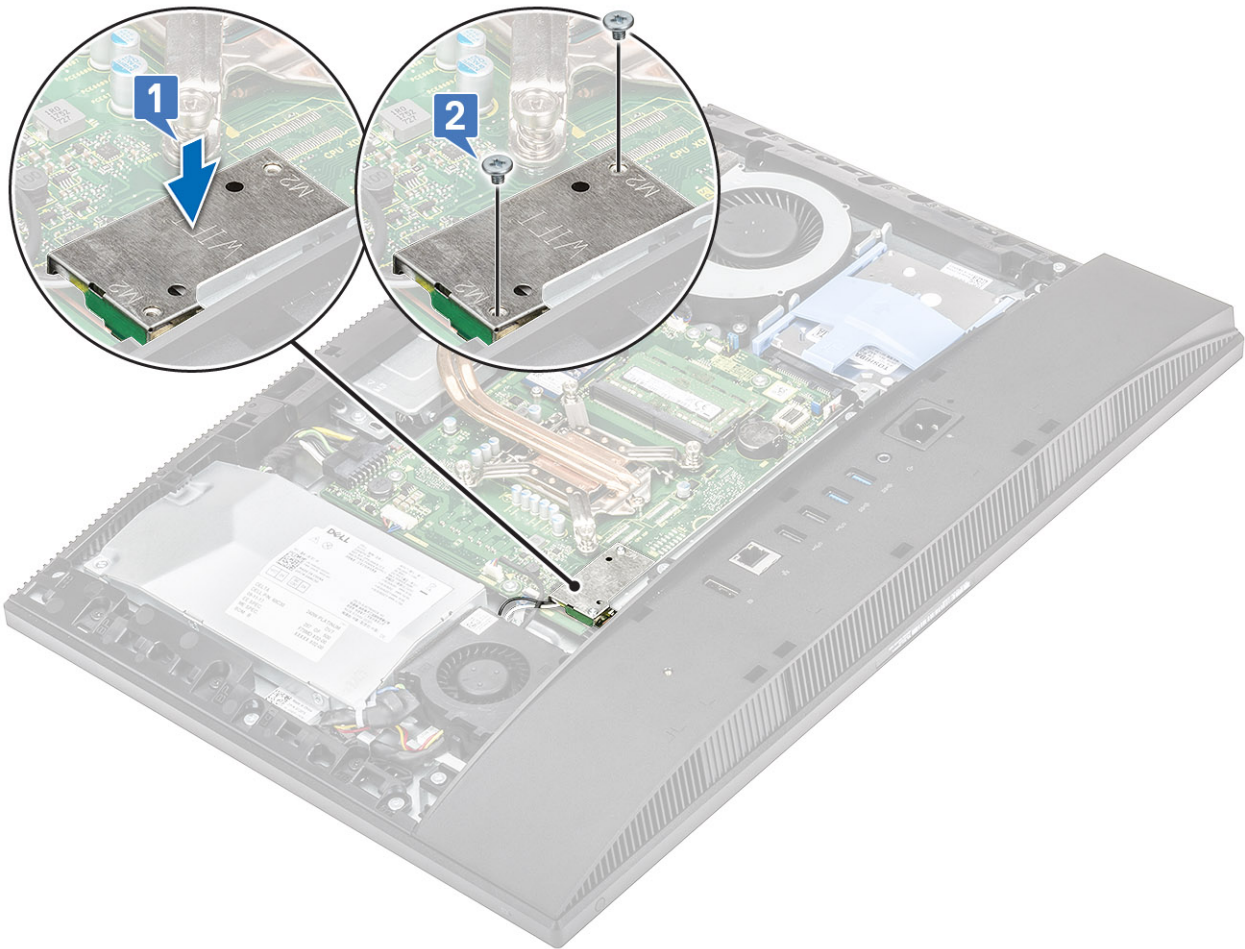


## Installing the WLAN card

1. To install the WLAN card:
  - a) Align and replace the WLAN card into the WLAN card slot [1].
  - b) Connect the antenna cables to the WLAN card [2].
  - c) Replace the WLAN card bracket on the WLAN card [3].
  - d) Replace the screw (M2x2.5) that secures the WLAN card bracket and the WLAN to the system board [4].



2. To install the WLAN card shield:
  - a) Align the screw slot on the WLAN card shield with the screw slot on the system board and place the WLAN card shield on the system board [1].
  - b) Replace the two screws (M2x2.5) that secure the WLAN card shield to the system board [2]

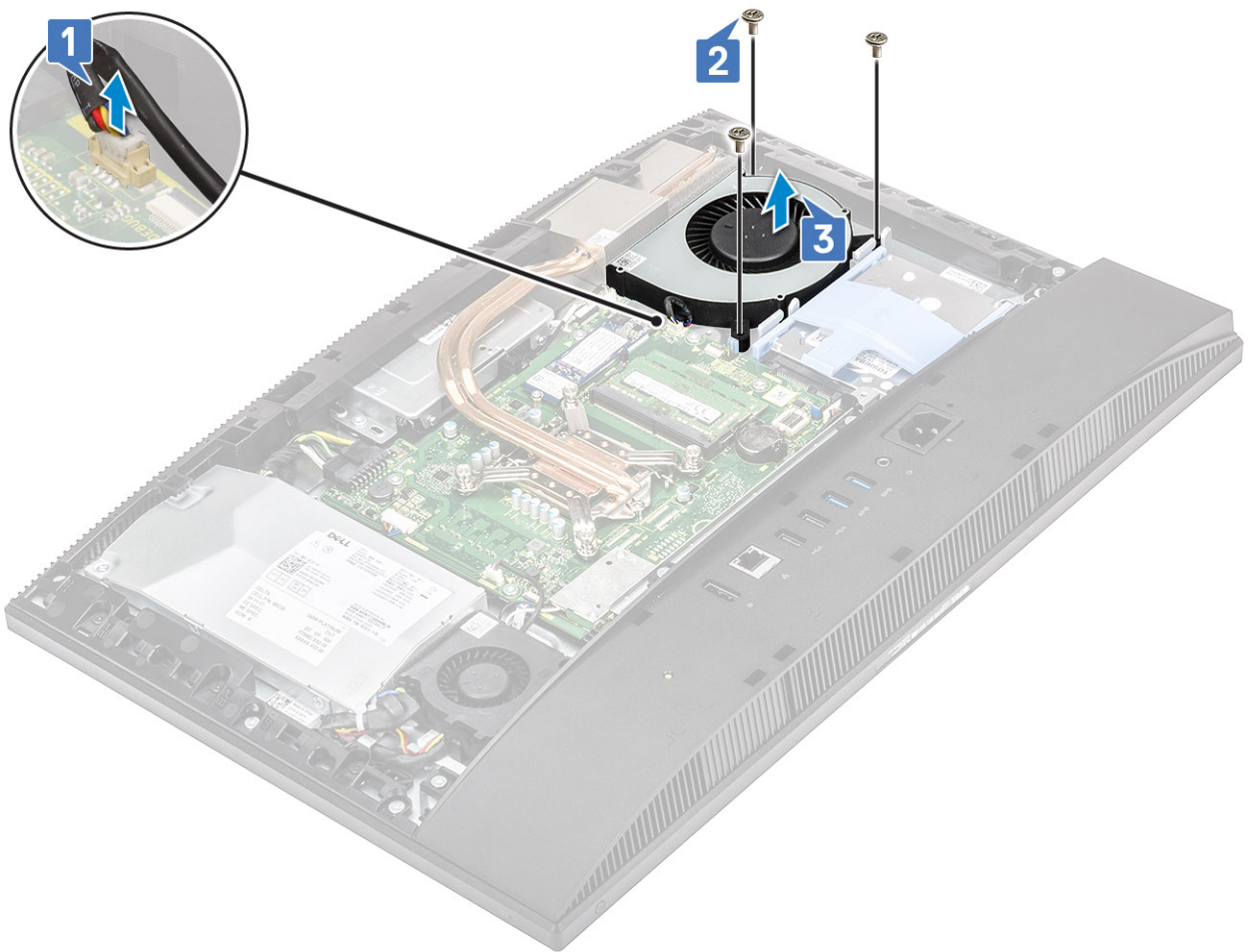


3. Install the following components:
  - a) [system board shield](#)
  - b) [Back cover](#)
  - c) [Stand](#)
4. Follow the procedure in [After working inside your computer](#).

## System fan

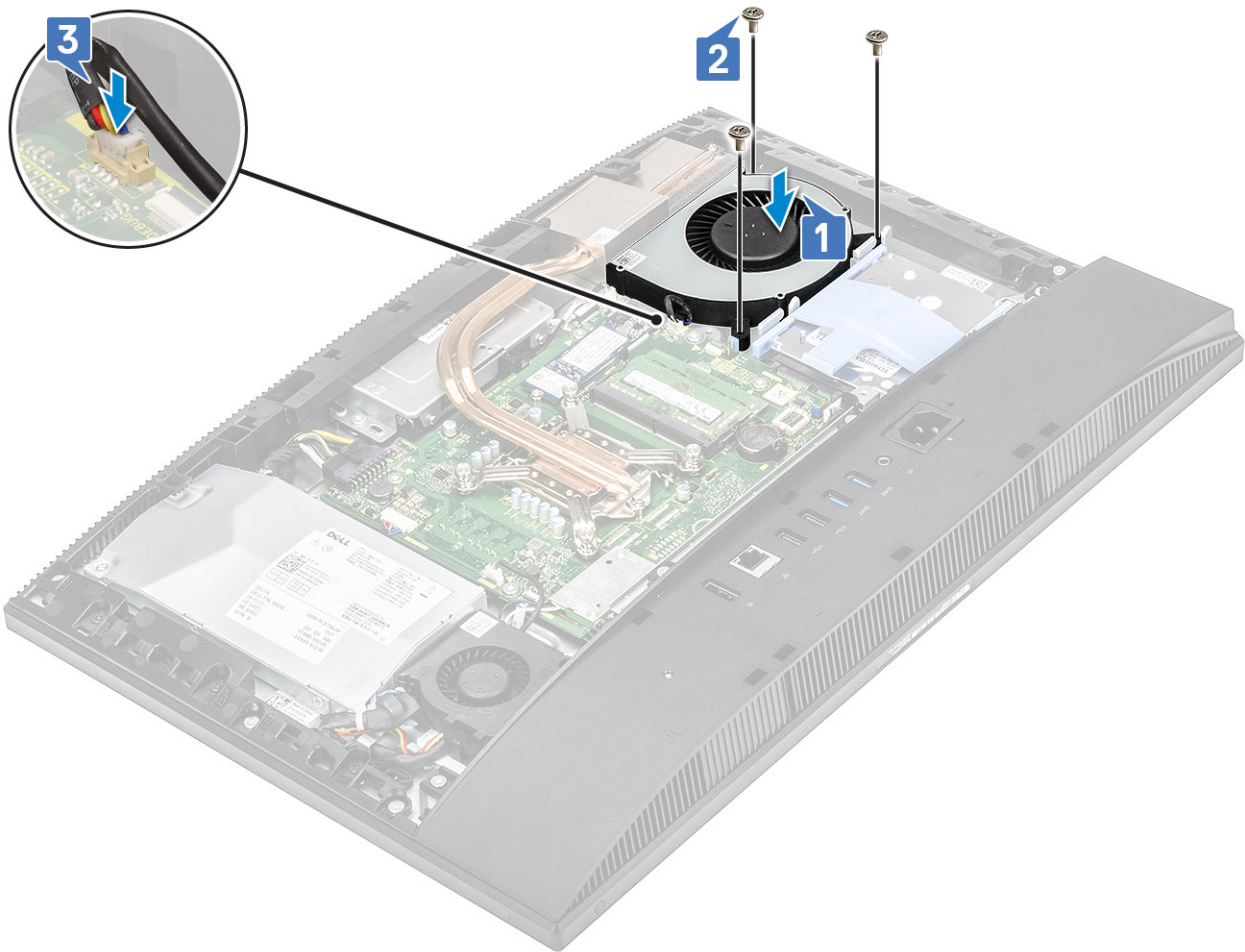
### Removing the system fan

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
3. Disconnect the system fan cable from the socket on the system board [1].
4. Remove the three screws (M3x5) that secure the system fan to the display assembly base [2].
5. Lift the system fan away from the system [3].



## Installing the system fan

1. Align the screw slots on the system fan with the screw slots on the display assembly base [1].
2. Replace the three screws (M3x5) that secure the system fan to the display assembly base [2].
3. Connect the system fan cable to the socket on the system board [3].

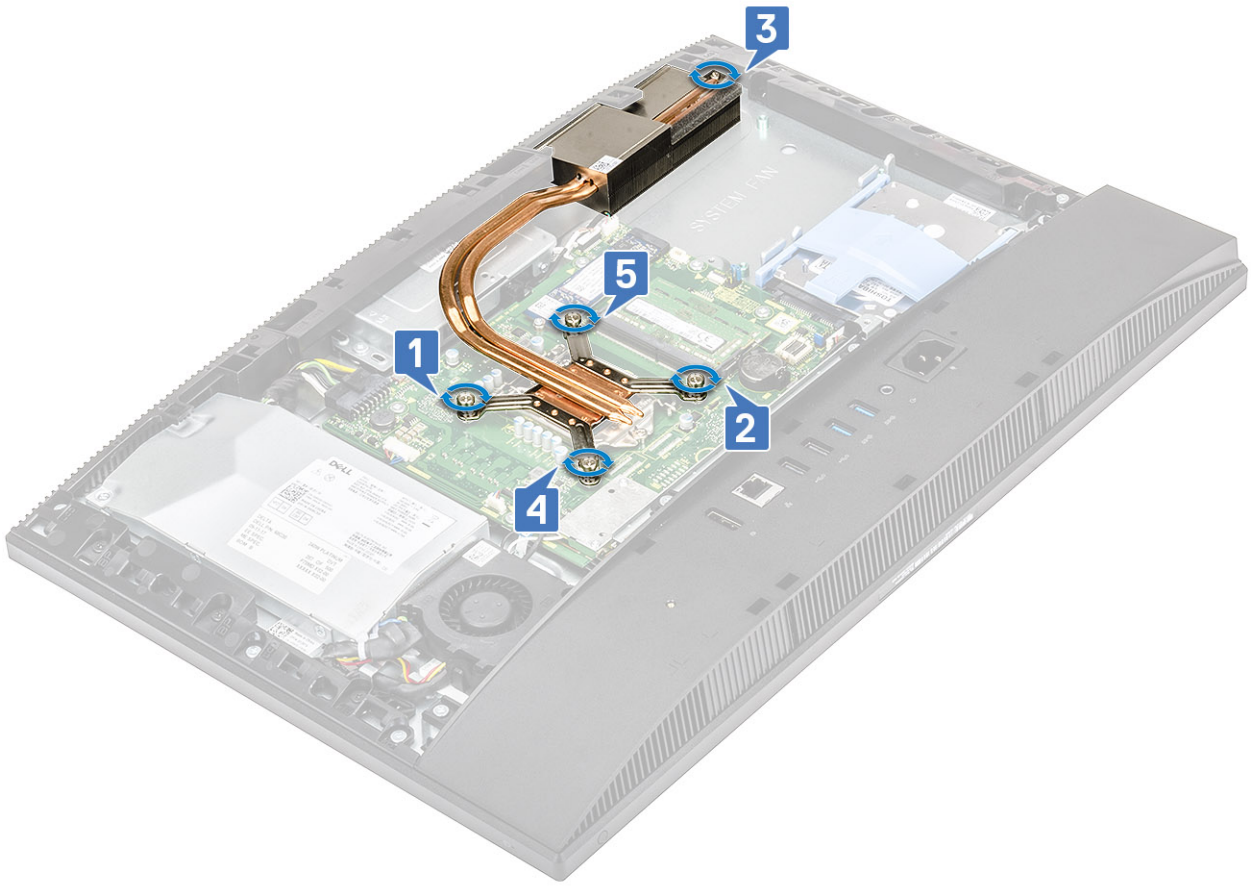


4. Install the following components:
  - a) [System board shield](#)
  - b) [Back cover](#)
  - c) [Stand](#)
5. Follow the procedure in [After working inside your computer](#).

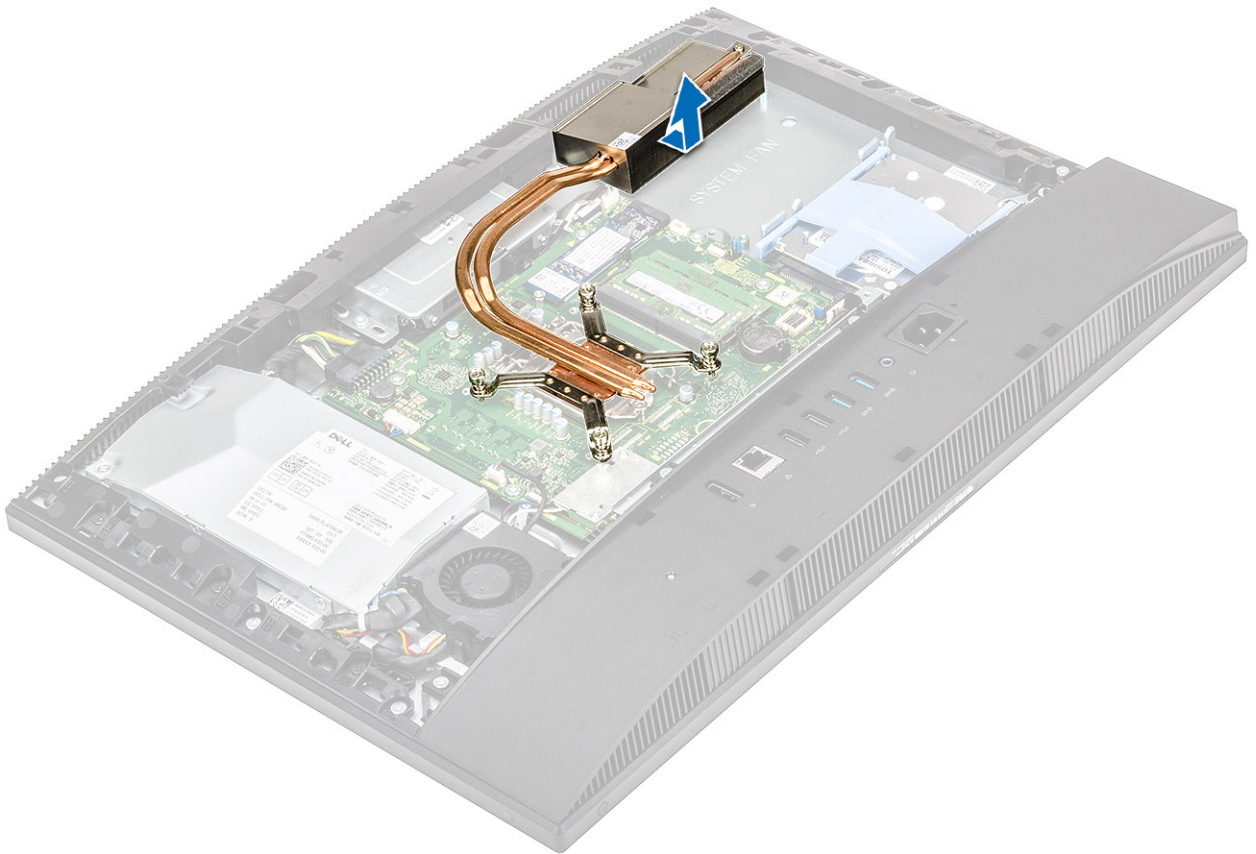
## Heat sink

### Removing the heat sink - UMA

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
  - d) [System fan](#)
3. Loosen the five captive screws in a sequential order [ 1,2,3,4,5] as mentioned on the heat sink..

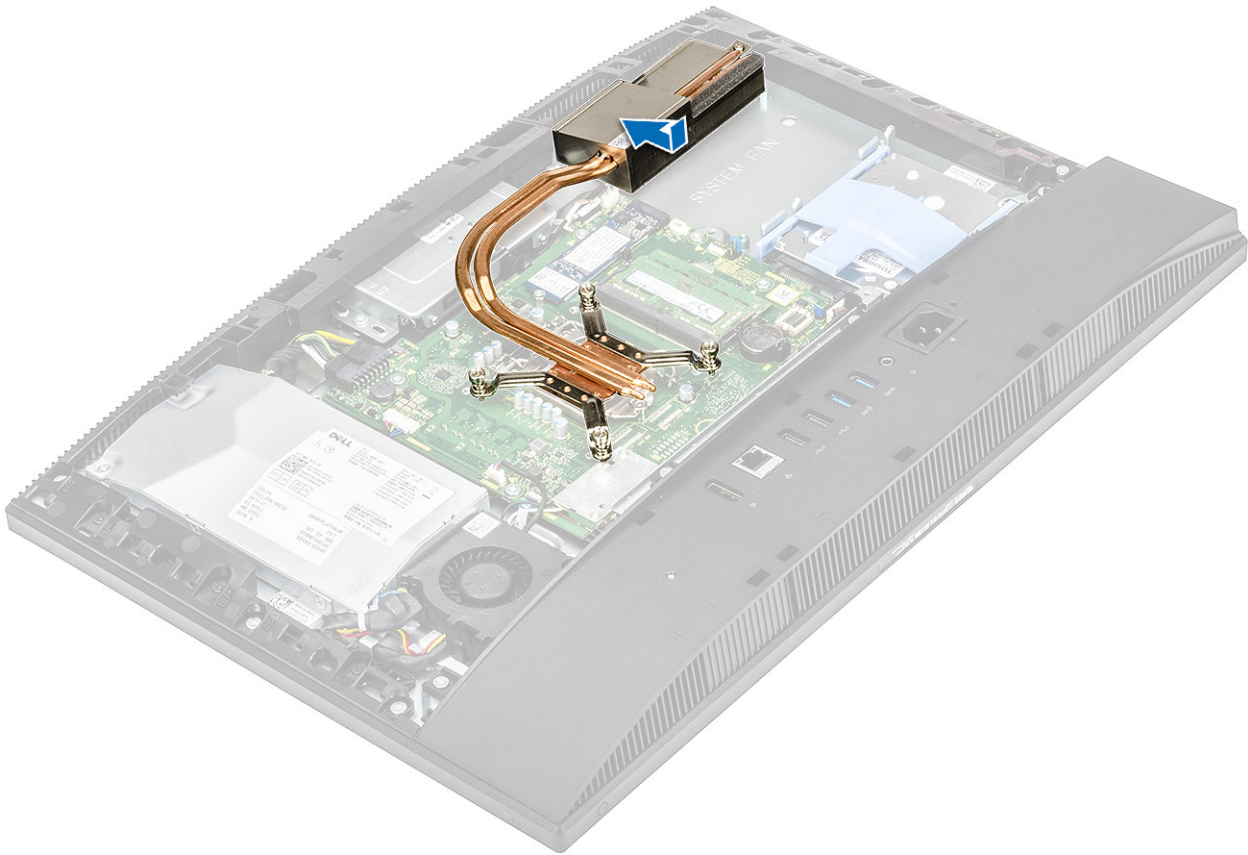


4. Lift the heat sink off the system board and display assembly base .

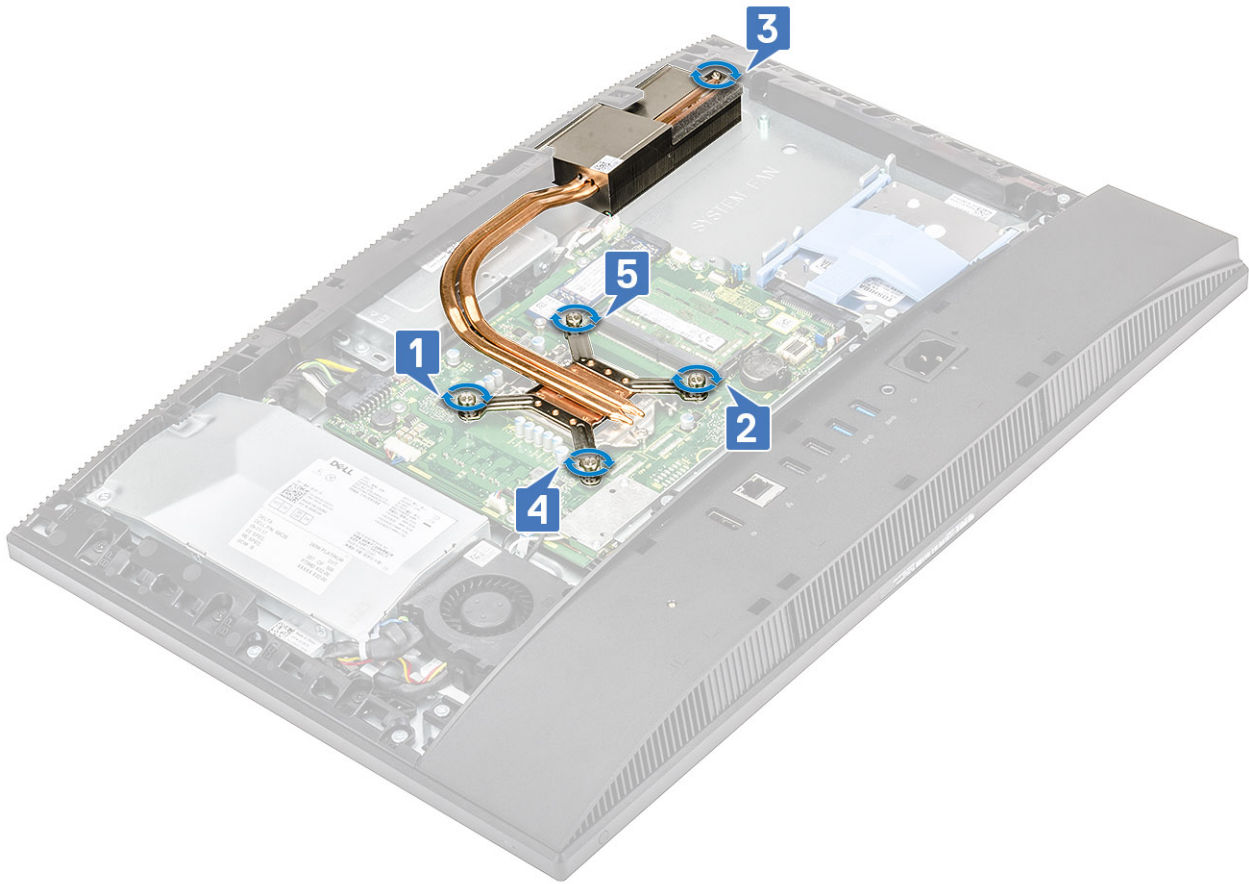


## Installing the heat sink - UMA

1. Align the captive screws on the heat sink with the screw slots on the system board and the display assembly base ..



2. Tighten the five captive screws in a sequential order [1,2,3,4,5] to secure the heat sink to the system board and display assembly base..

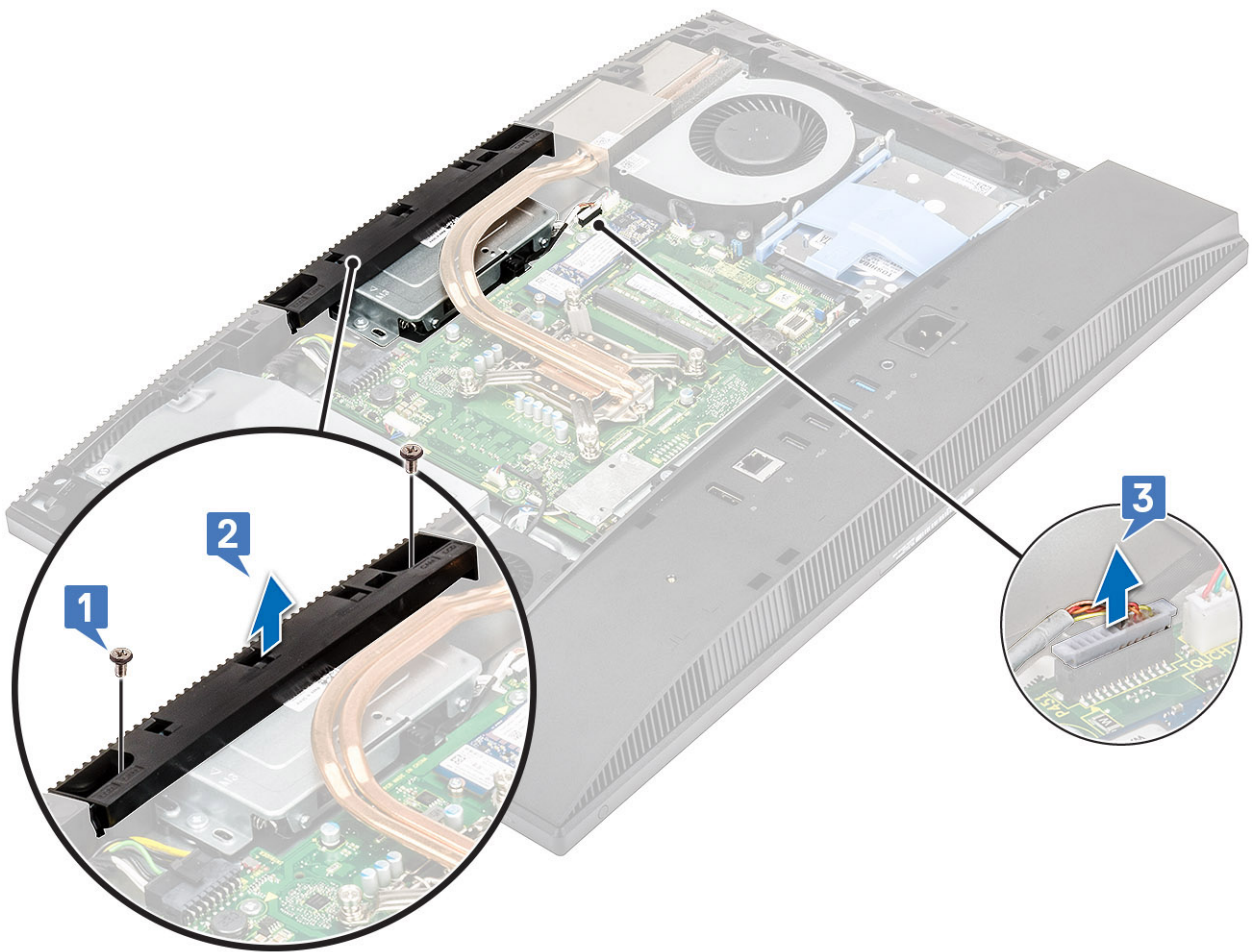


3. Install the following components:
  - a) System fan
  - b) System board shield
  - c) Back cover
  - d) Stand
4. Follow the procedure in [After working inside your computer](#).

## Pop-Up Camera

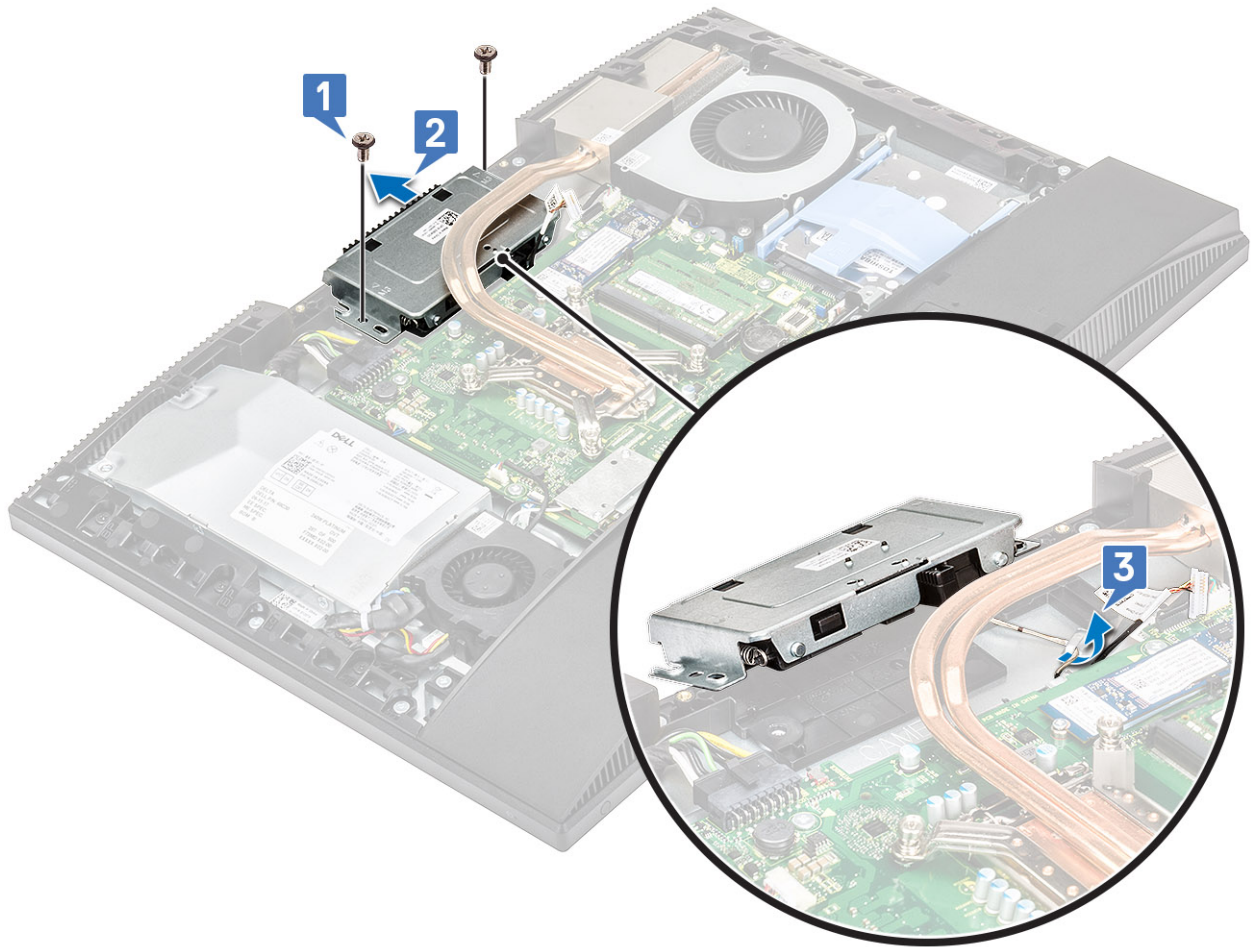
### Removing the pop-up camera

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
3. To remove the camera assembly cover:
  - a) Remove the two screws (M3x5) that secure the camera assembly cover to the middle frame [1].
  - b) Lift the camera assembly cover away from the middle frame [2].
  - c) Disconnect the camera cable from the system board [3].



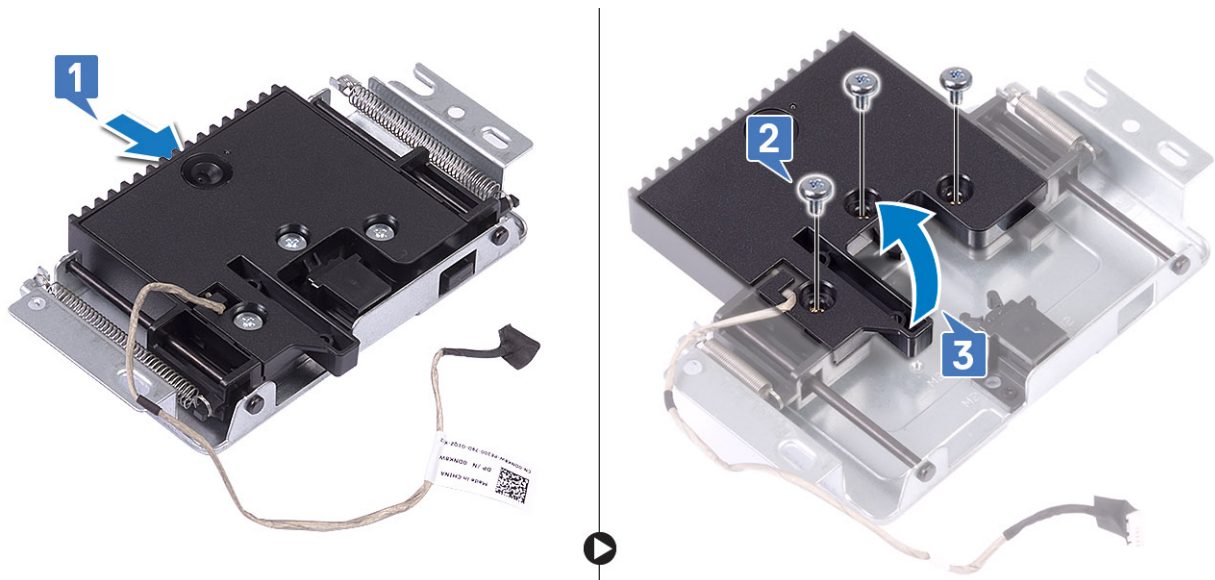
4. To remove the pop-up camera assembly:

- a) Remove the two screws (M3x5) that secure the pop-up camera assembly to the middle frame [1].
- b) Slide the pop-up camera assembly forward [2].
- c) To remove the pop-up camera assembly off the middle frame, unroute the camera cable from the routing channel [3].



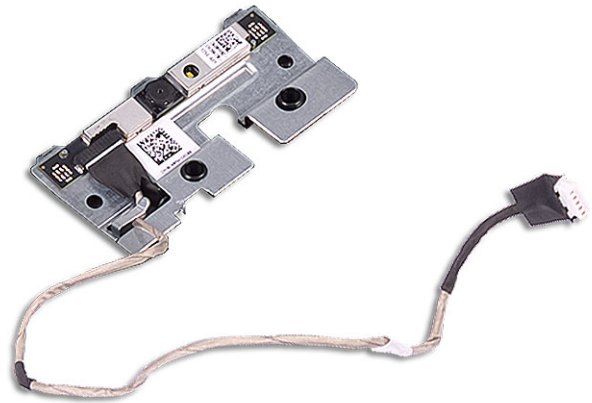
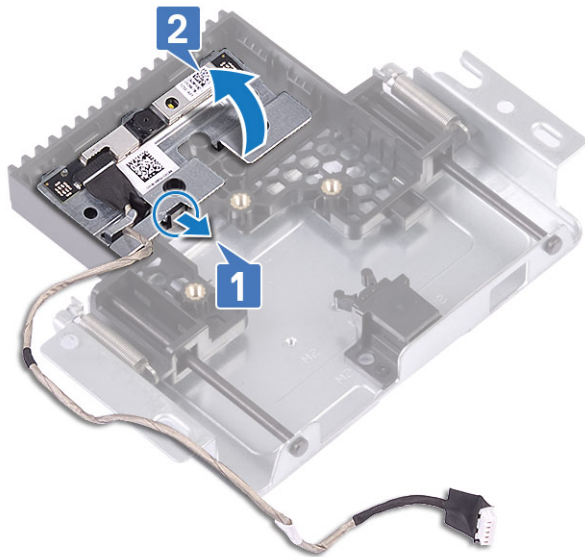
**5. To remove the pop-up camera bezel:**

- a) Press the top of the pop-up camera assembly to extend the pop-up camera.
- b) Remove the three screws (M3x5) that secure the bezel to the pop-up camera assembly [2].
- c) Lift the pop-up camera bezel off the pop-up camera assembly [3].



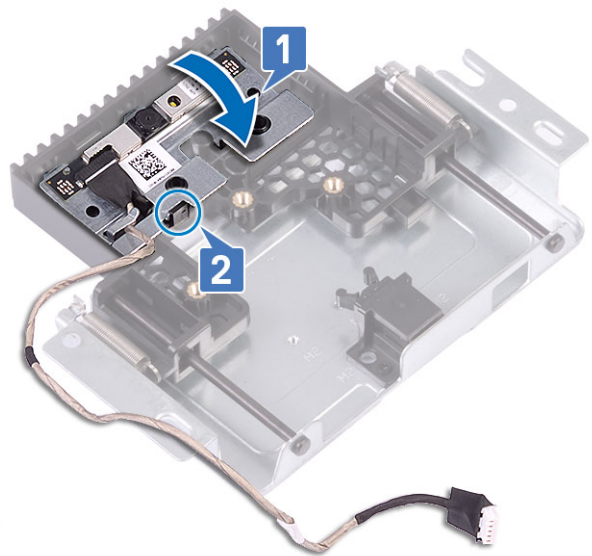
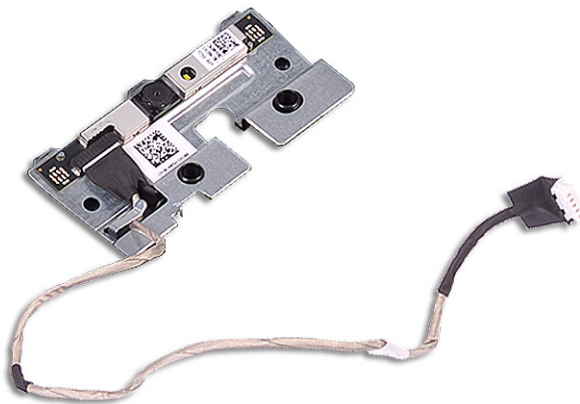
**6. To remove the pop-up camera module:**

- a) Release the camera module from the tab [1].
- b) Remove the camera module along with the camera cable off the pop-up camera assembly [2].

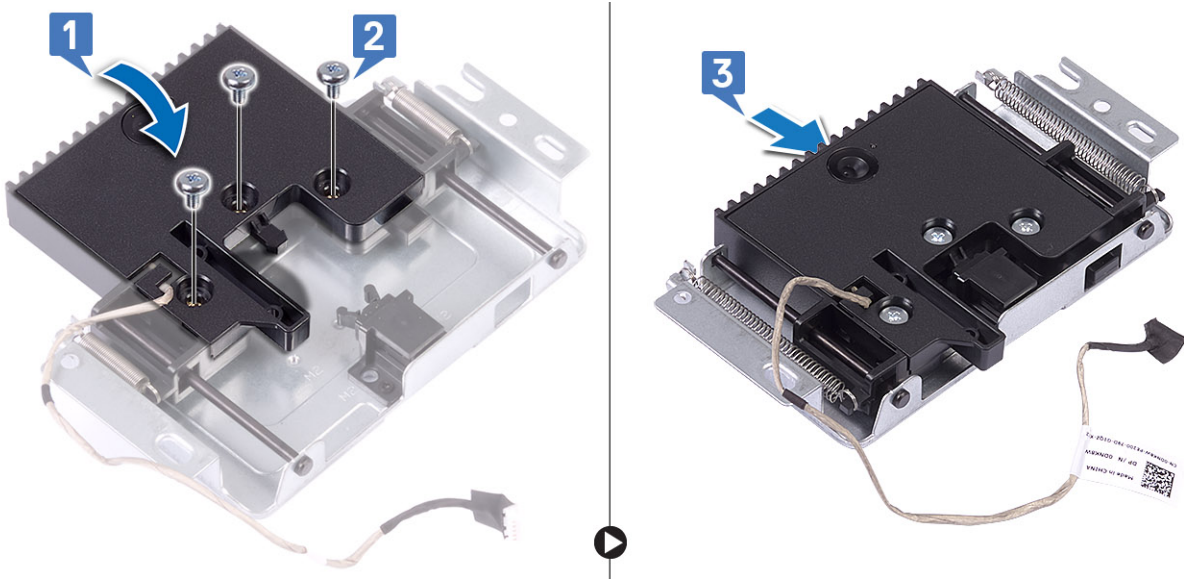


## Installing the pop-up camera

1. Follow the procedure in [After working inside your computer](#).
2. To install the pop-up camera module:
  - a) Replace the camera module along with the camera cable in the slot on the pop-up camera assembly [1].
  - b) Snap the pop-up camera assembly in place to the tab [2].

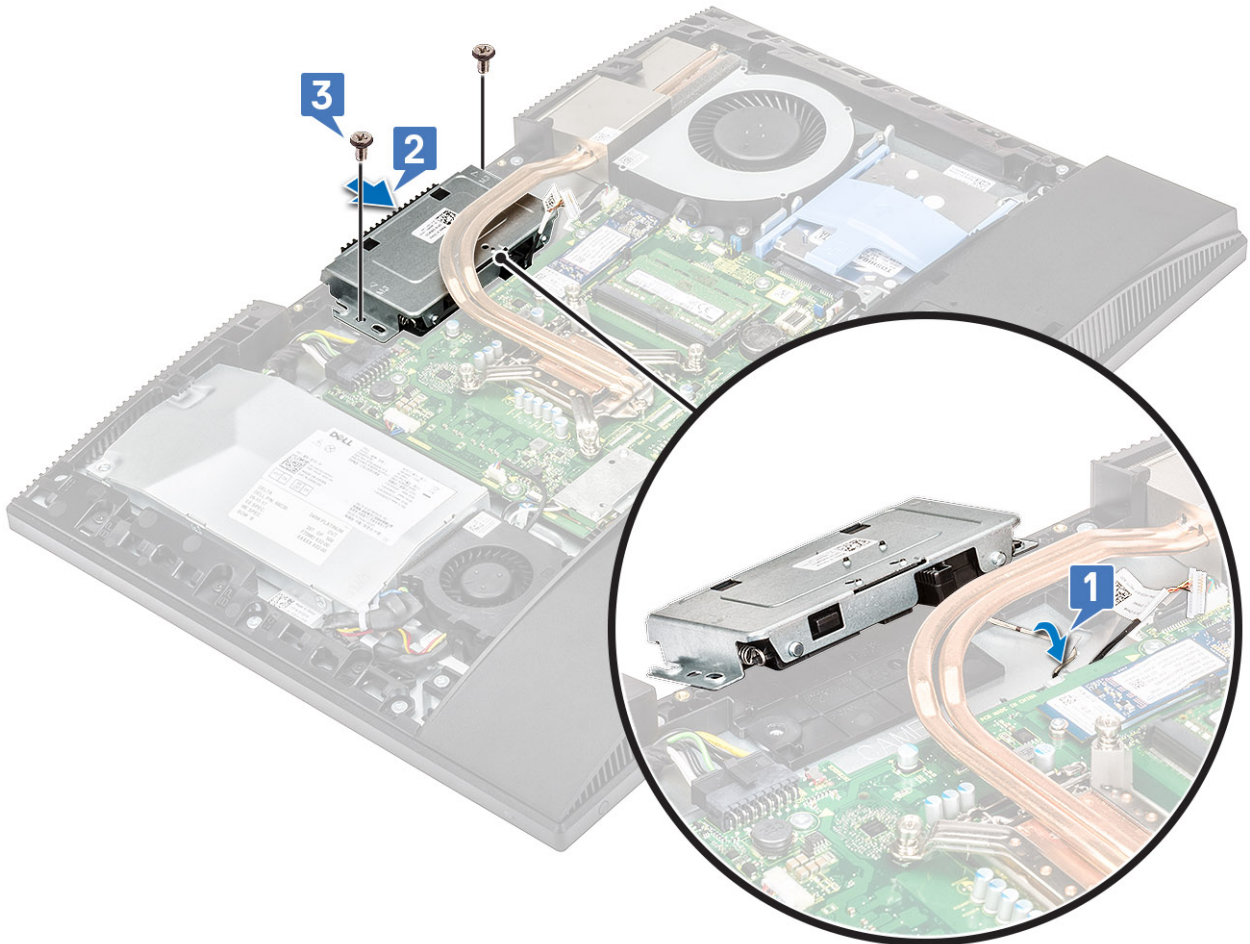


3. To install the pop-up camera bezel:
  - a) Align the screw slots on the pop-up camera bezel with the screw slots on the pop-up camera assembly [1].
  - b) Replace the three screws (M3x5) that secure the pop-up camera bezel to the pop-up camera assembly [2].
  - c) To retract the pop-up camera, press the top of the pop-up camera assembly [3].



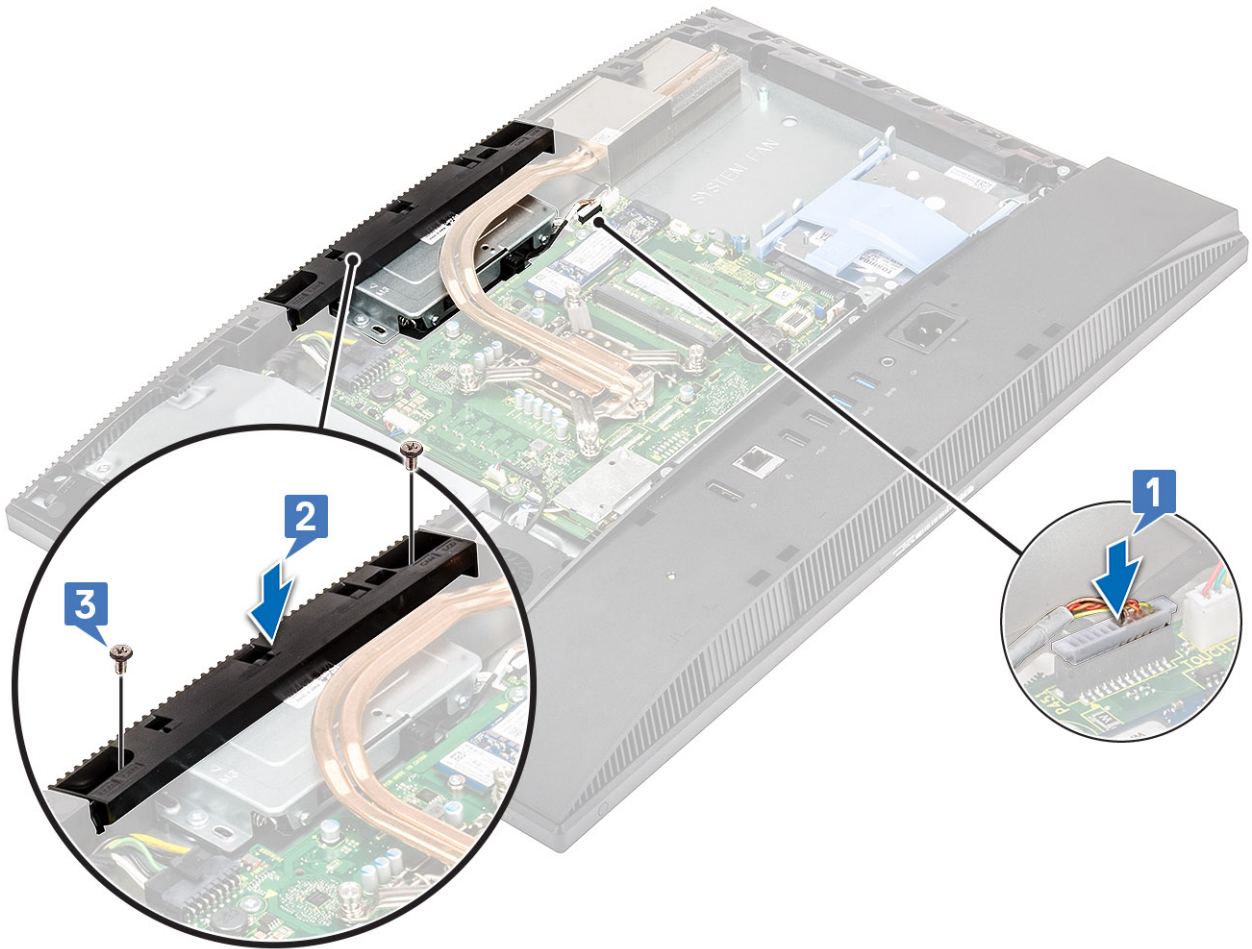
4. To install the pop-up camera assembly:

- a) Route the camera cable through to the routing channel [1].
- b) Align and place the pop-up camera assembly on the display panel base [2].
- c) Replace the two screws (M3x5) that secure the pop-up camera assembly to the middle frame [3].



5. To replace the camera assembly cover:

- a) Connect the camera cable to the system board [1].
- b) Align and place the pop-up camera assembly cover on the middle frame [2].
- c) Replace the two screws (M3x5) that secure the camera assembly cover to the middle frame [3].

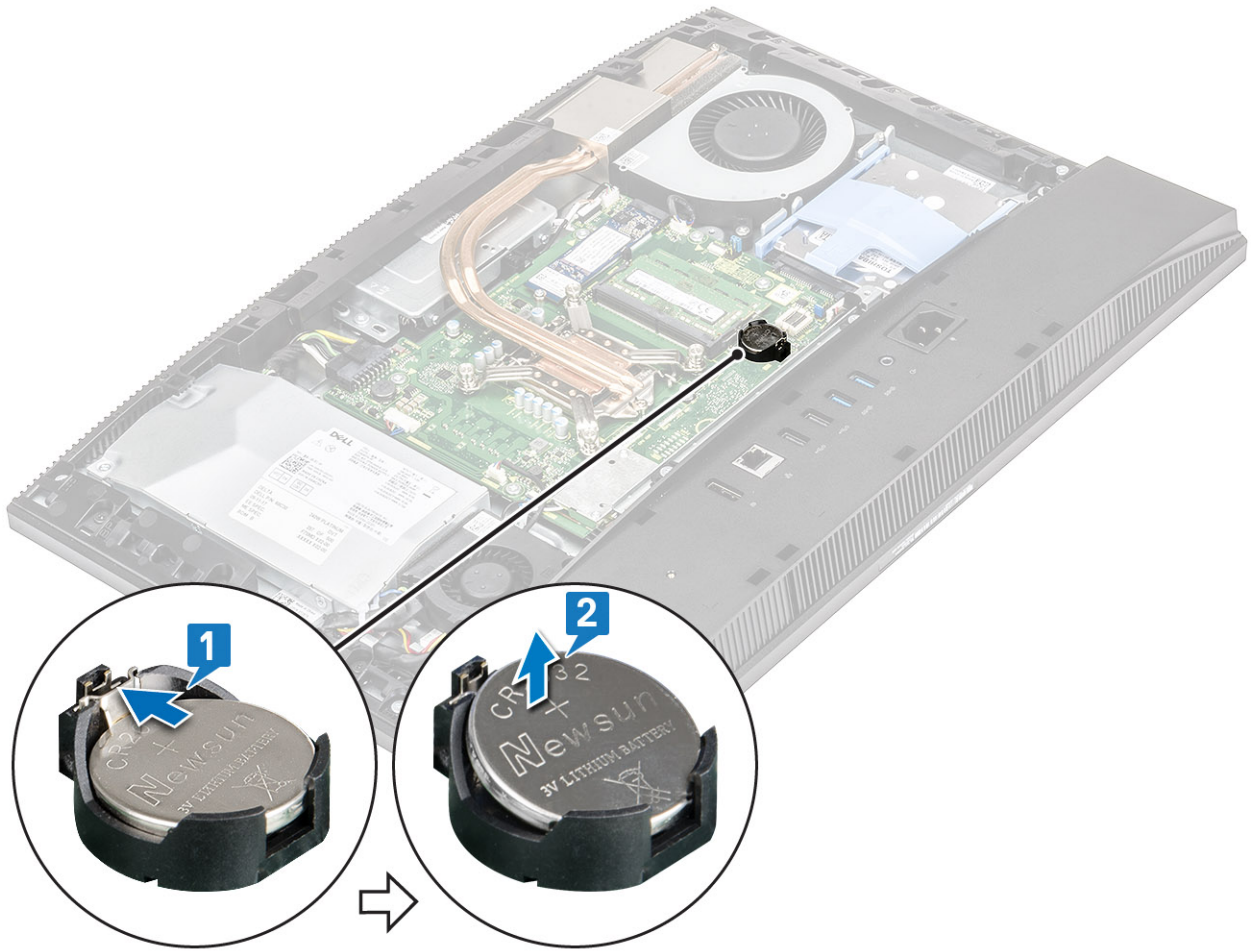


6. Install the following components:
- a) System board shield
  - b) Back cover
  - c) Stand

## Coin cell battery

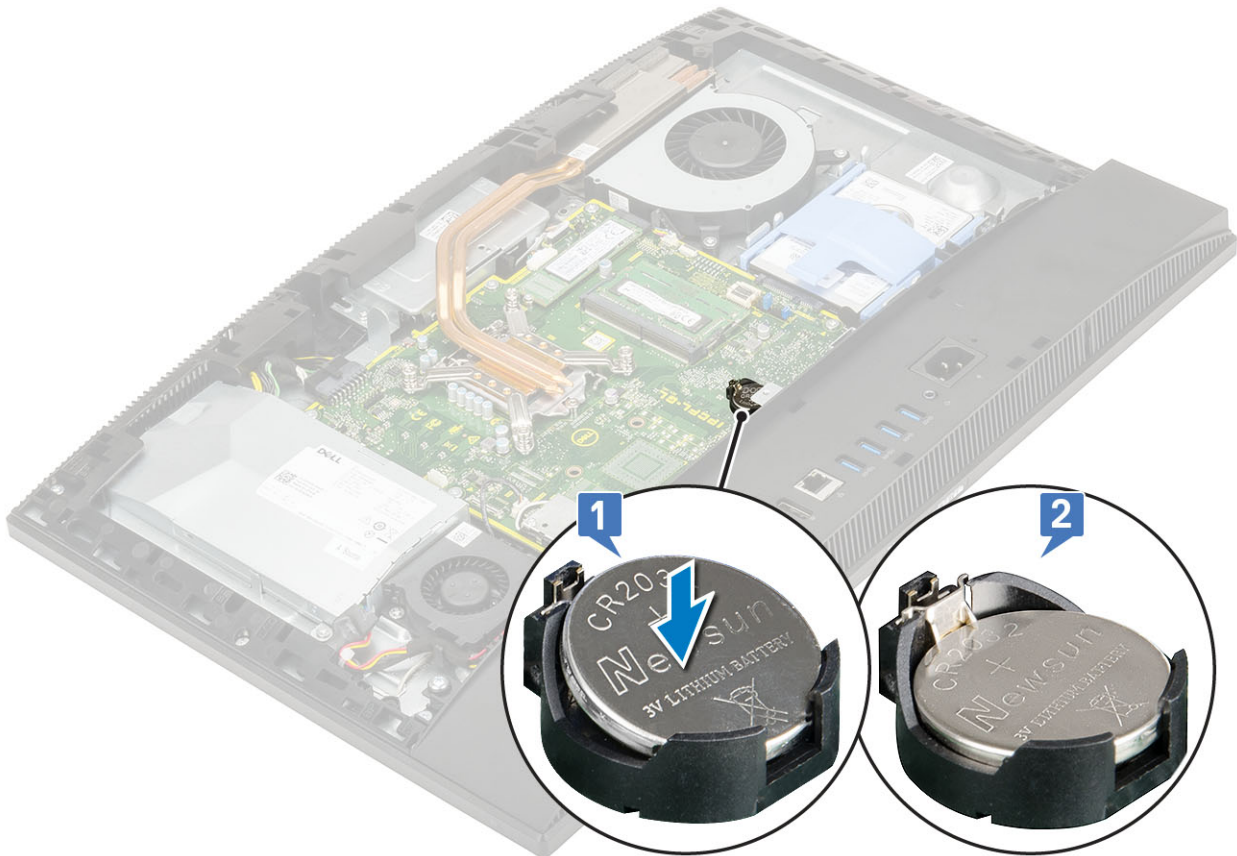
### Removing the coin cell battery

1. Follow the procedure in [Before working inside your computer.](#)
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
3. Press the tab on the coin cell battery socket until the coin cell battery pops up [1].
4. Lift the coin cell battery out of the coin cell battery socket [2].



## Installing the coin cell battery

1. Insert the coin cell battery into the battery socket on the system board, with the positive side facing up [1].
2. Press down the battery into place until it fits securely [2].



3. Install the following components:
  - a) [System board shield](#)
  - b) [Back cover](#)
  - c) [Stand](#)
4. Follow the procedure in [After working inside your computer](#).

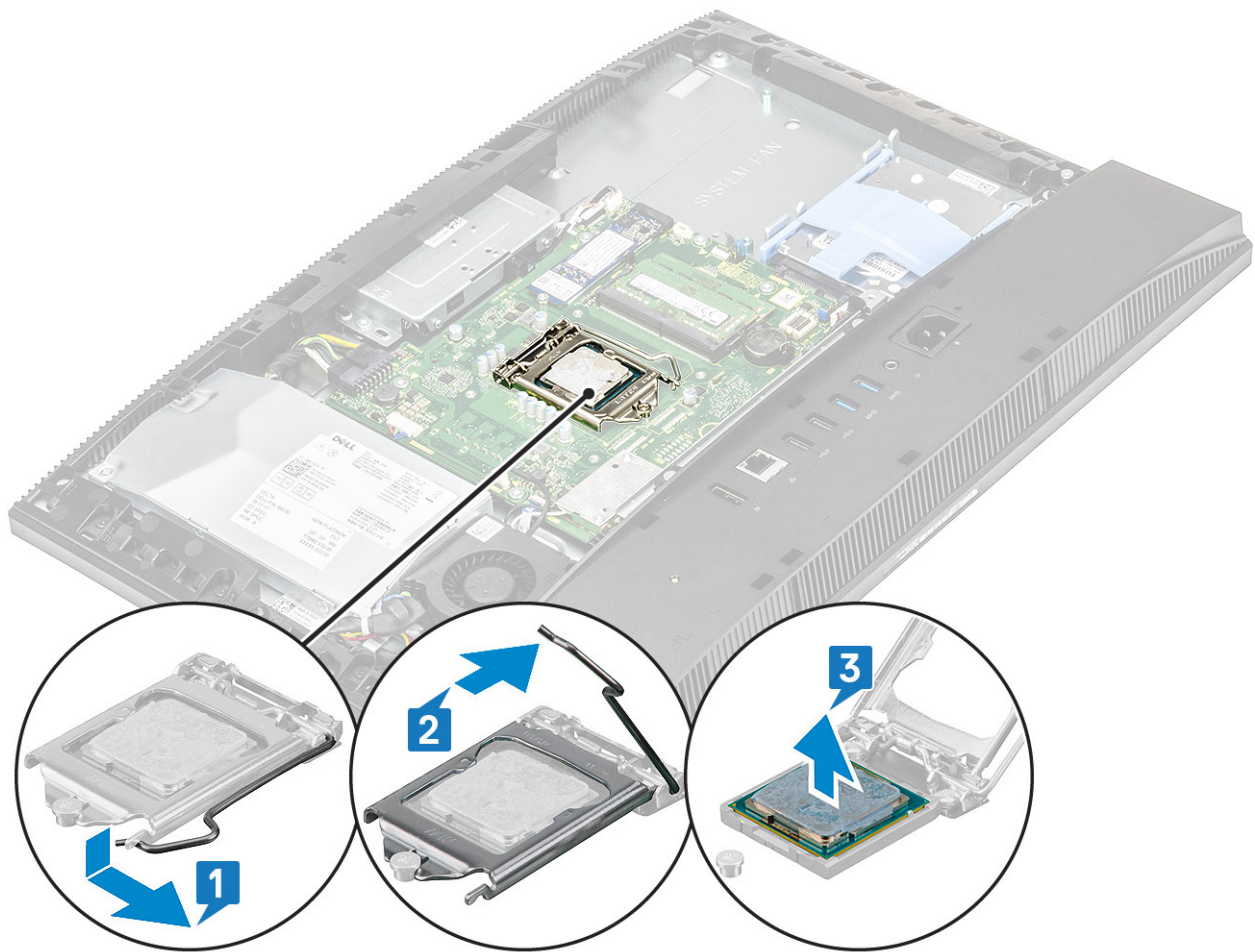
## Processor

### Removing the processor

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
  - d) [Heat sink](#)
3. To remove the processor:
  - a) Release the socket lever by pushing the lever down and out from under the tab on the processor shield [1].
  - b) Lift the lever upward, and lift the processor shield [2].
 

**⚠ CAUTION:** The processor socket pins are fragile and can be permanently damaged. Be careful not to bend the pins in the processor socket when removing the processor out of the socket.
  - c) Lift the processor and remove it from the processor socket [3].
 

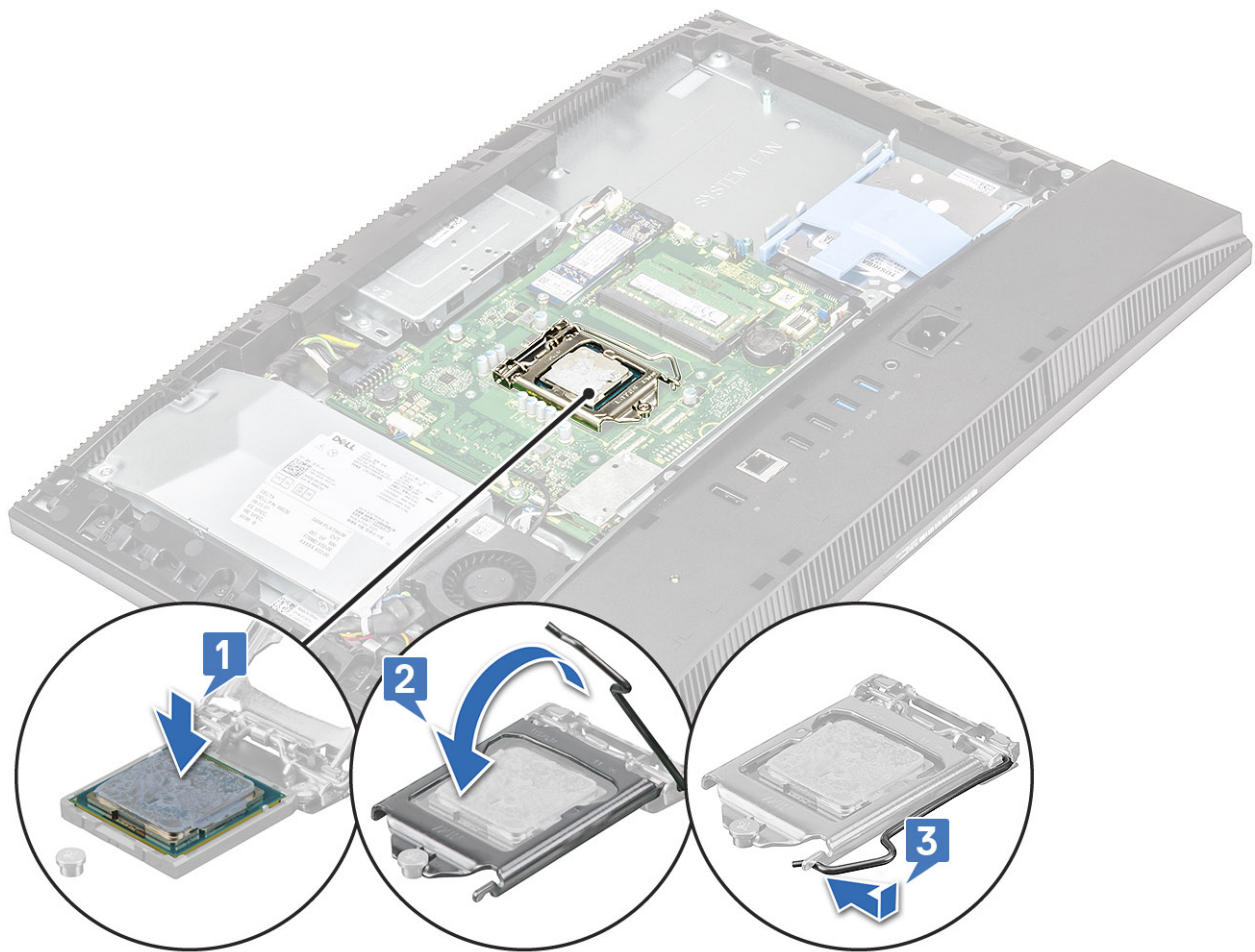
**i NOTE:** After removing the processor, place it in an antistatic container for reuse, return, or temporary storage. Do not touch the bottom of the processor to avoid damage to the processor contacts. Touch only the side edges of the processor.



## Installing the processor

1. To install the processor:
  - a) Ensure that the release lever on the processor socket is fully extended in the open position. Align the notches on the processor with the tabs on the processor socket and place the processor in the processor socket [1].

**CAUTION:** The pin-1 corner of the processor has a triangle that aligns with the triangle on the pin-1 corner on the processor socket. When the processor is properly seated, all four corners are aligned at the same height. If one or more corners of the processor are higher than the others, the processor is not seated properly.
  - b) Close the processor shield by sliding it under the retention screw [2].
  - c) Lower the socket lever and push it under the tab to lock it [3].



2. Install the following components:

- a) Heat sink
- b) System board shield
- c) Back cover
- d) Stand

3. Follow the procedure in [After working inside your computer](#).

**NOTE:** If the processor is replaced, use the thermal grease provided in the kit to ensure that thermal conductivity is achieved.

## Base cover

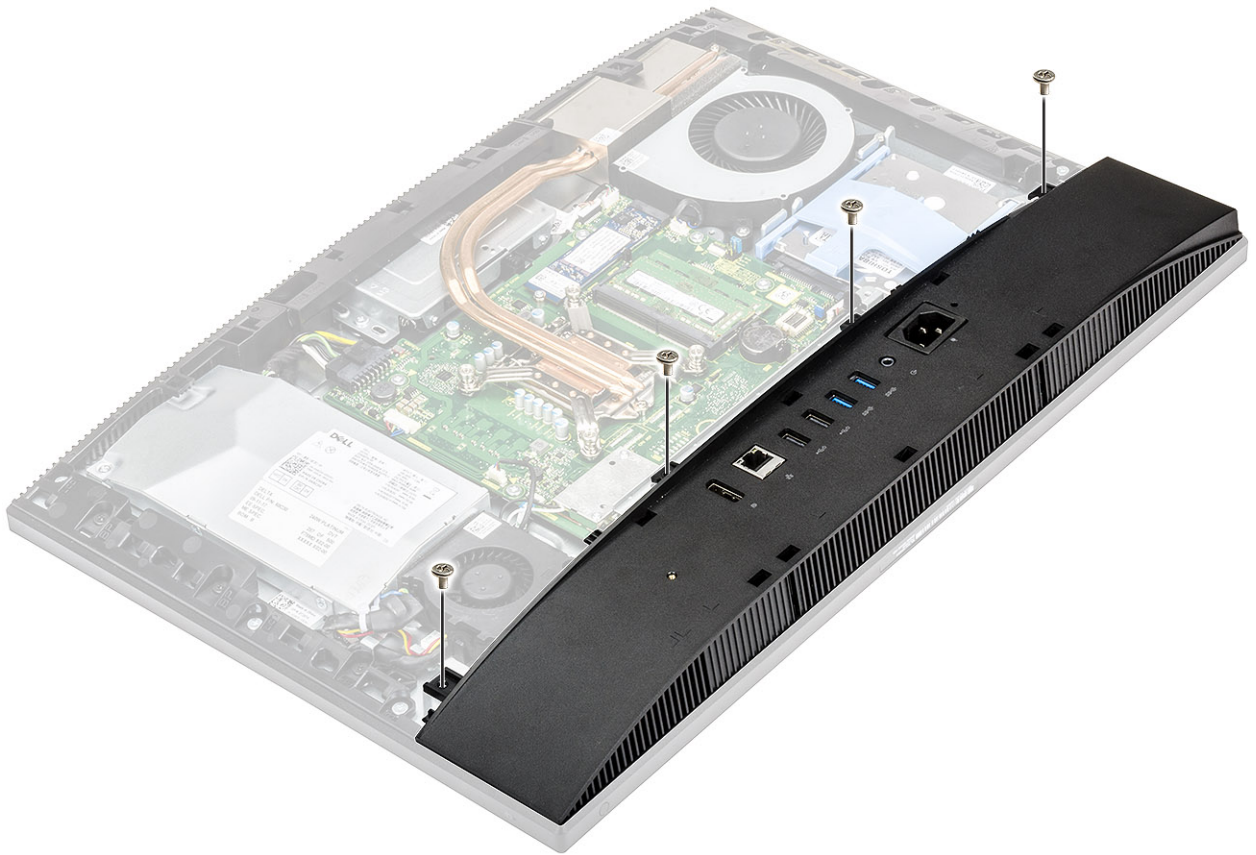
### Removing the base cover

1. Follow the procedure in [Before working inside your computer](#).

2. Remove the following components:

- a) Stand
- b) Cable cover (optional)
- c) Back cover
- d) System board shield

3. Remove the four screws (M3x5) that secure the base cover to the display assembly base.



4. Pry and lift the base cover off the middle frame.

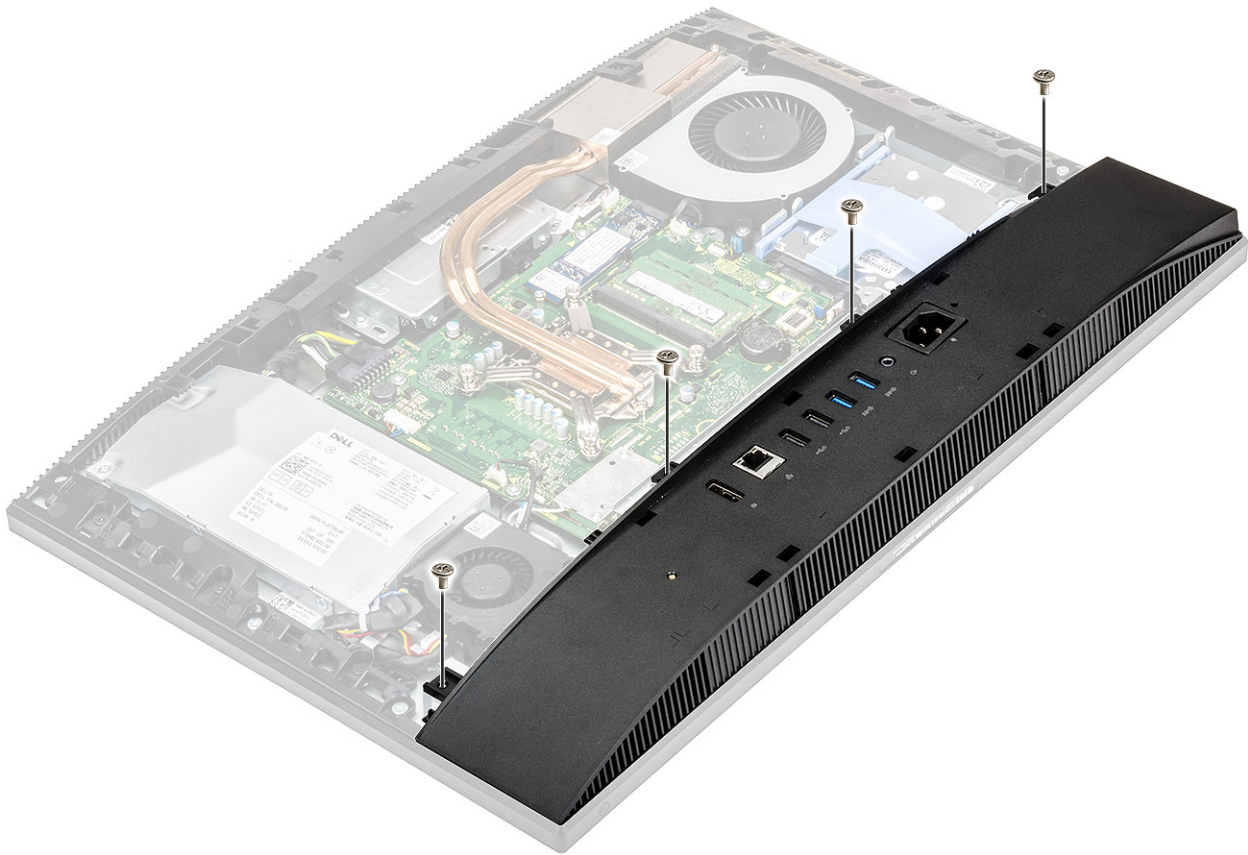


## Installing the base cover

1. Align and place the tabs on the base cover with the slots on the middle frame [1].
2. Press the base cover down until it snaps into place on the middle frame [2].



3. Replace the four screws (M3x5) that secure the base cover to the display assembly base.



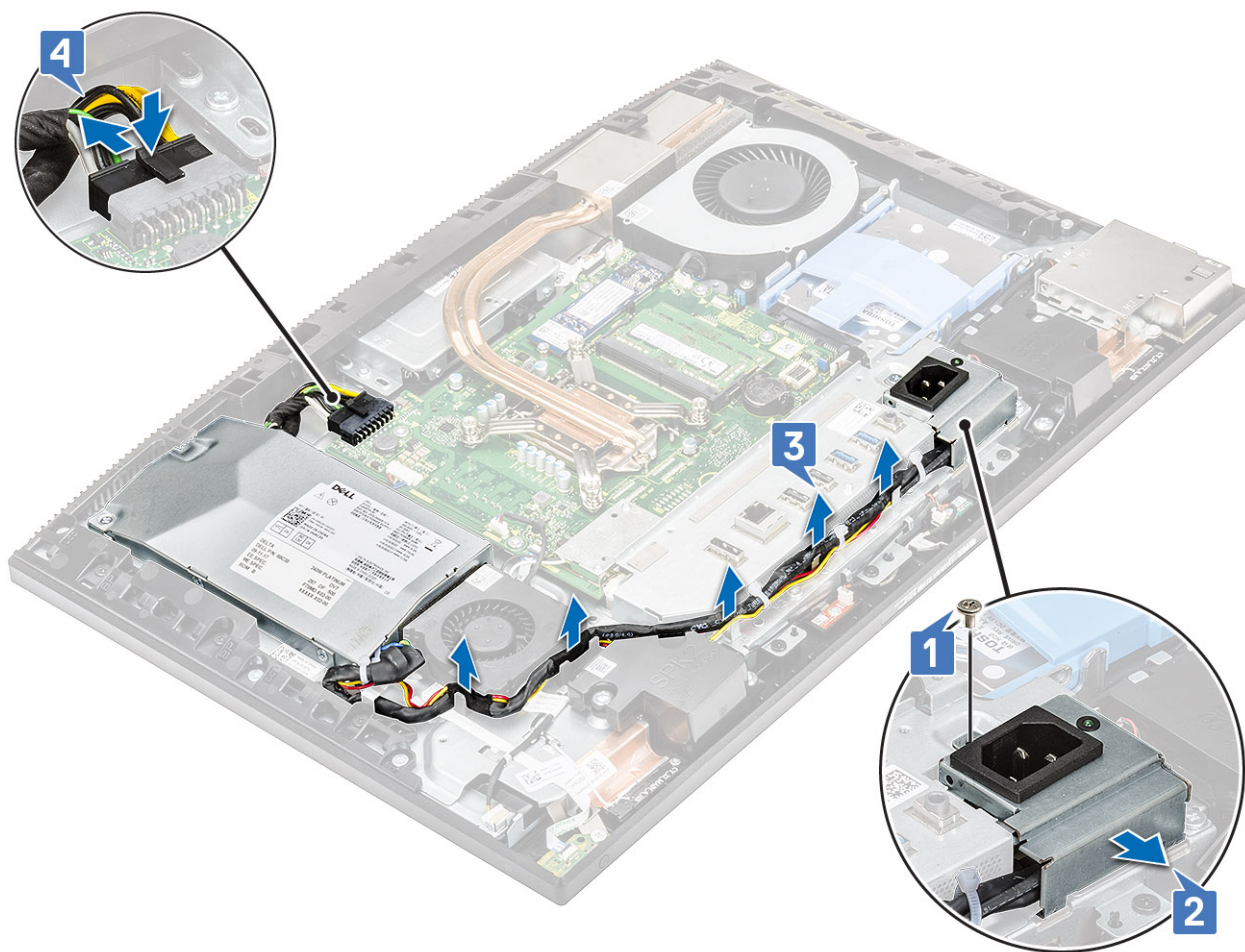
4. Install the following components:
  - a) [System board shield](#)
  - b) [Back cover](#)
  - c) [Cable cover](#)
  - d) [Stand](#)
5. Follow the procedure in [After working inside your computer](#).

## Power supply unit - PSU

### Removing the power supply unit -PSU

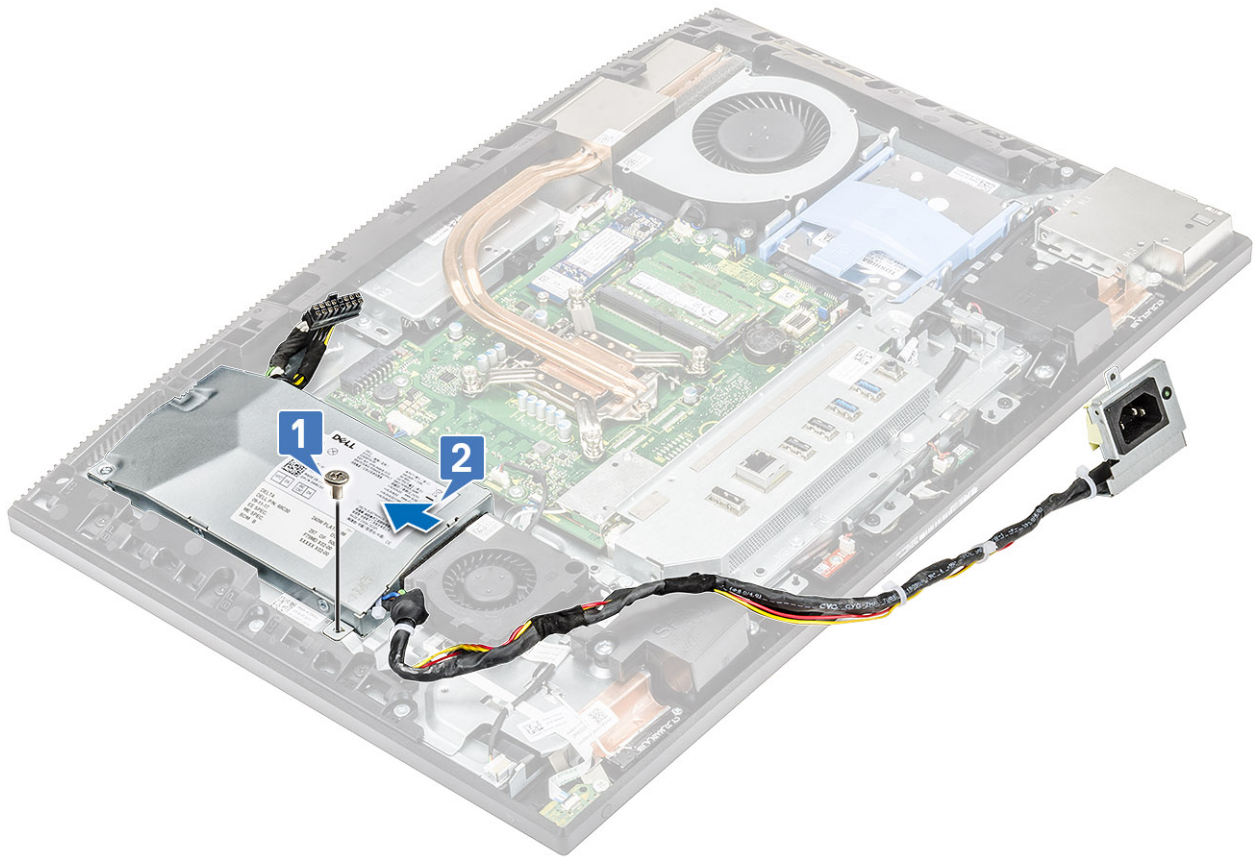
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
  - d) [Base cover](#)
3. To release the PSU cable:
  - a) Remove the single (M3x5) screw securing the power supply socket to the I/O bracket [1].
  - b) Slide the power supply socket away to remove it from the system [2].
  - c) Unroute the power supply cables from the retention clips in the chassis [3].
  - d) Disconnect the power supply cable from the socket on the system board [4].

**i** **NOTE:** Press the clip downward to release the power supply cable from the system board.

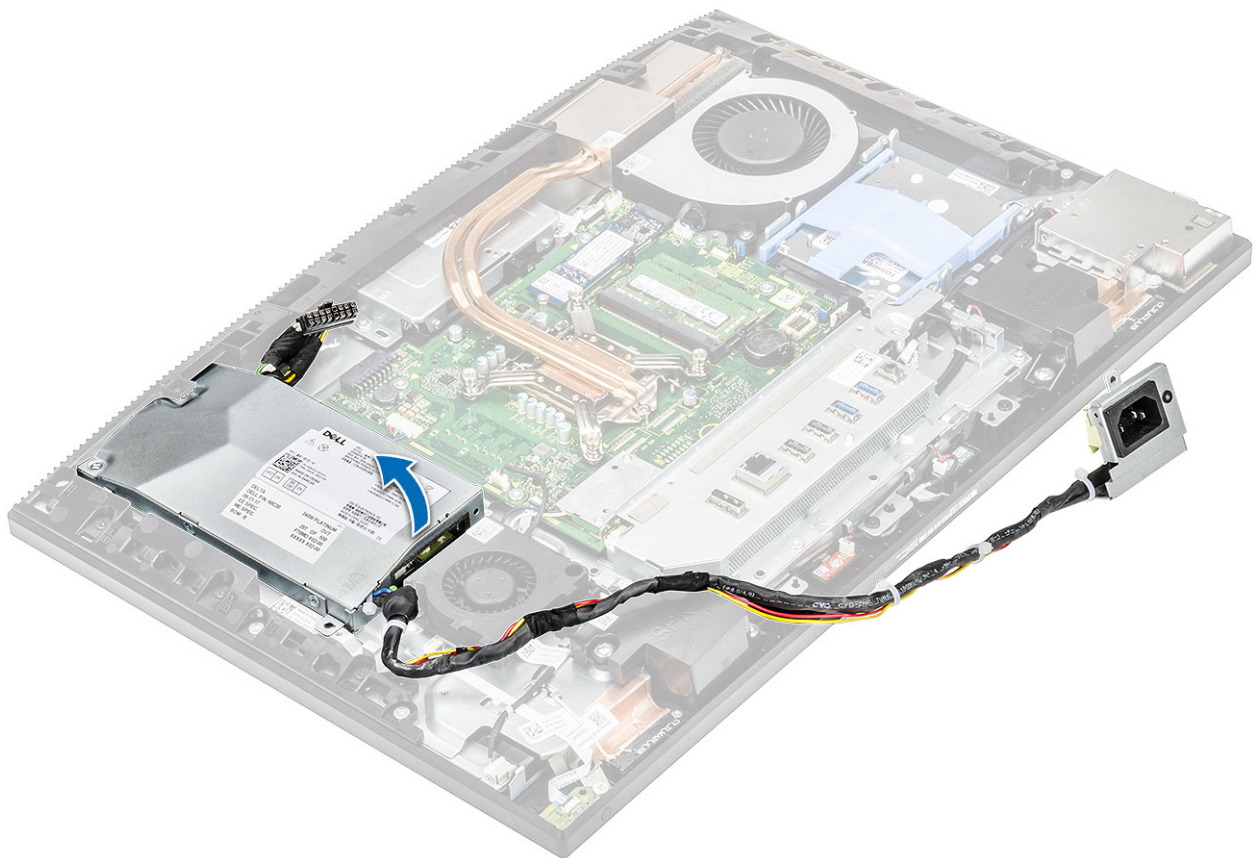


**4.** To remove the PSU:

- a) Remove the single (M3x5) screw that secures the PSU to the display assembly base [1] and then slide the PSU forward [2].

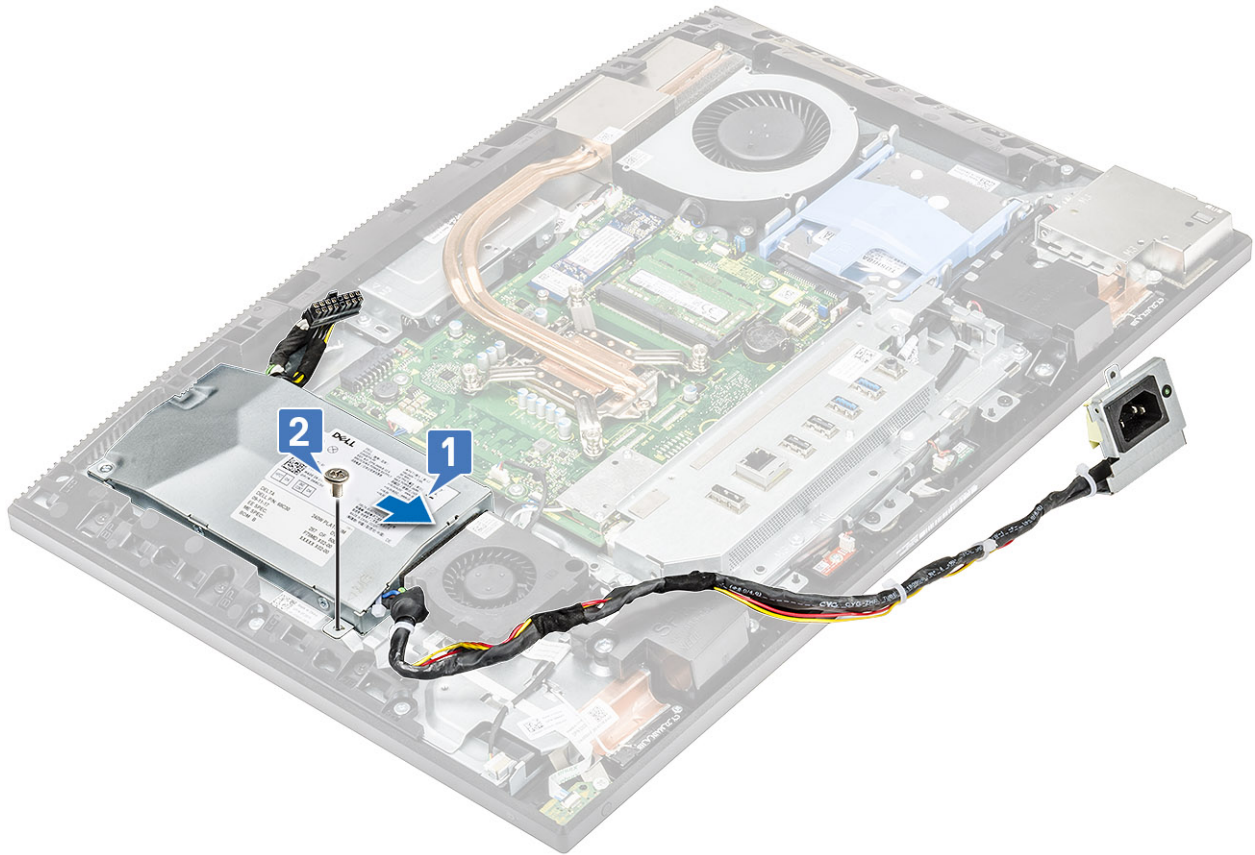


b) Slide the PSU, and lift it away from the chassis .

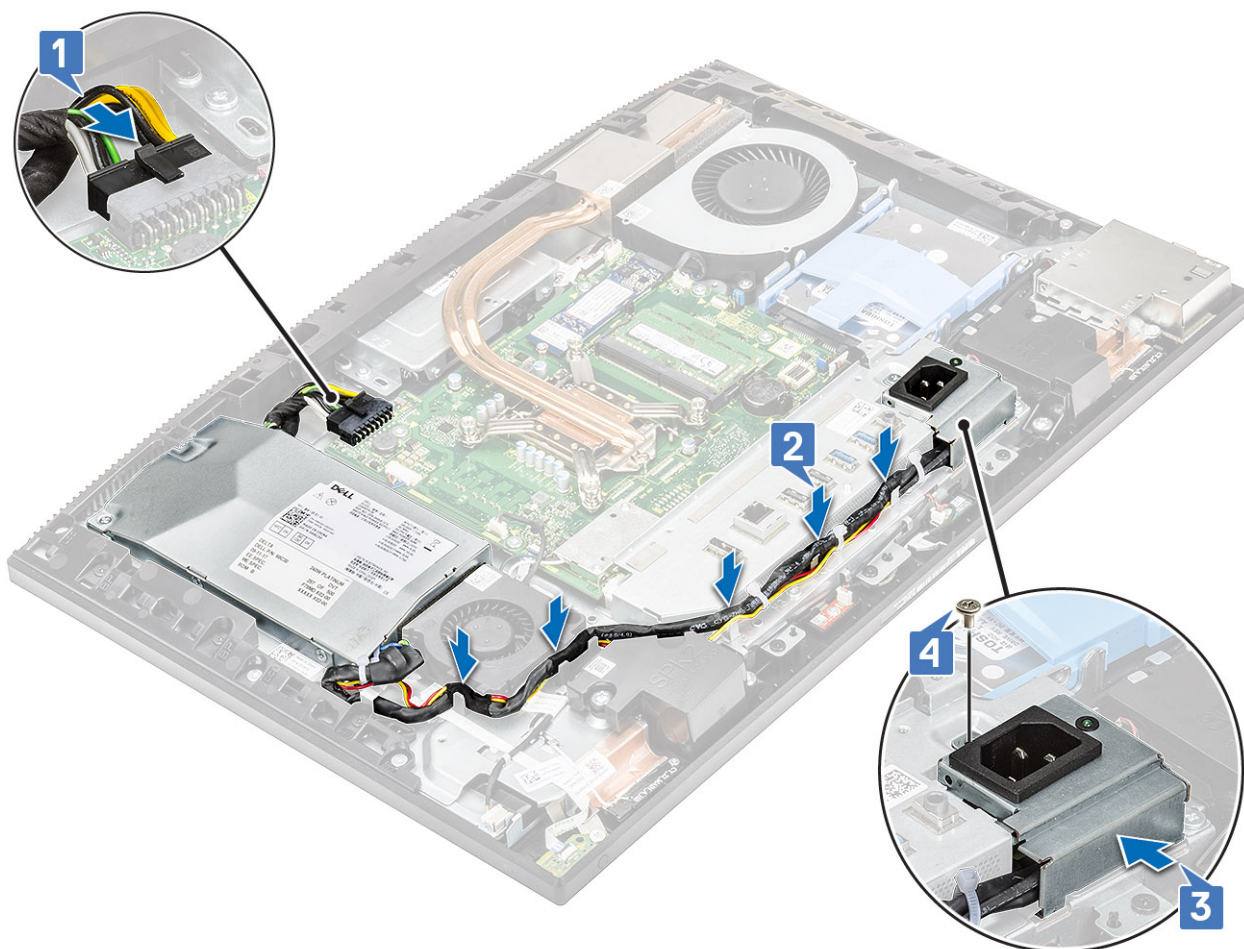


# Installing the power supply unit -PSU

1. To install the PSU:
  - a) Align and slide the PSU, in to the slot on the display assembly base [1].
  - b) Replace the single screw (M3x5) that secures the PSU to the chassis [2].



2. To install the PSU cable:
  - a) Connect the power supply cable to the socket on the system board [1].
  - b) Route back the power supply cables through the retention clips in the I/O bracket [2].
  - c) Slide and replace the power supply socket on the chassis [3].
  - d) Replace the single (M3x5) screw securing the power supply socket to the I/O bracket [4].

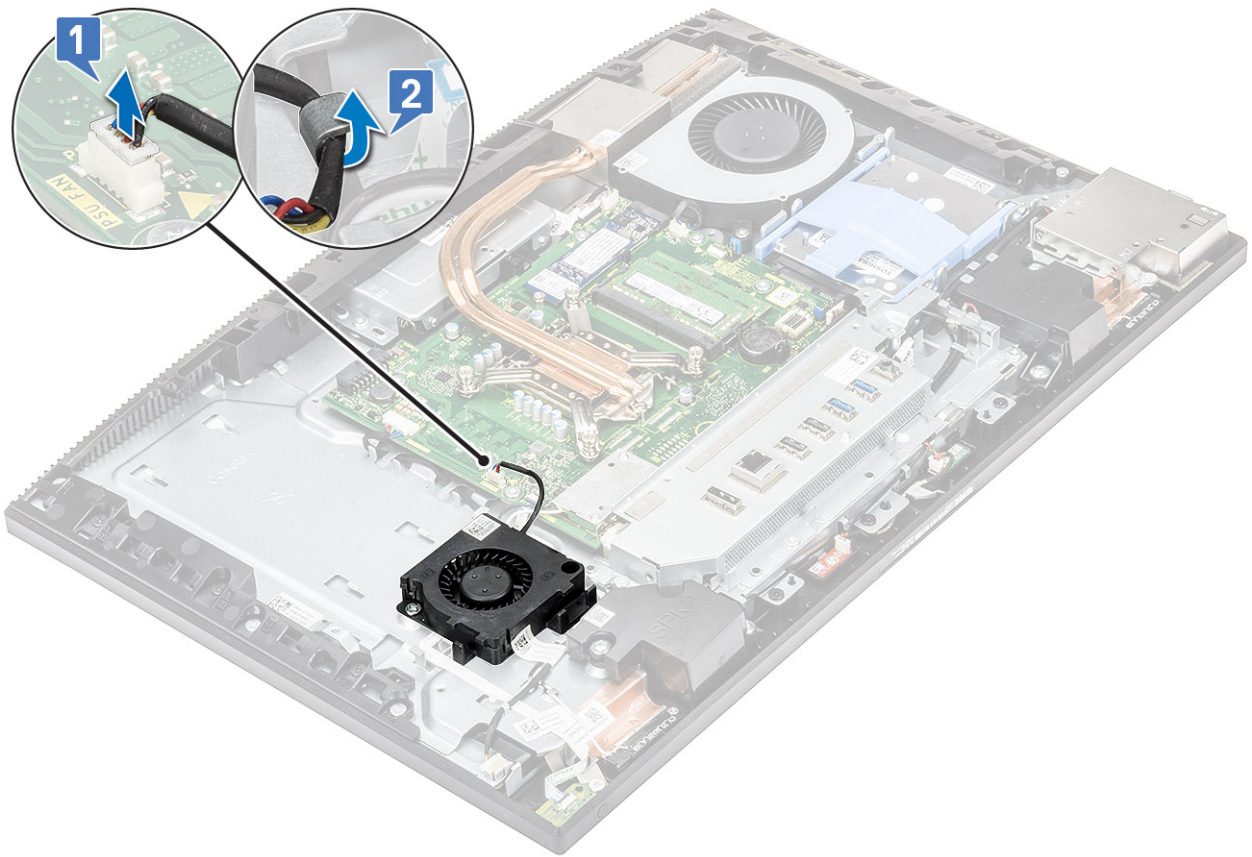


3. Install the following components:
  - a) Base cover
  - b) System board shield
  - c) Back cover
  - d) Stand
4. Follow the procedure in [After working inside your computer](#).

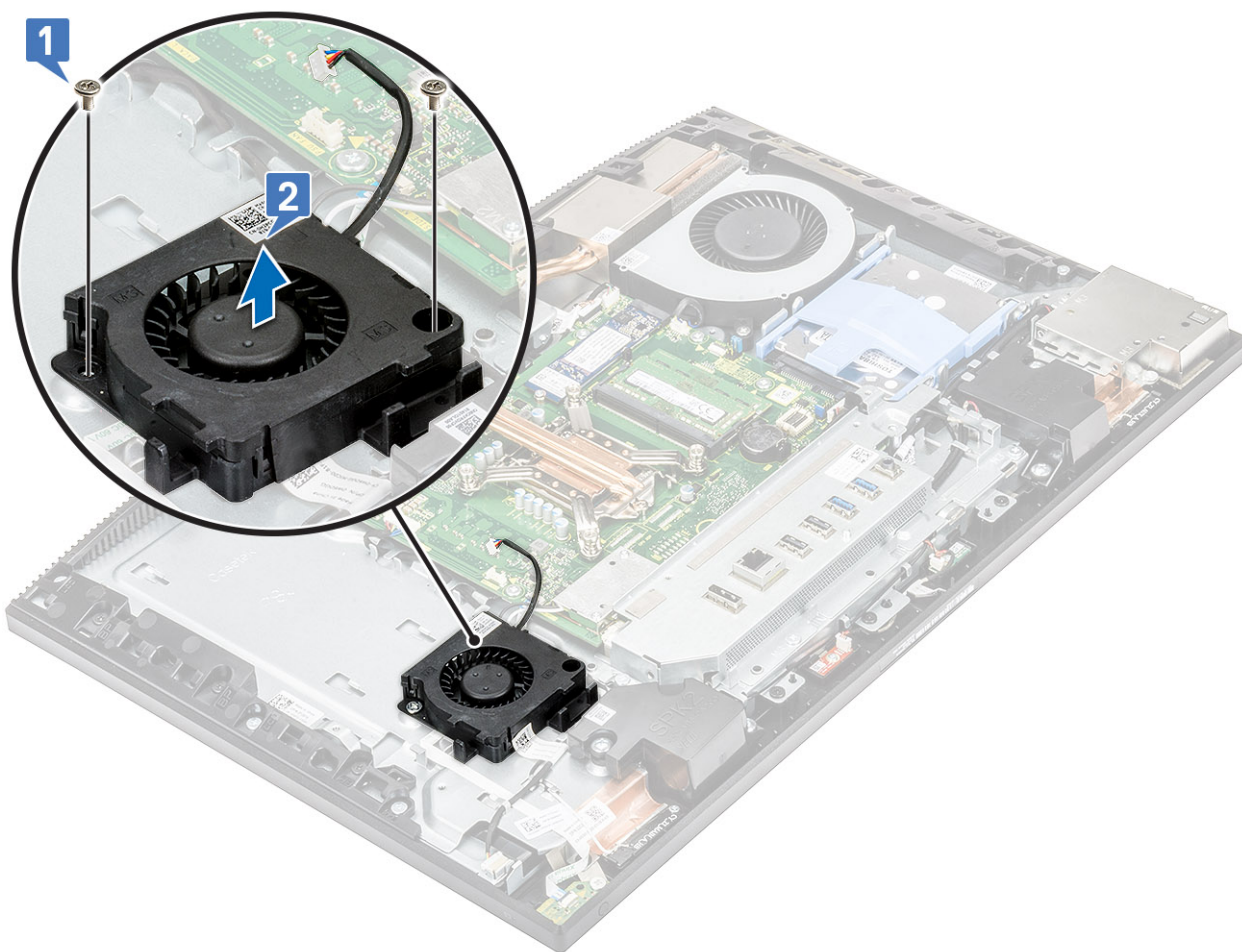
## Power supply unit fan - PSU fan

### Removing the power supply unit fan -PSU fan

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
  - d) Base cover
3. To disconnect the PSU fan cable:
  - a) Unroute the power supply cables from the retention clips in the PSU fan.
  - b) Disconnect the PSU fan cable from the socket on the system board [1].
  - c) Unroute the PSU fan cable from the retention tab [2].

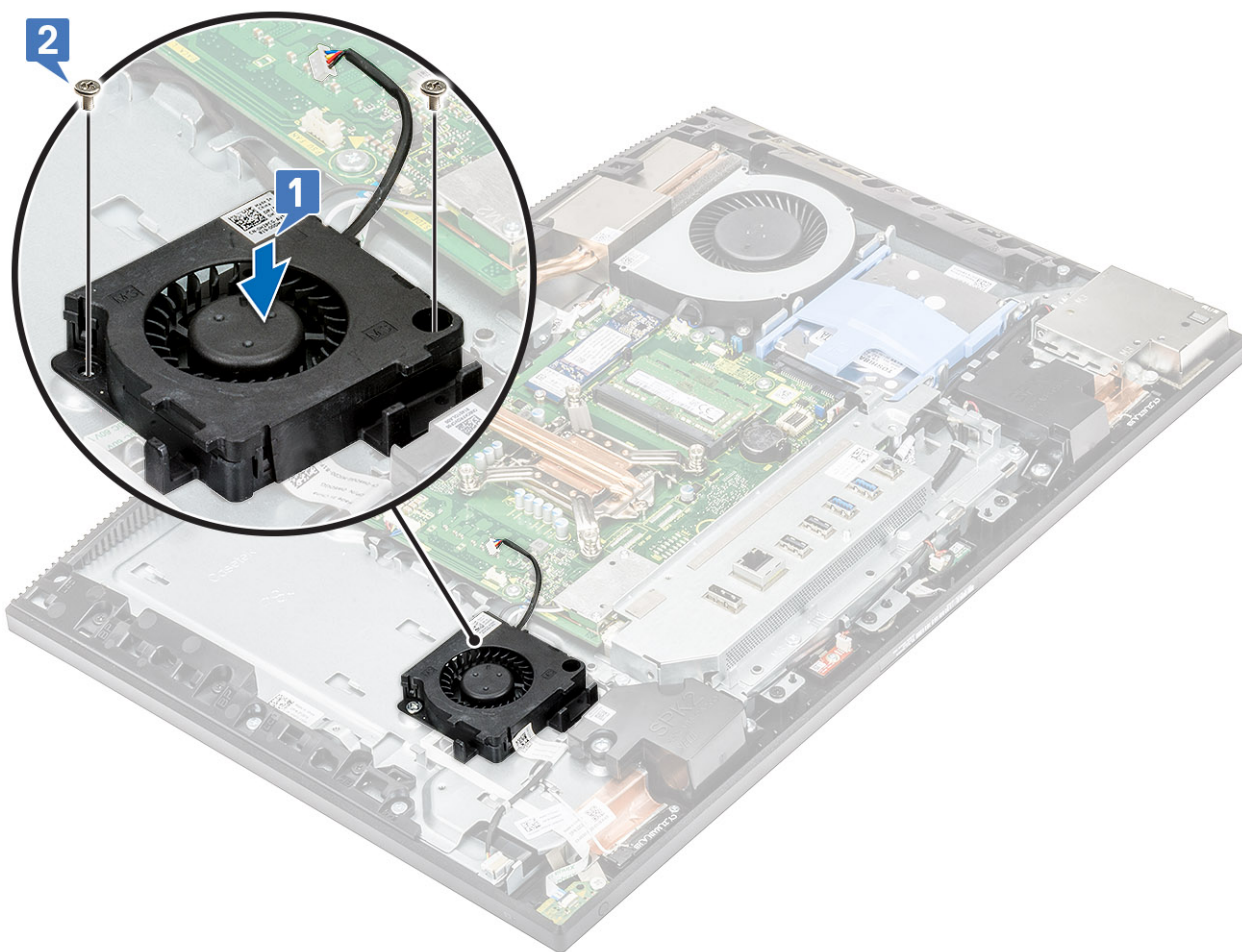


4. To disconnect the PSU fan:
  - a) Remove two (M3x5) screws that secure the PSU fan to the display assembly base [1].
  - b) Lift the PSU fan away from the chassis [2].



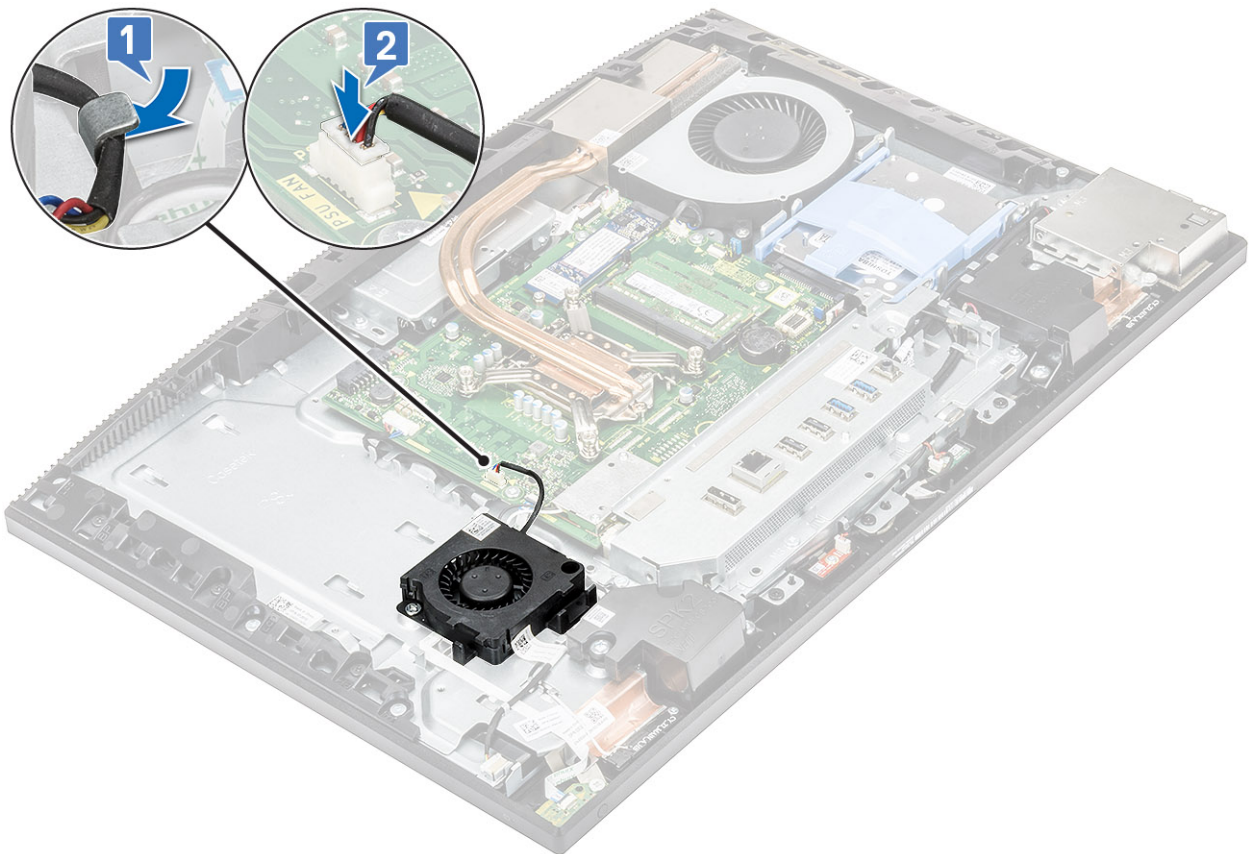
## Installing the power supply unit -PSU fan

1. To install the PSU fan:
  - a) Align and place the PSU fan on the chassis [1].
  - b) Replace the two (M3x5) screws that secure the PSU fan to the display assembly base [2].



2. To replace the PSU Fan cable:

- a) Route the PSU fan cable through the retention tab [1].
- b) Connect the PSU fan cable to the socket on the system board [2].
- c) Route the power supply cables to the retention clips on the PSU fan.

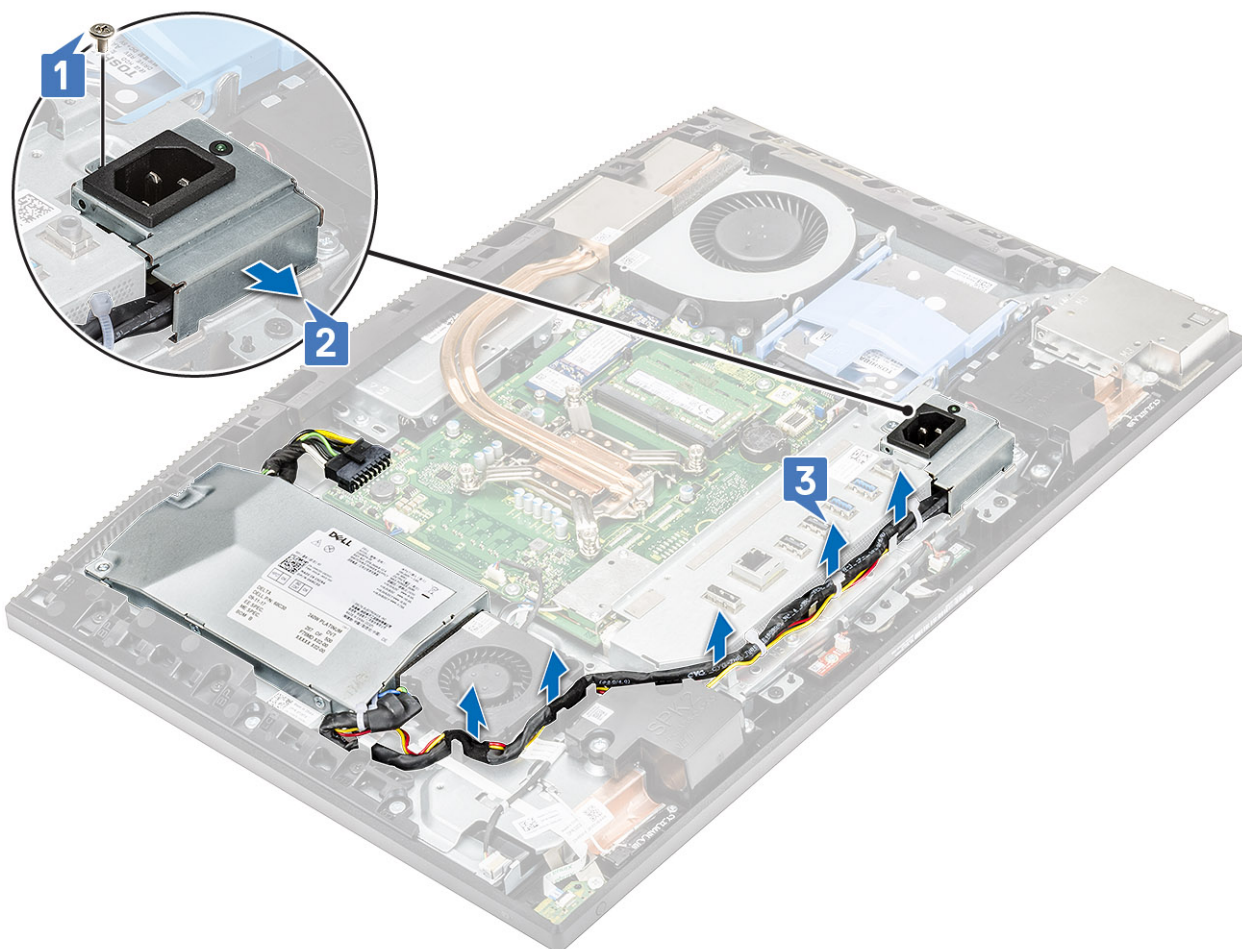


3. Install the following components:
  - a) [Base cover](#)
  - b) [System board shield](#)
  - c) [Back cover](#)
  - d) [Stand](#)
4. Follow the procedure in [After working inside your computer](#).

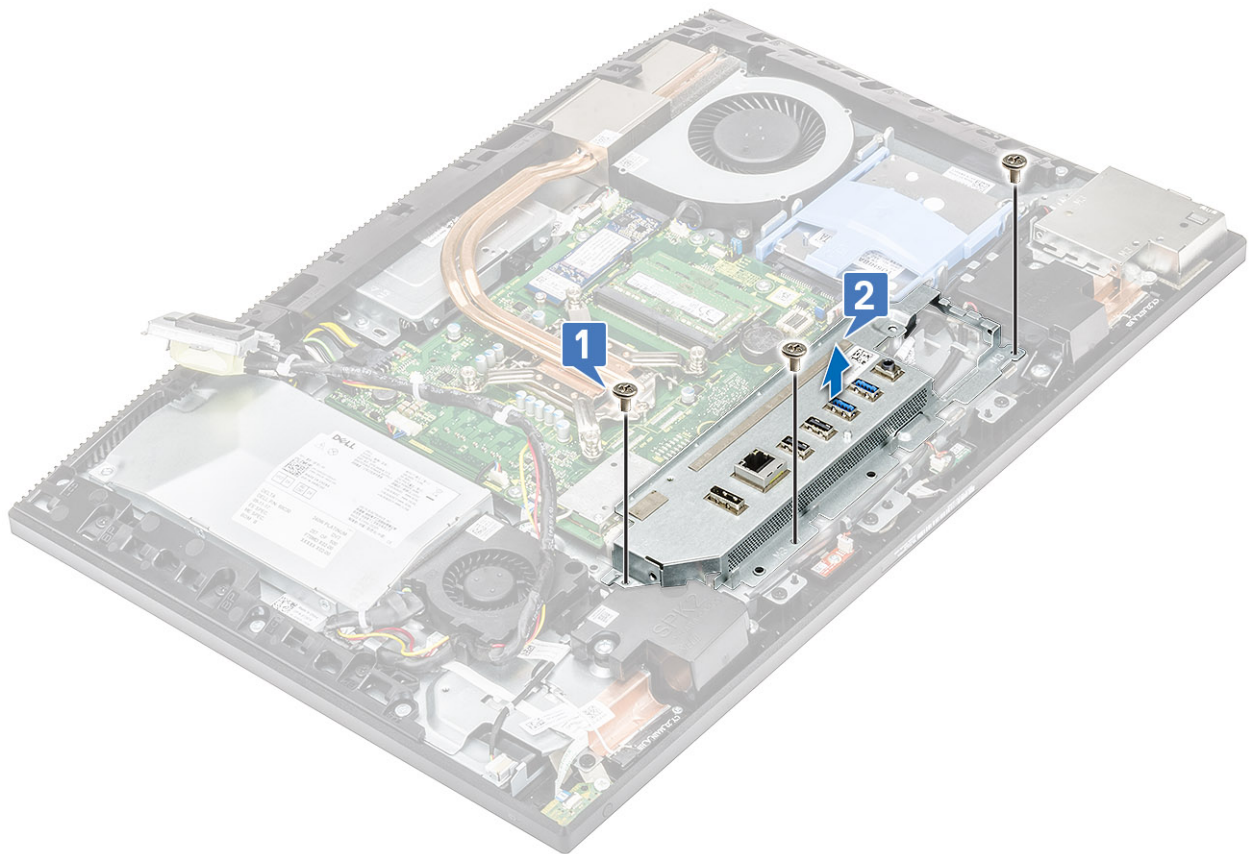
## Input and Output bracket

### Removing the Input and Output bracket

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) [Stand](#)
  - b) [Back cover](#)
  - c) [System board shield](#)
  - d) [Base cover](#)
3. Release the PSU cable to remove the Input and Output (I/O) bracket.
4. To release the PSU cable:
  - a) Remove the single (M3x5) screw securing the power supply socket to the Input and Output (I/O) bracket [1].
  - b) Slide the power supply socket away to remove it from the system [2].
  - c) Unroute the power supply cables from the retention clips in the chassis [3].

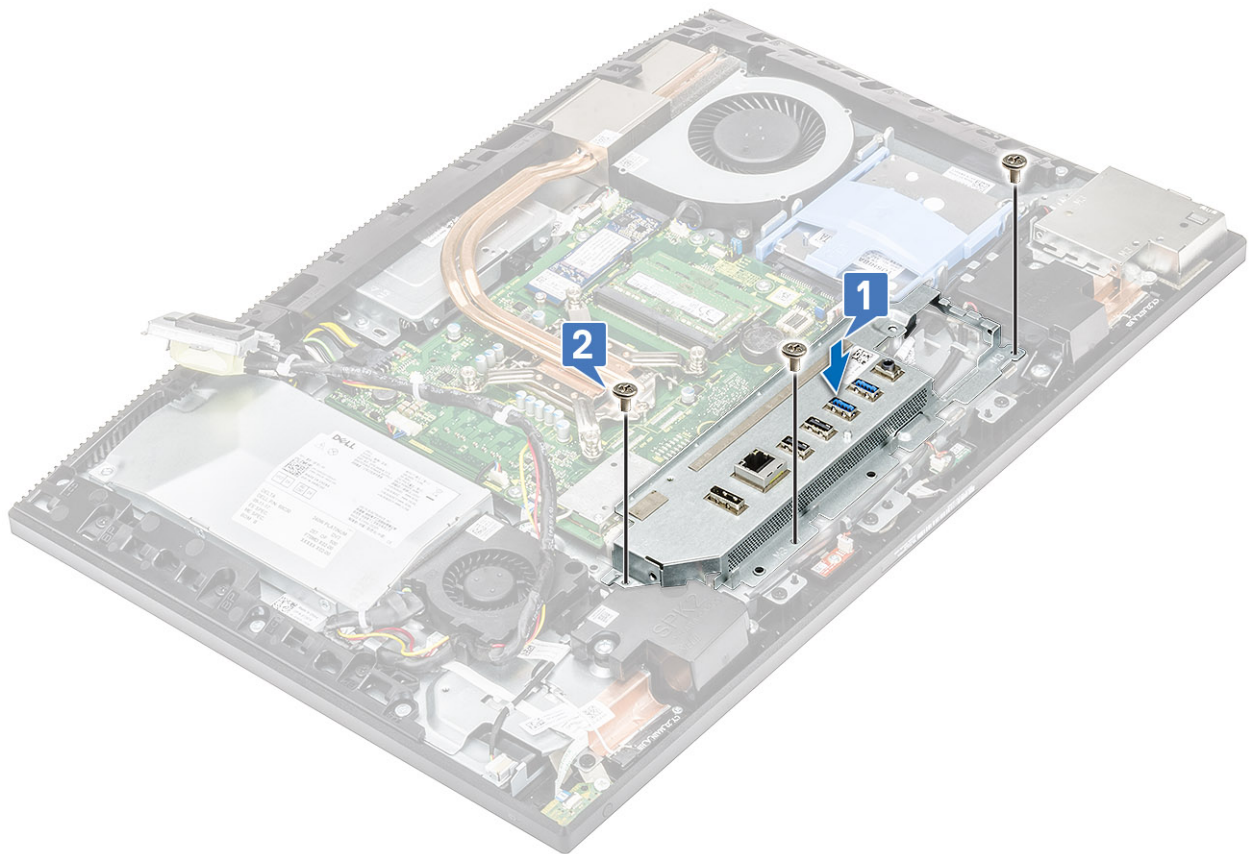


5. To remove the Input and Output (I/O) bracket:
- a) Remove the three (M3x5) screws that secure the I/O bracket to the display assembly base [1].
  - b) Lift the I/O bracket off the display assembly base [2].



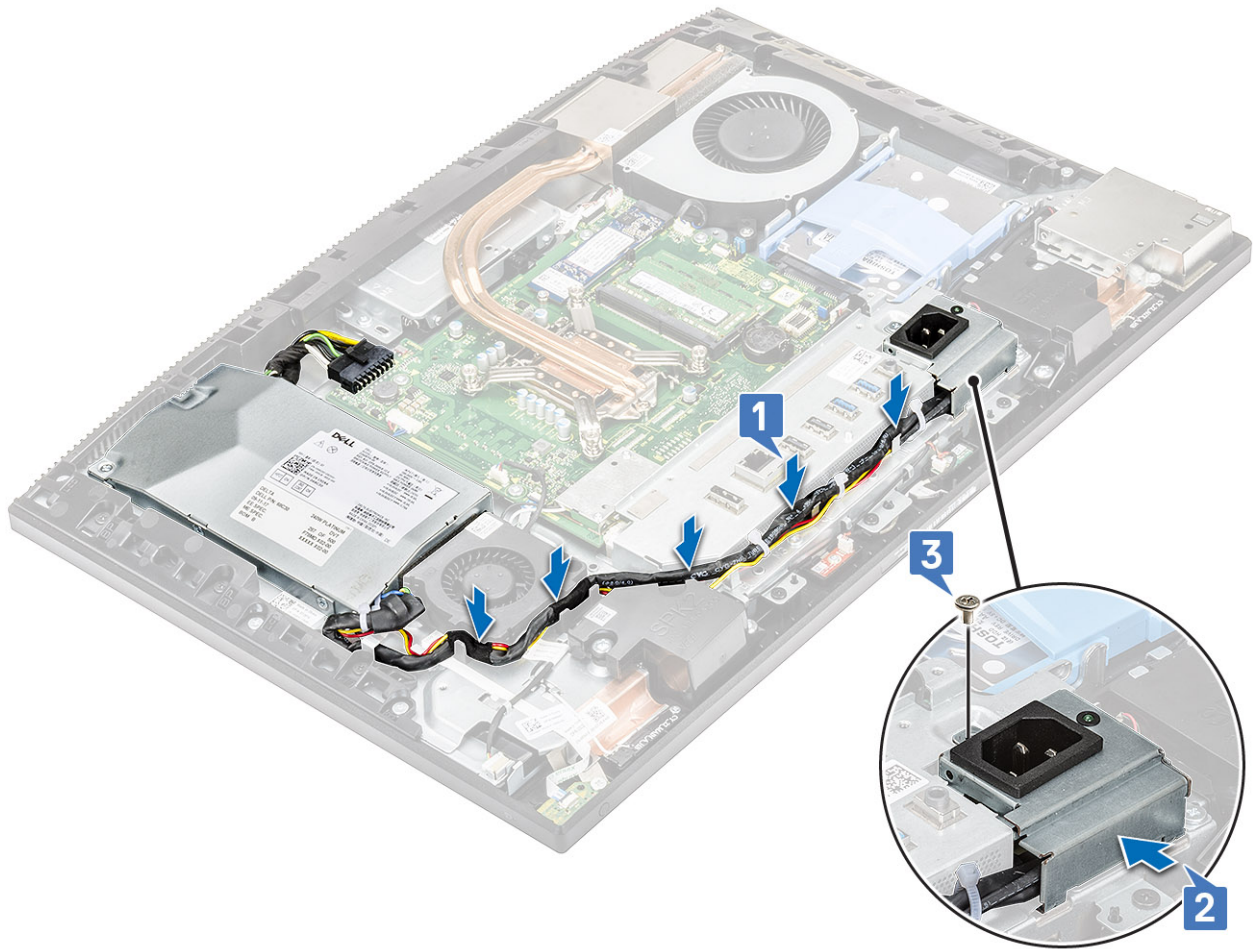
## Installing the Input and Output bracket

1. To install the Input and Output bracket (I/O) bracket:
  - a) Align the slots on the Input and Output bracket (I/O) bracket with the ports on the system board [1].
  - b) Replace the three screws (M3x5) that secure the I/O bracket to the display assembly base [2].



**2.** To install the PSU cable:

- a) Route back the power supply cables through the retention clips in the chassis [1].
- b) Slide and replace the power supply socket on the chassis [2].
- c) Replace the single (M3x5) screw securing the power supply socket to the I/O bracket [3].



3. Install the following components:
  - a) Base cover
  - b) System board shield
  - c) Back cover
  - d) Stand
4. Follow the procedure in [After working inside your computer](#).

## System board

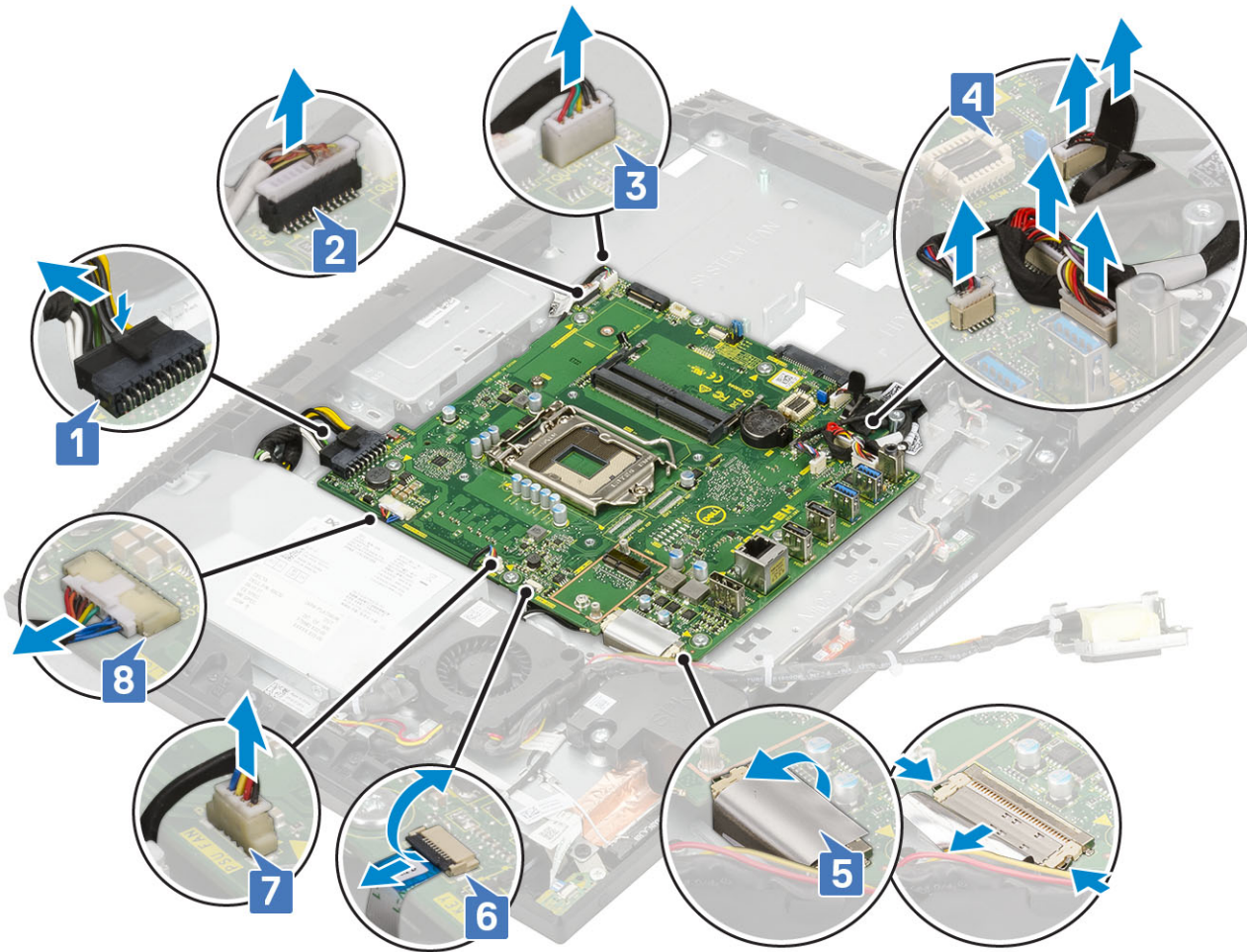
### Removing the system board

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) Hard drive
  - d) Memory
  - e) System board shield
  - f) Intel Optane
  - g) SSD
  - h) WLAN card
  - i) System fan
  - j) Heat sink
  - k) Processor

- l) Base cover
- m) I/O bracket.

3. Disconnect the following cables from the system board:

- Power supply unit cable [1]
- Camera cable [2]
- Touch cable [3]
- SIO\_power,SIO\_signal, UAJ, INT\_speaker,DMIC cables [4]
- LVDC cable [5]
- Power button board cable [6]
- PSU fan cable [7]
- Back light cable [8]



- 4. Remove the eight screws (M3x5) that secure the system board to the display assembly base [1].
- 5. Lift the system board off the display assembly base [2].



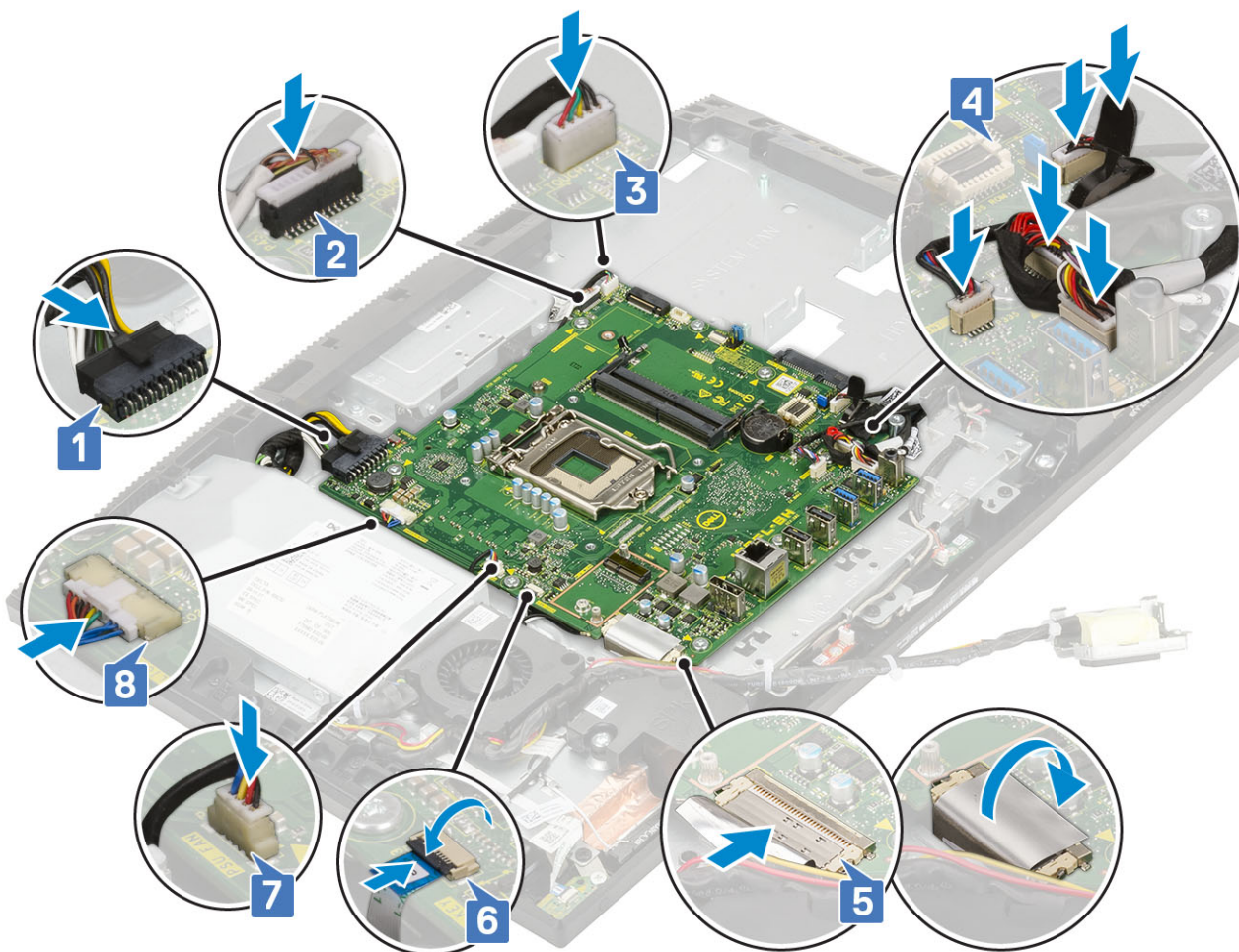
## Installing the system board

1. Align the screw slots on the system board with the screw slots on the display assembly base [1].
2. Replace the eight screws (M3x5) that secure the system board to the display assembly base [2].



**3.** Connect the following cables to the system board:

- Power supply unit cable [1]
- Camera cable [2]
- Touch cable [3]
- SIO\_power,SIO\_signal, UAJ, INT\_speaker,DMIC cables [4]
- LVDC cable [5]
- Power button board cable [6]
- PSU fan cable [7]
- Back light cable [8]



4. Install the following components:

- a) I/O bracket
- b) Base cover
- c) Processor
- d) Heat sink
- e) System fan
- f) WLAN card
- g) SSD
- h) Intel Optane
- i) System board shield
- j) Memory
- k) Hard drive
- l) Back cover
- m) Stand

5. Follow the procedure in [After working inside your computer](#)

## Speakers

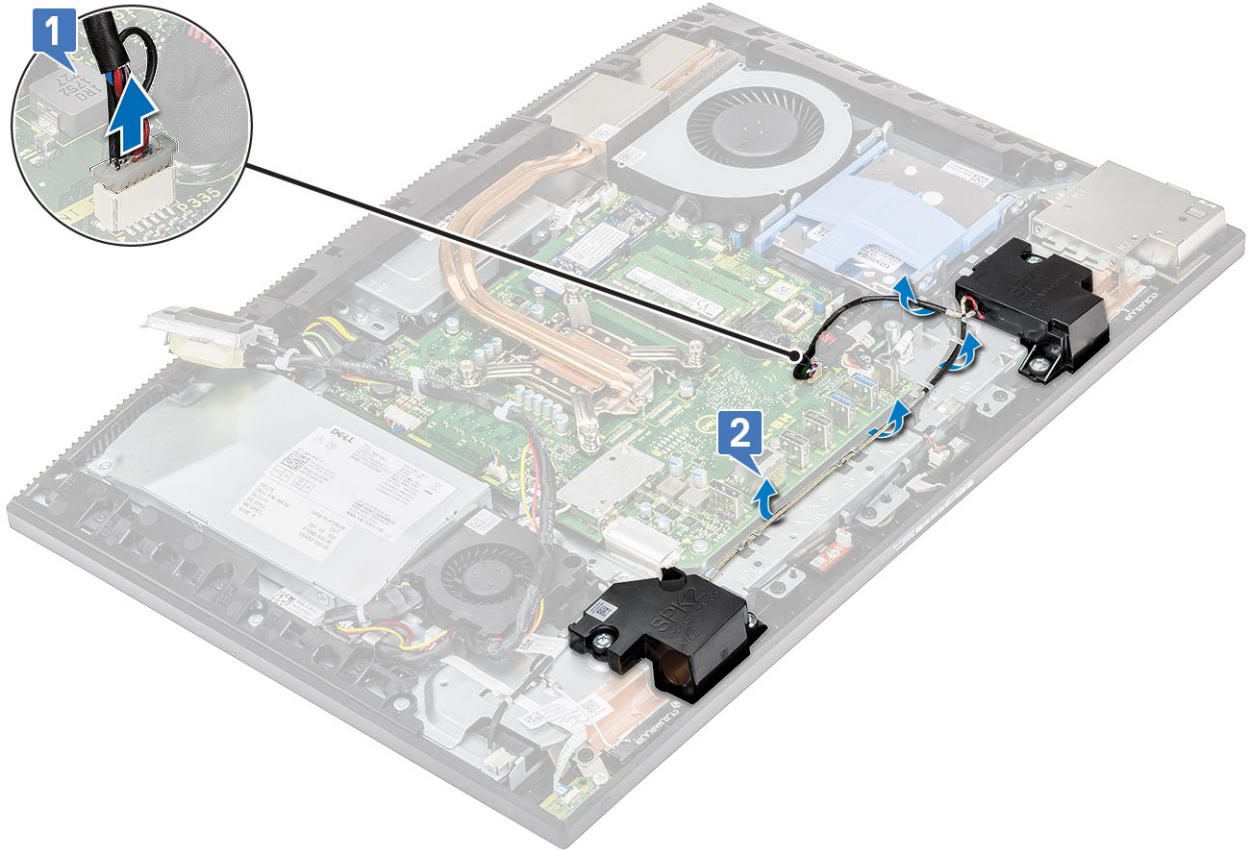
### Removing the speakers

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover

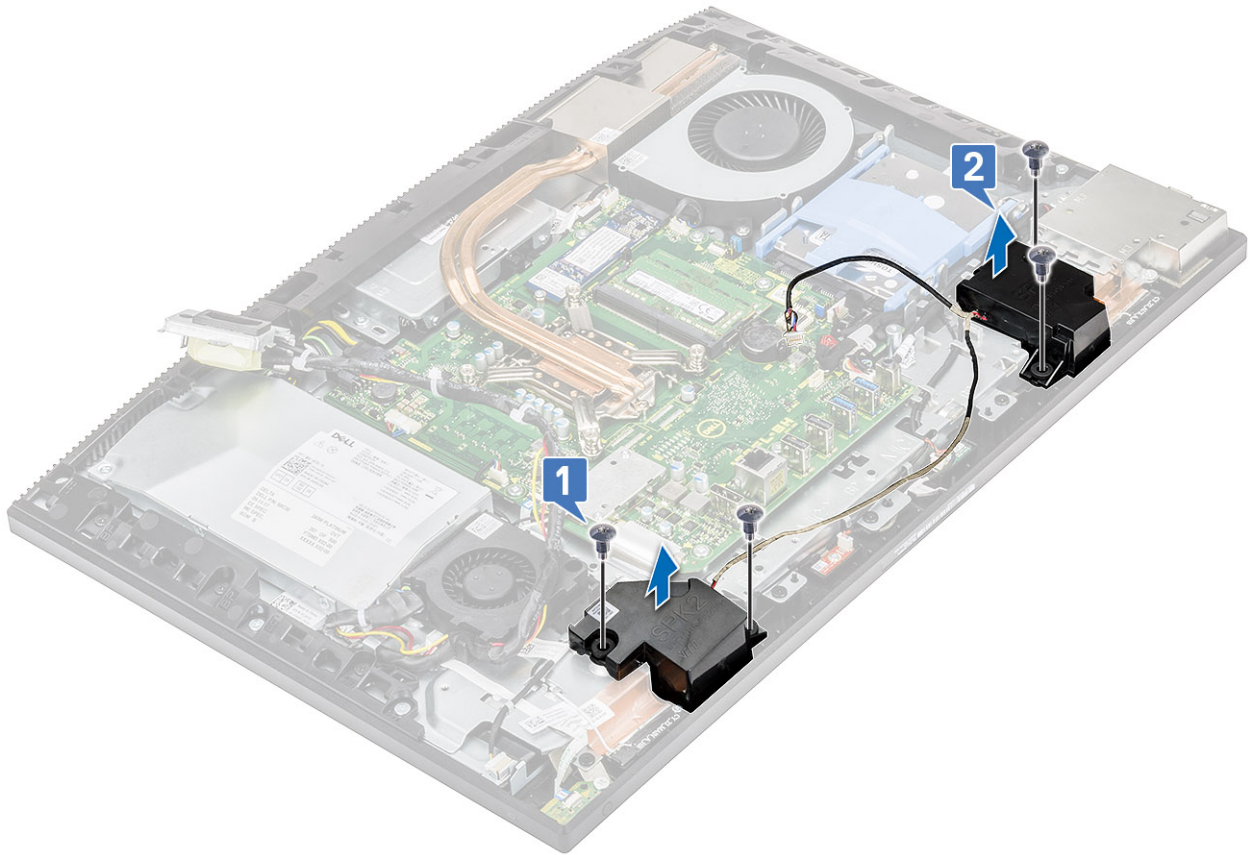
- c) System board shield
- d) Base cover
- e) I/O bracket

3. To disconnect the speakers:

- a) Disconnect the speaker cable from the system board [1].
- b) Unroute the speaker cable from the routing guide on the display assembly base [2].

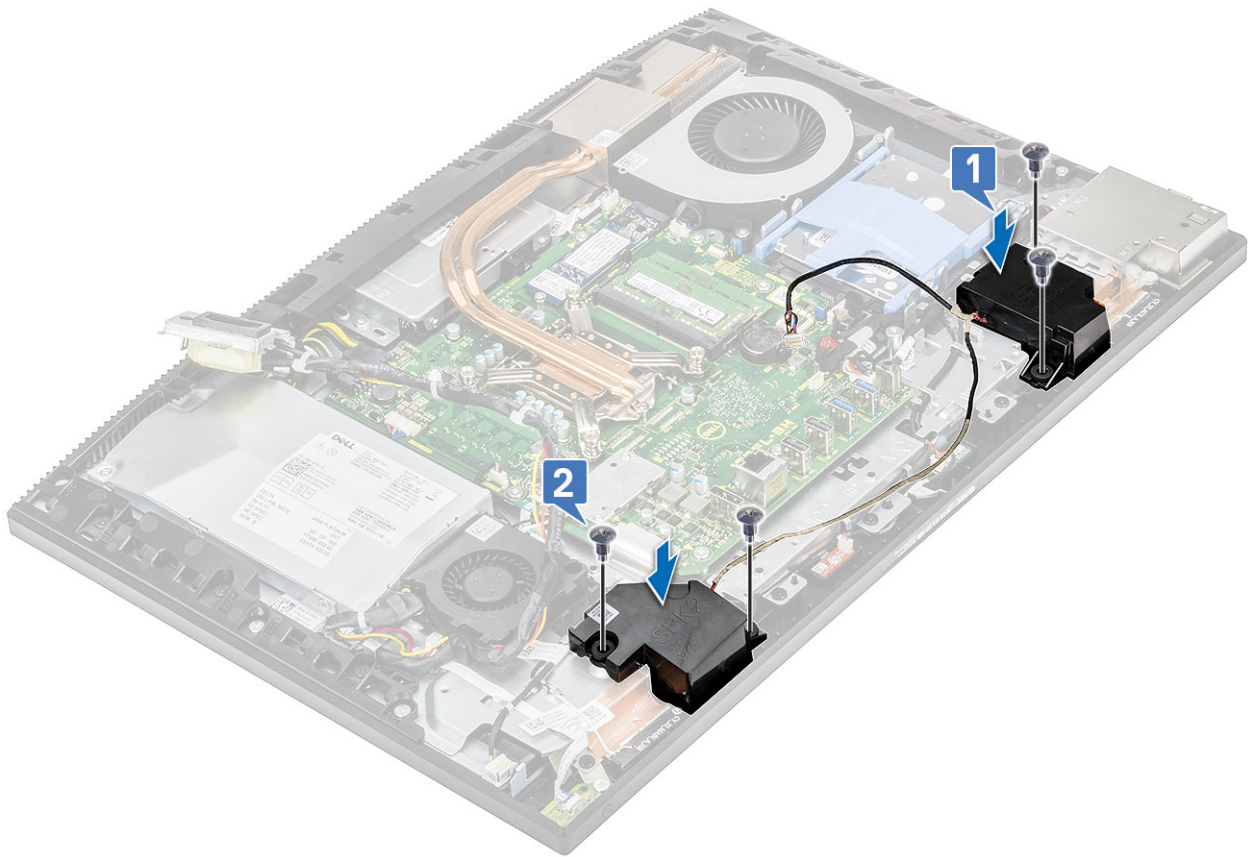


- c) Remove the four screws (M3x4+7.1) that secure the speakers to the display-assembly base [1].
- d) Lift the speakers and the speaker cable off the display assembly base [2].

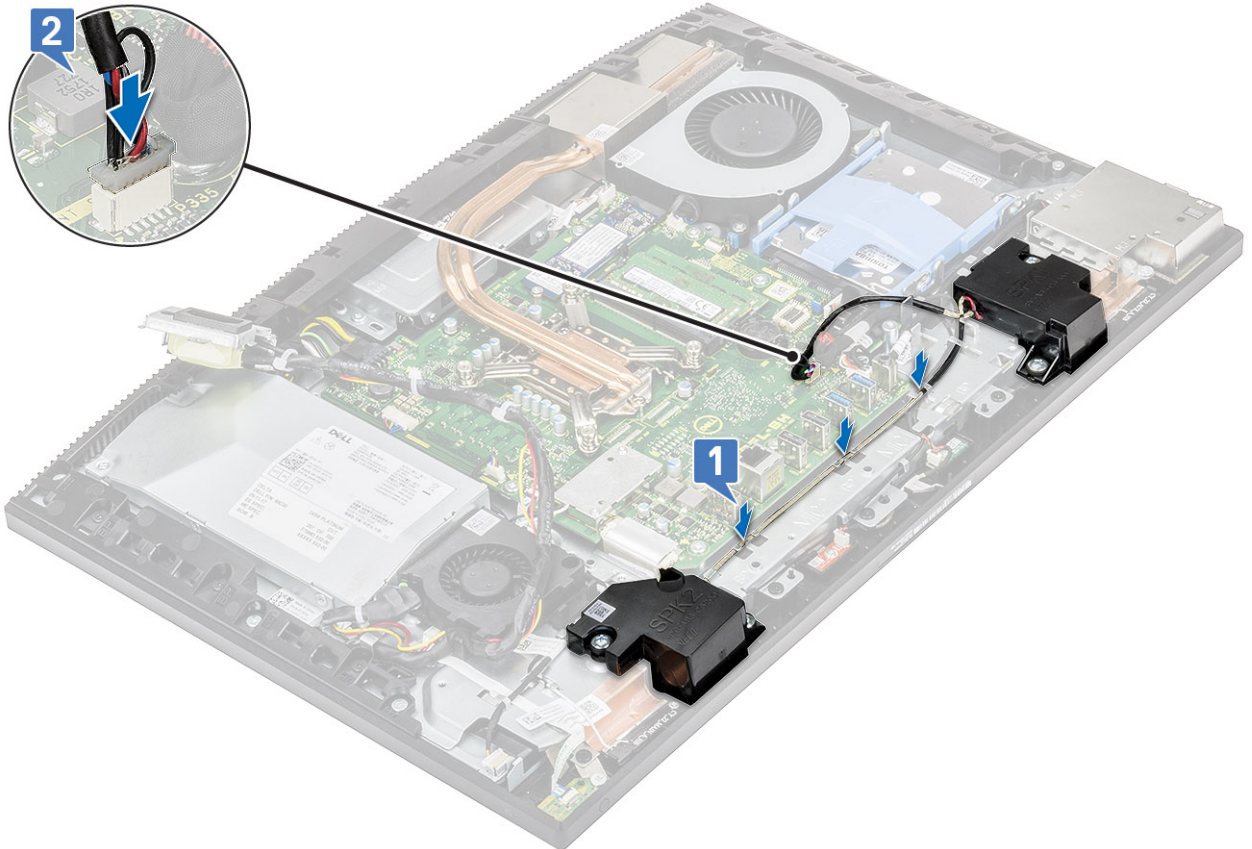


## Installing the speakers

1. To replace the speakers:
  - a) Place the speakers on the display assembly base and align the screw slots on the speakers with the screw slots on the display assembly base [1].
  - b) Replace the eight screws (M3x4+7.1) that secure the speakers to the display assembly base [2].



- c) Route the speaker cable through the routing guides on the display assembly base [1].
- d) Connect the speaker cable to the socket on the system board [2].



2. Install the following components:

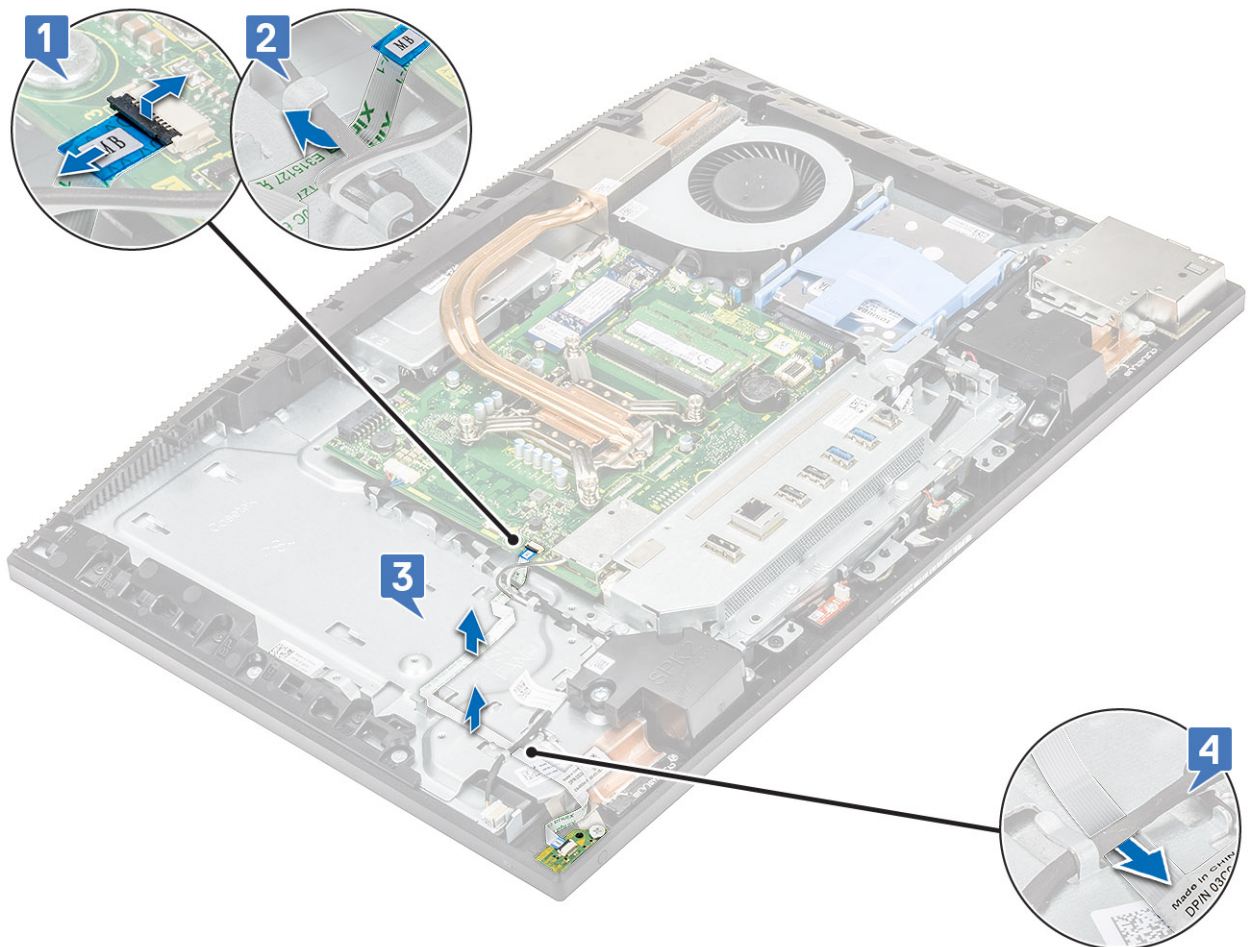
- a) I/O bracket
- b) Base cover
- c) System board shield
- d) Back cover
- e) Stand

3. Follow the procedure in [After working inside your computer.](#)

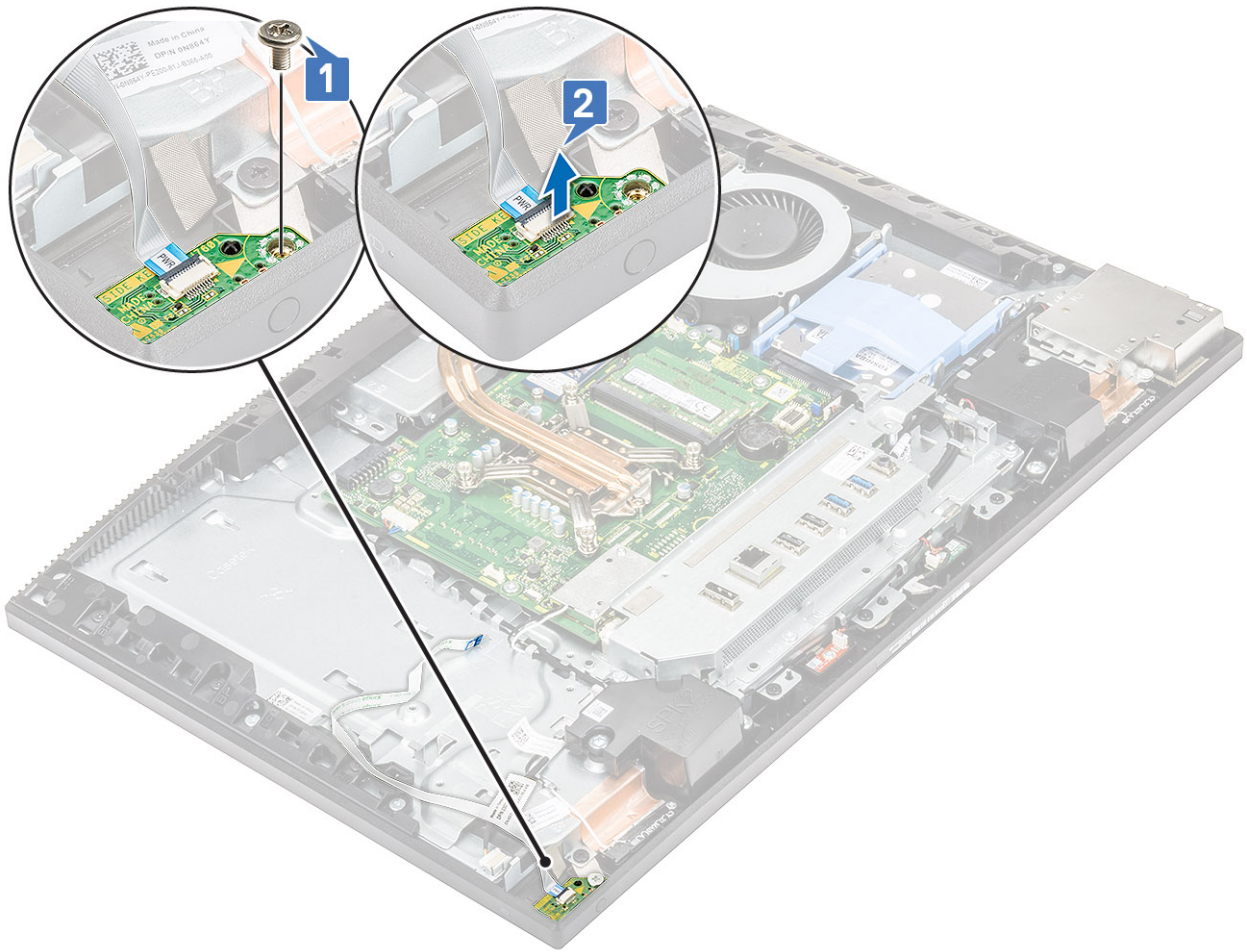
## Power button board

### Removing the power button board

1. Follow the procedure in [Before working inside your computer.](#)
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
  - d) Base cover
  - e) PSU
  - f) PSU fan
3. To remove the power button board:
  - a) Open the latch, and disconnect the power button board cable from the system board [1].
  - b) Slide the power button board cable out from under the antenna cables [2].
  - c) Peel off the power button board cable from the display assembly base [3].
  - d) Slide the power button board cable out from under the antenna cables [4].

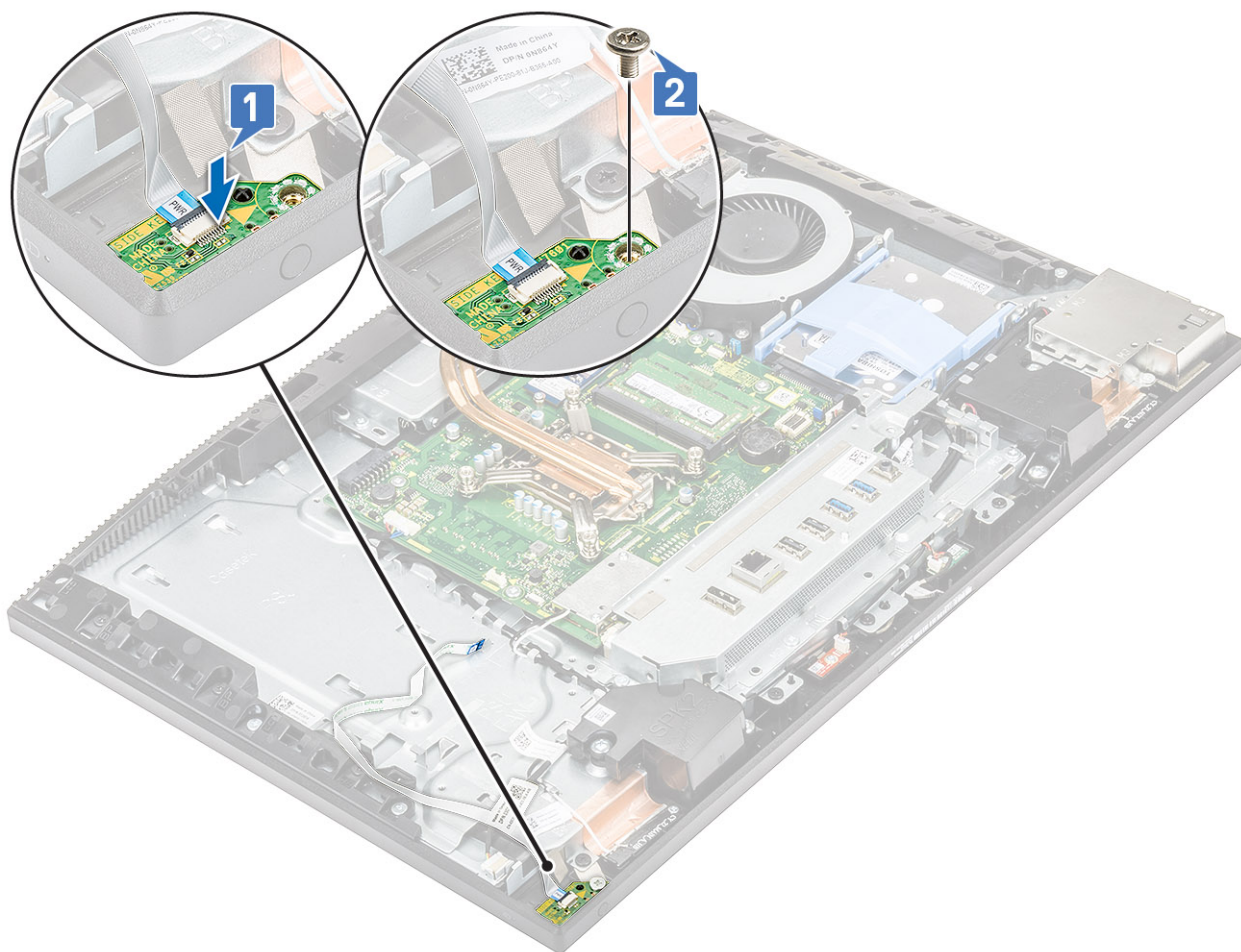


- e) Remove the single screw (M3x5) that secures the power button board to the middle frame [1].
- f) Lift the power-button board, along with its cable, off the middle frame [2].

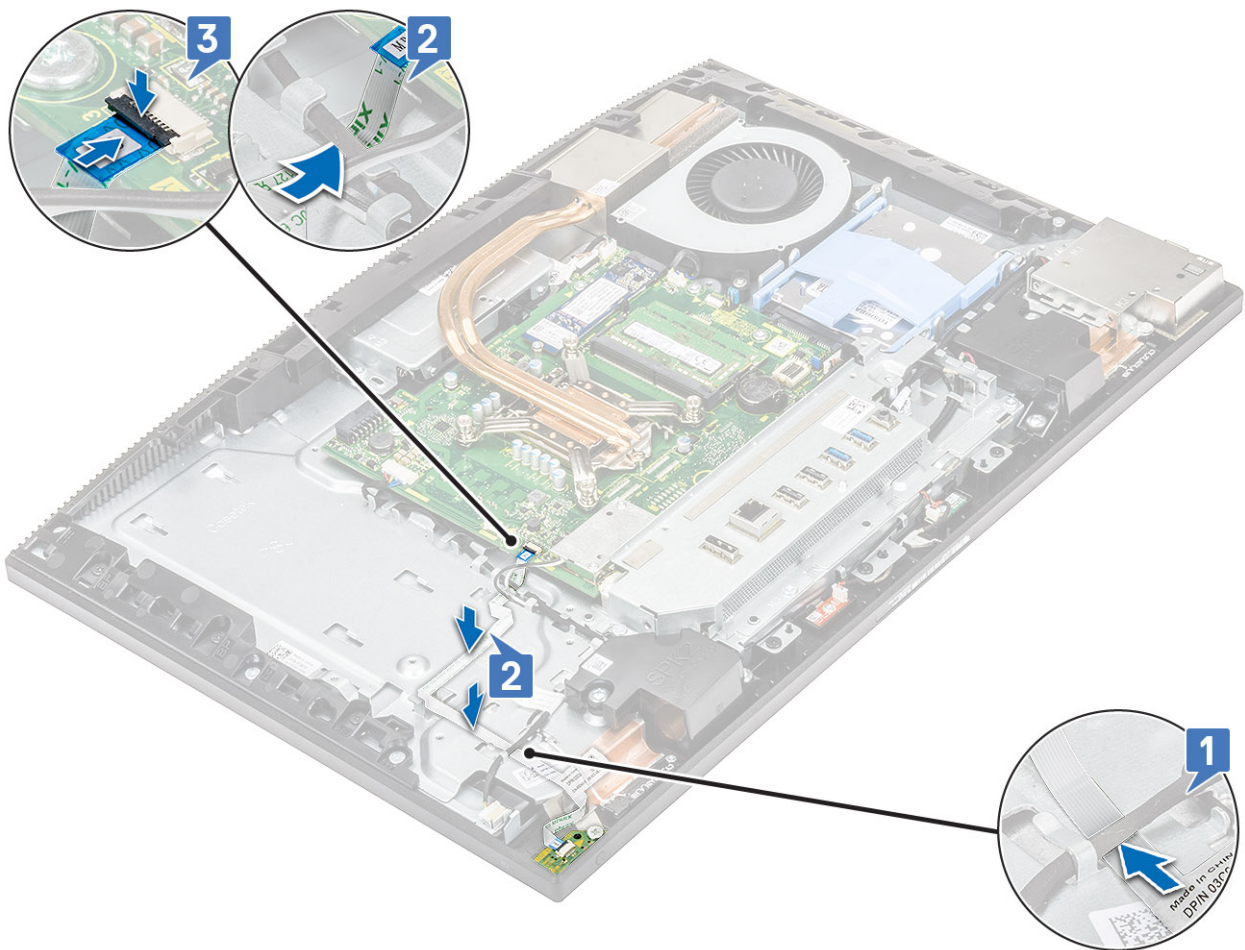


## Installing the power button board

- 1. To install the speakers:
  - a) Using the alignment post, place the power button board into its slot on the middle frame [1].
  - b) Replace the single screw (M3x5) that secures the power button board to the middle frame [2].



- c) Slide the power button board cable under the antenna cable [1].
- d) Slide the power button board cable under the antenna cable, then adhere the power button board cable to the display assembly base [2].
- e) Slide the power button board cable into the socket on the system board and close the latch to secure the cable [3].

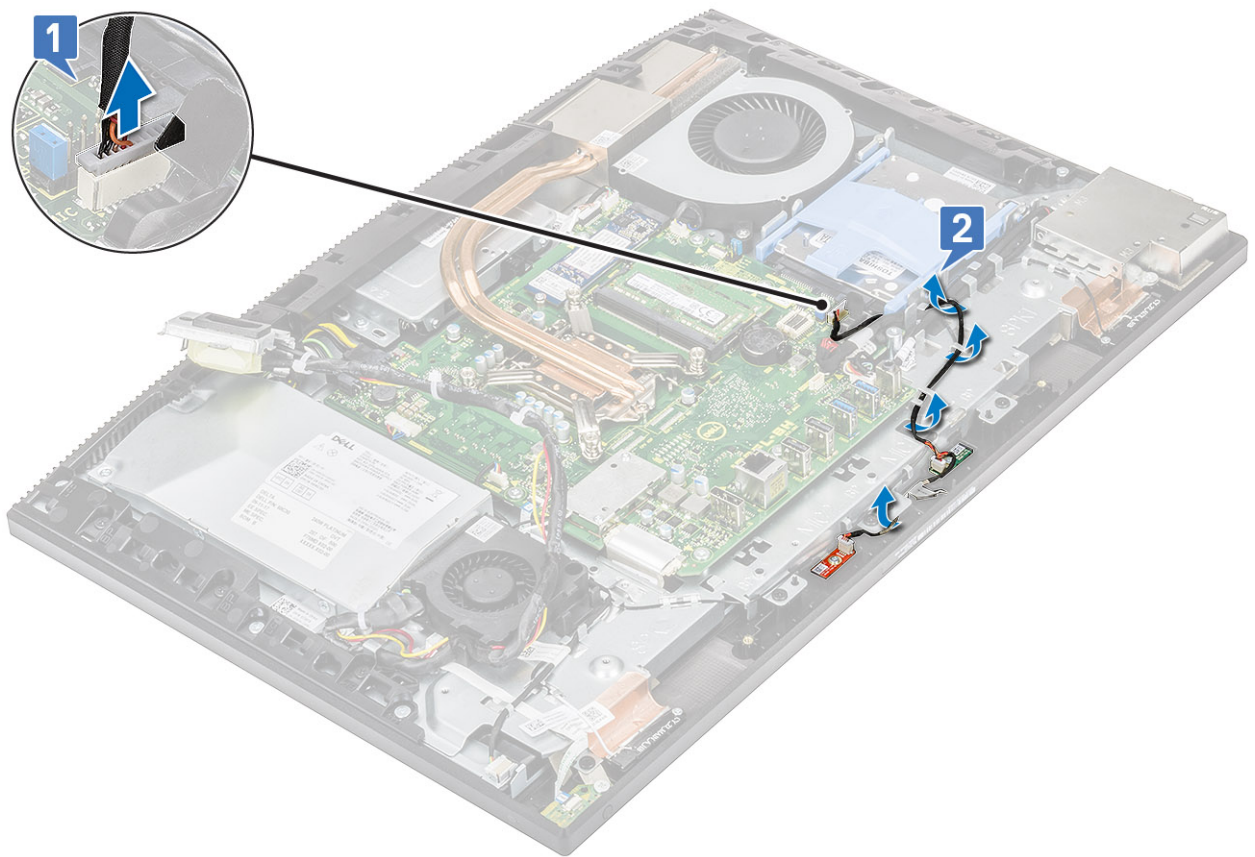


2. Install the following components:
  - a) PSU fan
  - b) PSU
  - c) Base cover
  - d) System board shield
  - e) Back cover
  - f) Stand
3. Follow the procedure in [After working inside your computer](#).

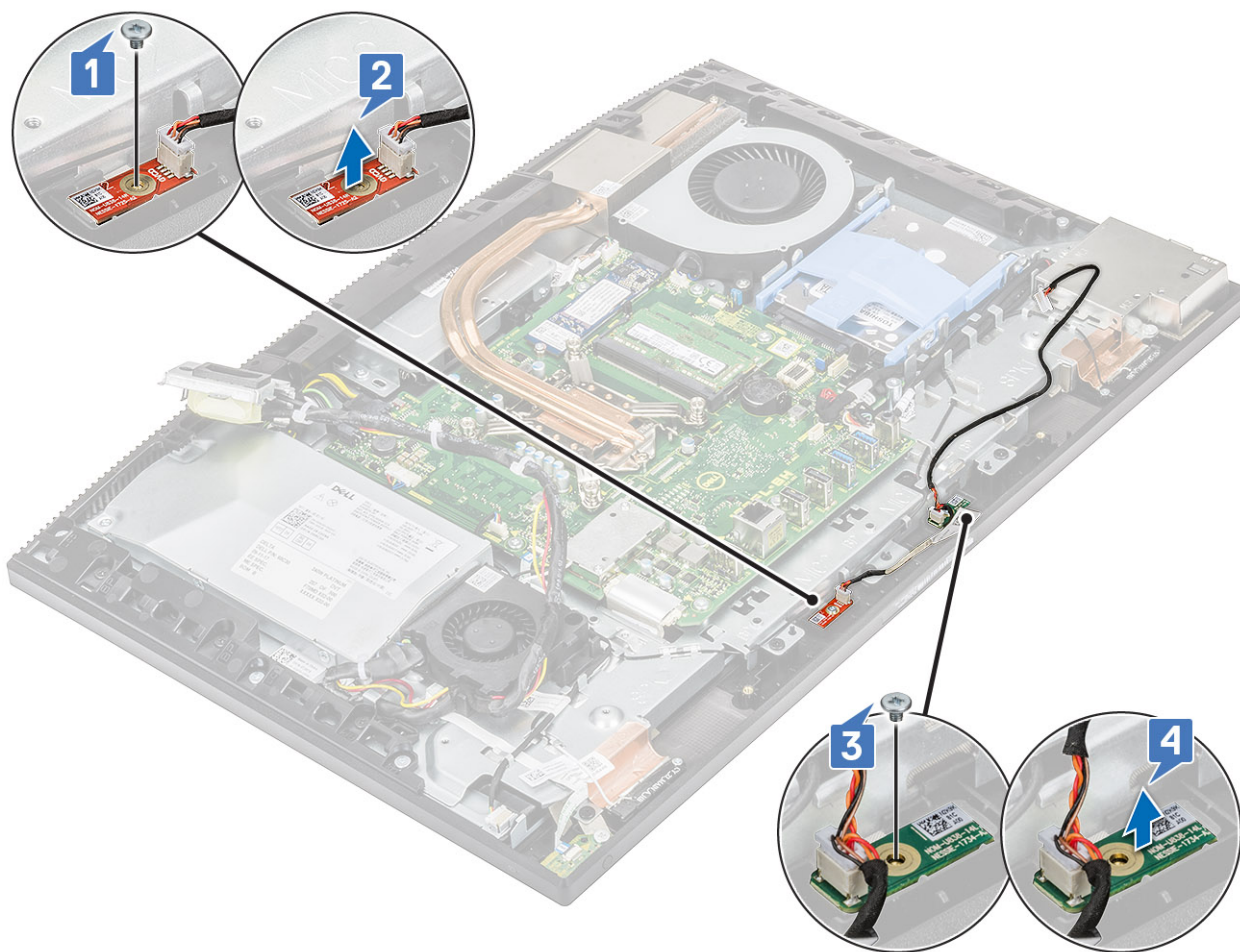
## Microphones

### Removing the microphones

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
  - d) Base cover
  - e) I/O bracket
  - f) Speakers
3. To remove the microphone and cable:
  - a) Disconnect the microphone module cable from the system board [1].
  - b) Unroute the microphone module cable from the routing guides on the display assembly base [2].



- c) Remove the two screws (M2x2.5) that secure the microphone modules to the middle frame [1,3].
- d) Lift the microphone modules off the slots on the middle frame [2,4].



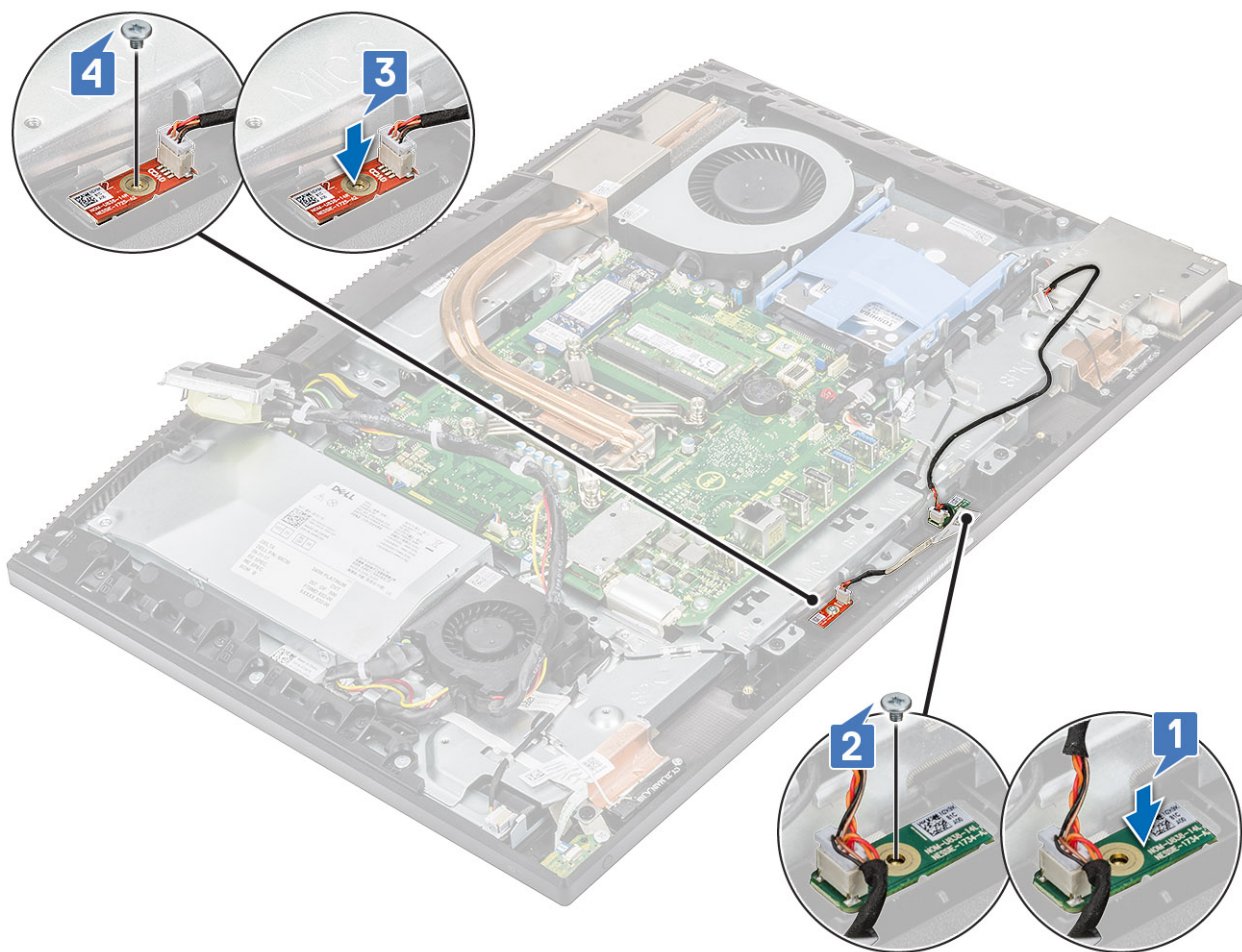
## Installing the microphones

1. To install the microphone and cable:

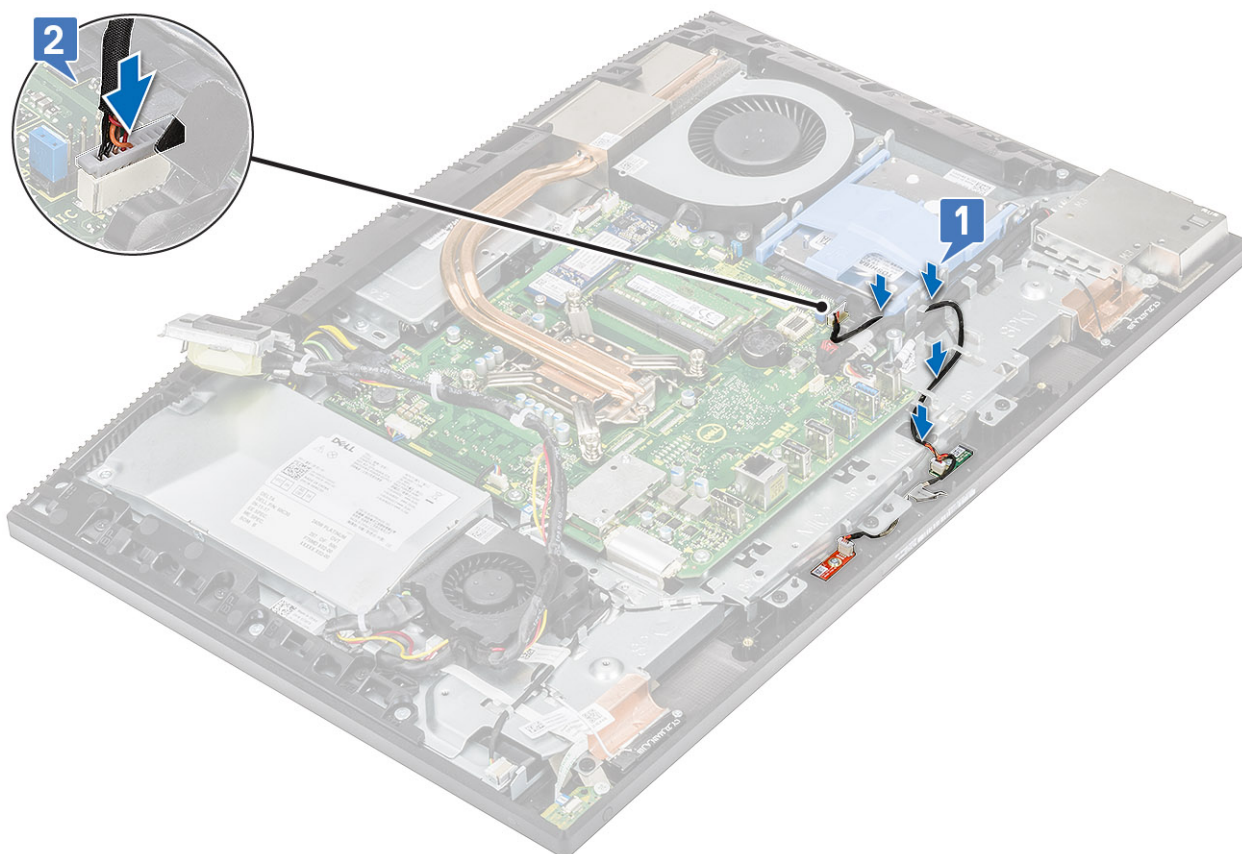
a) Align and place the microphone modules to the slots on the middle frame [1,3].

**i** **NOTE: Match the numbers on the microphone modules to the numbers on the middle frame while placing the microphone modules on the middle frame.**

b) Replace the two screws (M2x2.5) that secure the microphone modules to the middle frame [4,2].



- c) Route the microphone module cable through the routing guides on the display assembly base [1].
- d) Connect the microphones module cable to the socket on the system board [2].



2. Install the following components:
  - a) Speakers
  - b) I/O bracket
  - c) Base cover
  - d) System board shield
  - e) Back cover
  - f) Stand
3. Follow the procedure in [After working inside your computer](#).

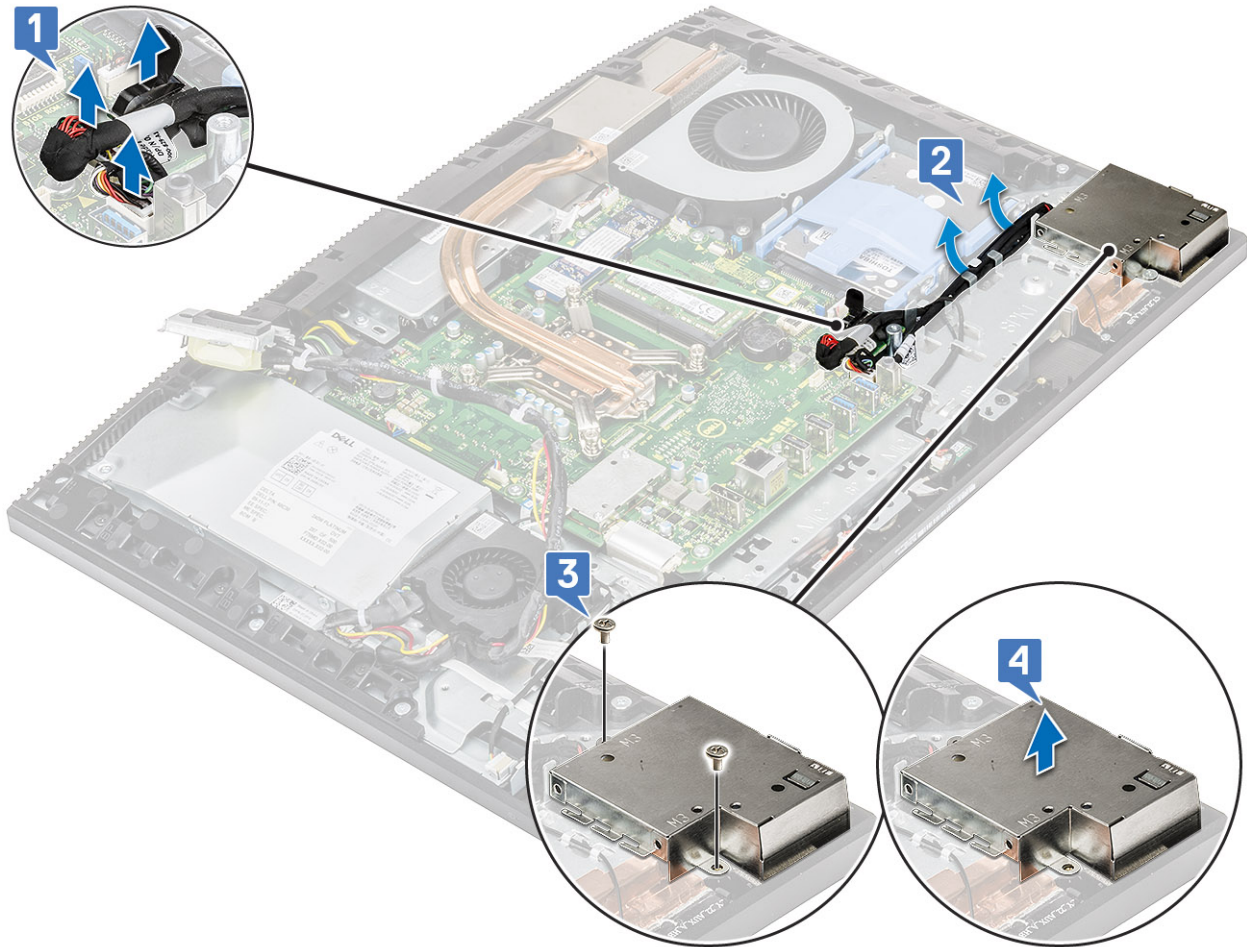
## Input and Output board

### Removing the Input and Output board

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
  - d) Base cover
  - e) I/O bracket
  - f) Speakers
3. To remove the Input and Output board (I/O) board shield:
  - a) Disconnect the I/O board cable, I/O board power cable, and headset port cable from the system board [1].
 

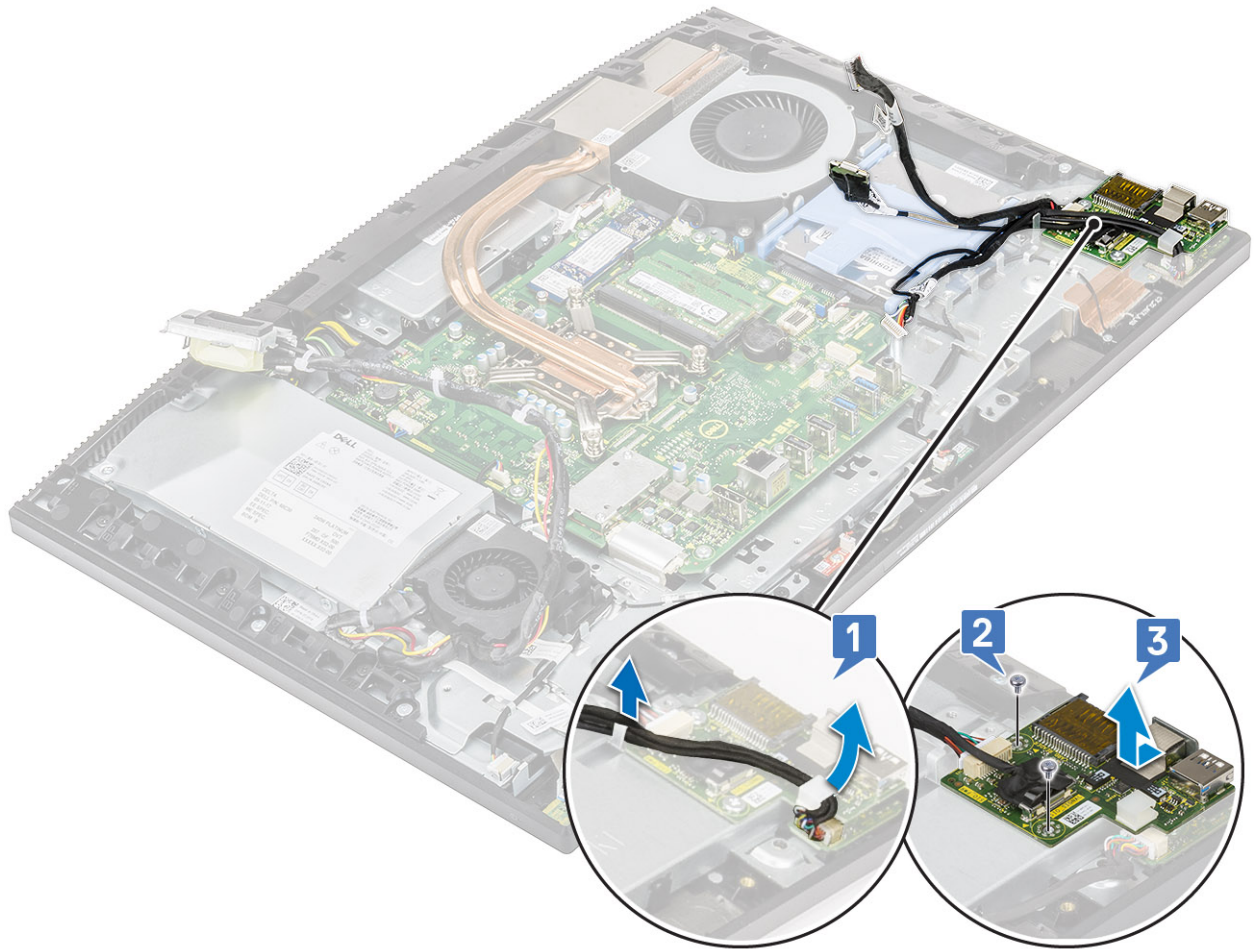
**i** **NOTE:** Use the pull tab to disconnect the I/O board cable from the system board.
  - b) Remove the I/O board cable, I/O-board power cable, and headset port cable from the routing guides on the display assembly base [2].
  - c) Remove the two screws (M3x5) securing the I/O board shield to the display assembly base [3].

d) Lift the I/O board shield from the display assembly base [4].



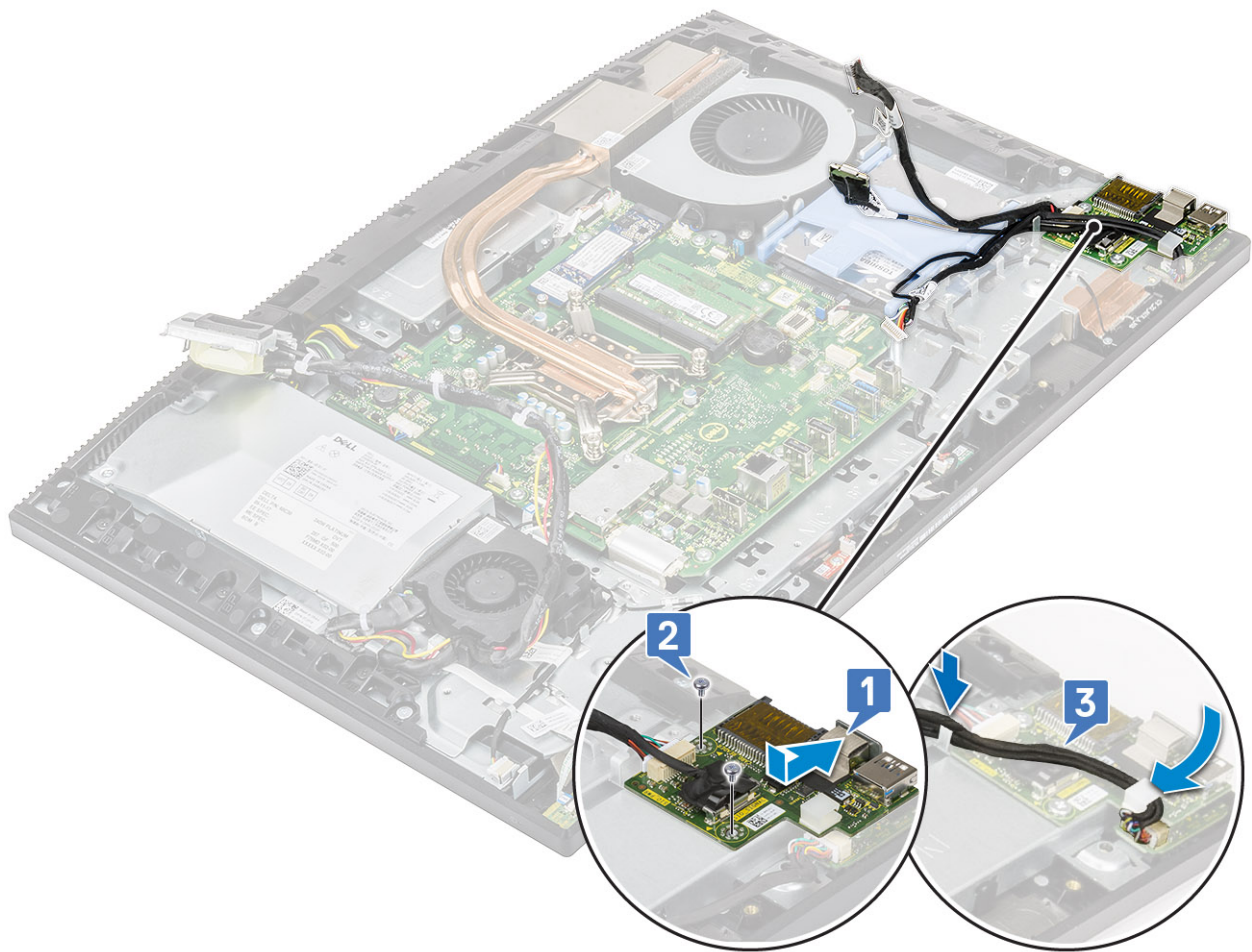
4. To remove the I/O board:

- a) Remove the headset port cable from the routing guide on the I/O board [1].
- b) Remove the two screws (M3x5) that secure the I/O board to the display assembly base [2].
- c) Lift the I/O board with its cables from the display assembly base [3].



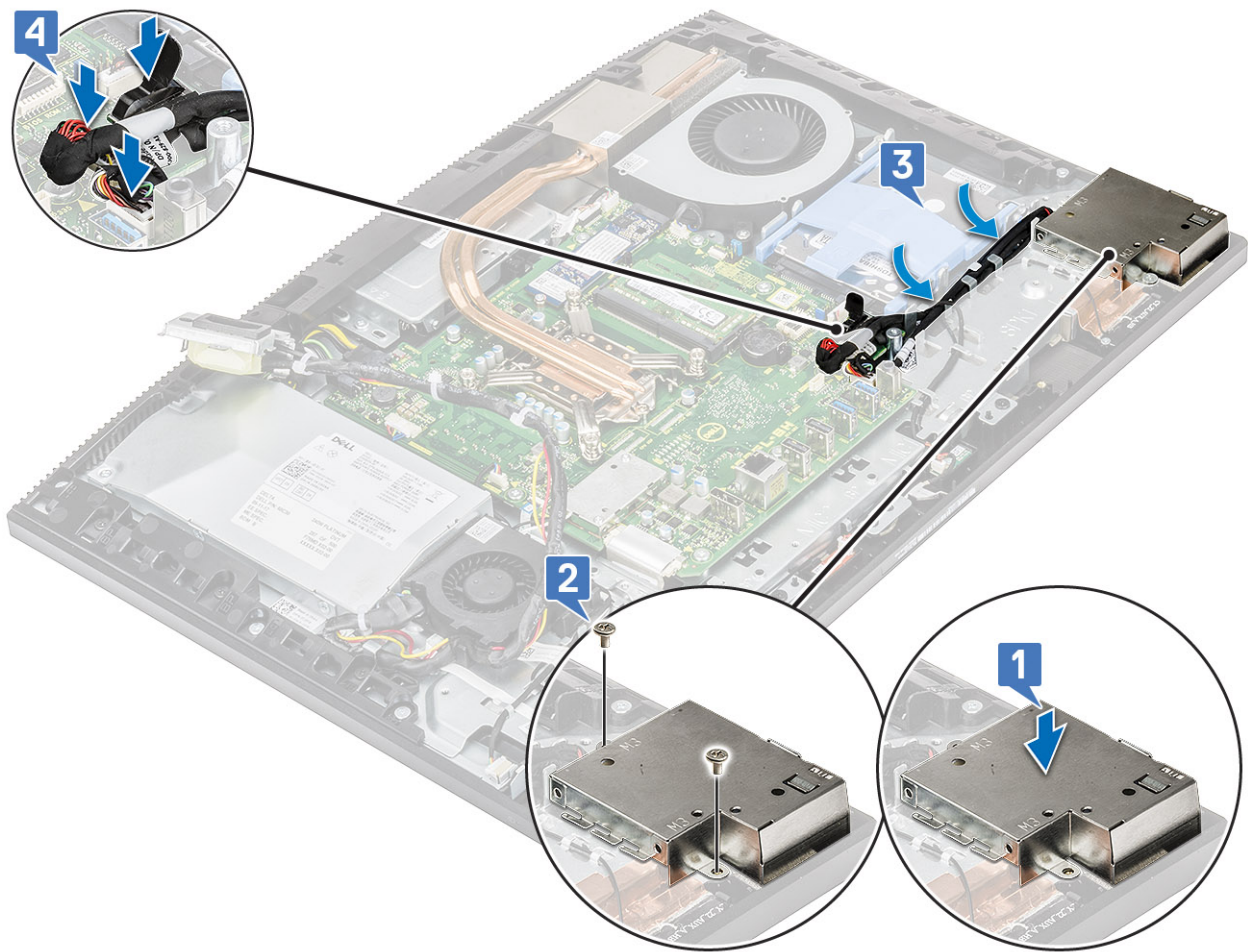
## Installing the input and output board

1. To replace the I/O board:
  - a) Place and align the Input and Output board (I/O) board onto the display assembly base [1].
  - b) Replace the two screws (M3x5) that secure the I/O board to the display assembly base [2].
  - c) Route the headset port cable through the routing guide on the I/O board [3].



2. To replace the I/O board shield:

- a) Place and align the screw slots on the I/O board shield to the slots on the display assembly base [1].
- b) Replace the two screws (M3x5) that secure the I/O board shield to the display assembly base [2].
- c) Route the headset port cable, I/O board cable, and I/O board power cable through the routing guides on the display assembly base [3].
- d) Connect the I/O board cable, I/O board power cable, and headset port cable to the system board [4].

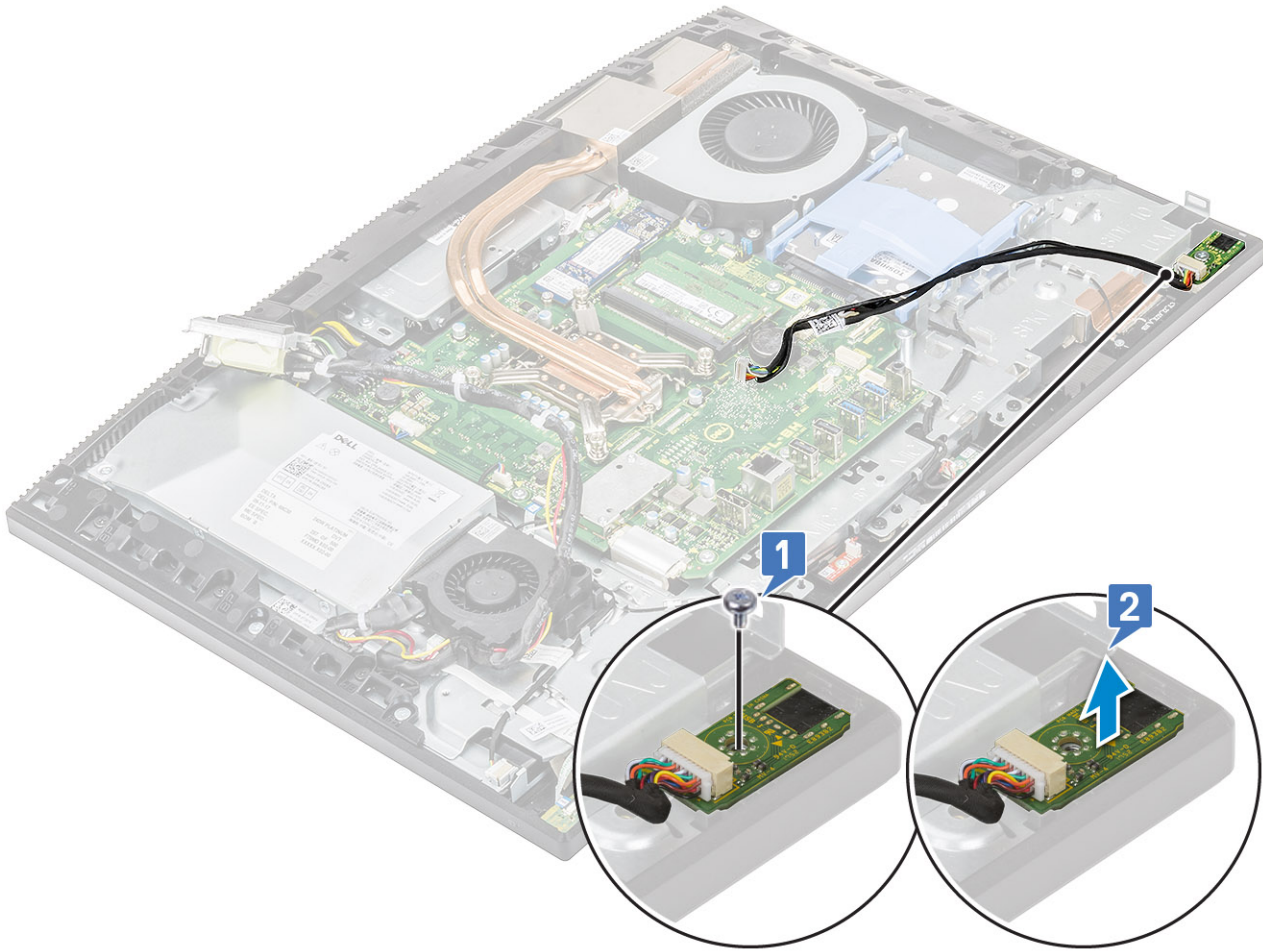


3. Install the following components:
  - a) Speakers
  - b) I/O bracket
  - c) Base cover
  - d) System board shield
  - e) Back cover
  - f) Stand
4. Follow the procedure in [After working inside your computer](#).

## Headset port

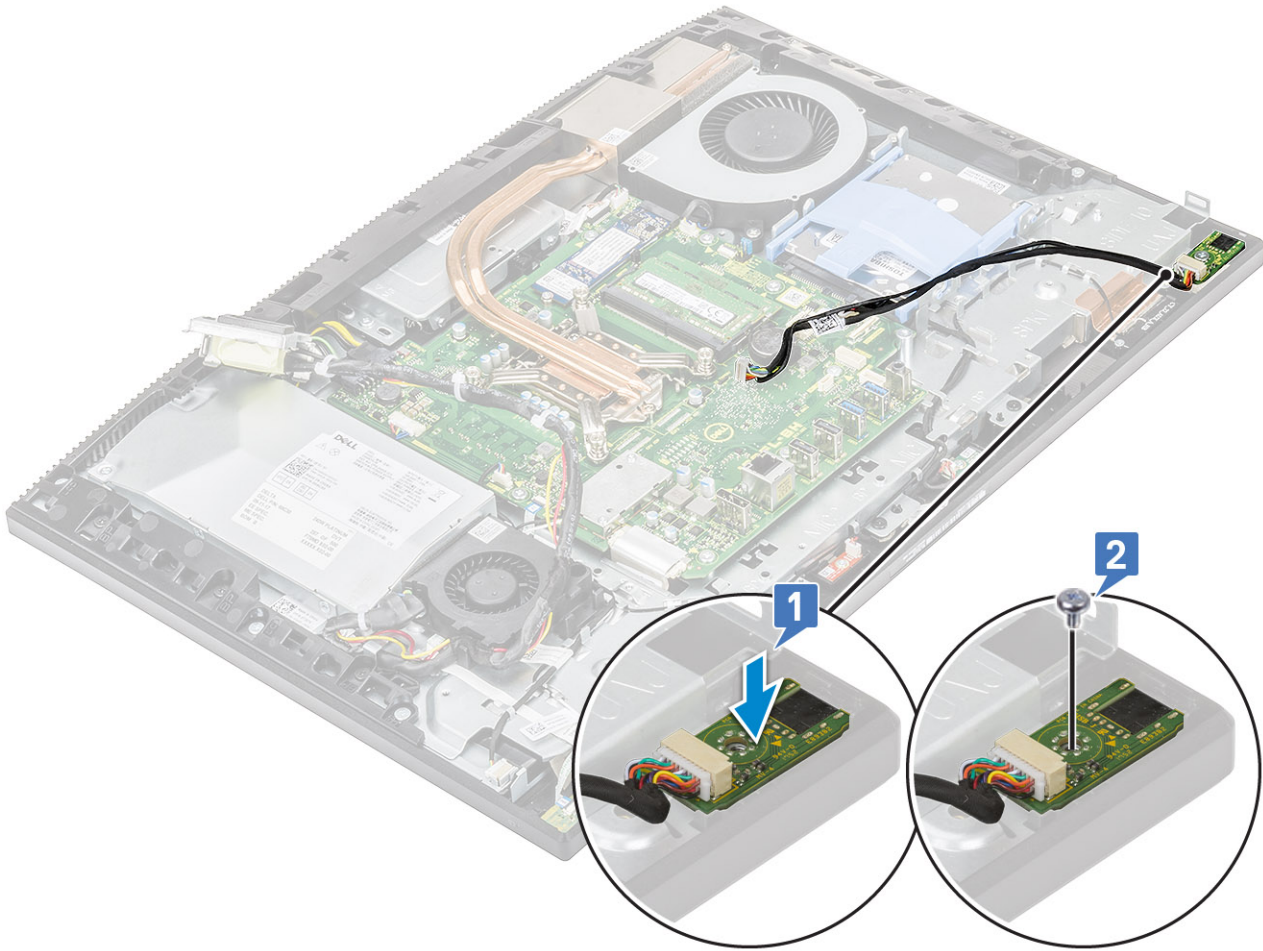
### Removing the headset port

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
  - d) Base cover
  - e) I/O bracket
  - f) Speakers
  - g) I/O board
3. Remove the single (M3x5) screw that secures the headset port to the display assembly base [1].
4. Lift the headset port with its cable from the display assembly base [2].



## Installing the headset port

1. Slide the headset port into its slot on the middle frame and align the screw slot on the headset port to the screw slot on the display assembly base [1].
2. Replace the single (M3x5) screw that secures the headset port to the display assembly base [2].



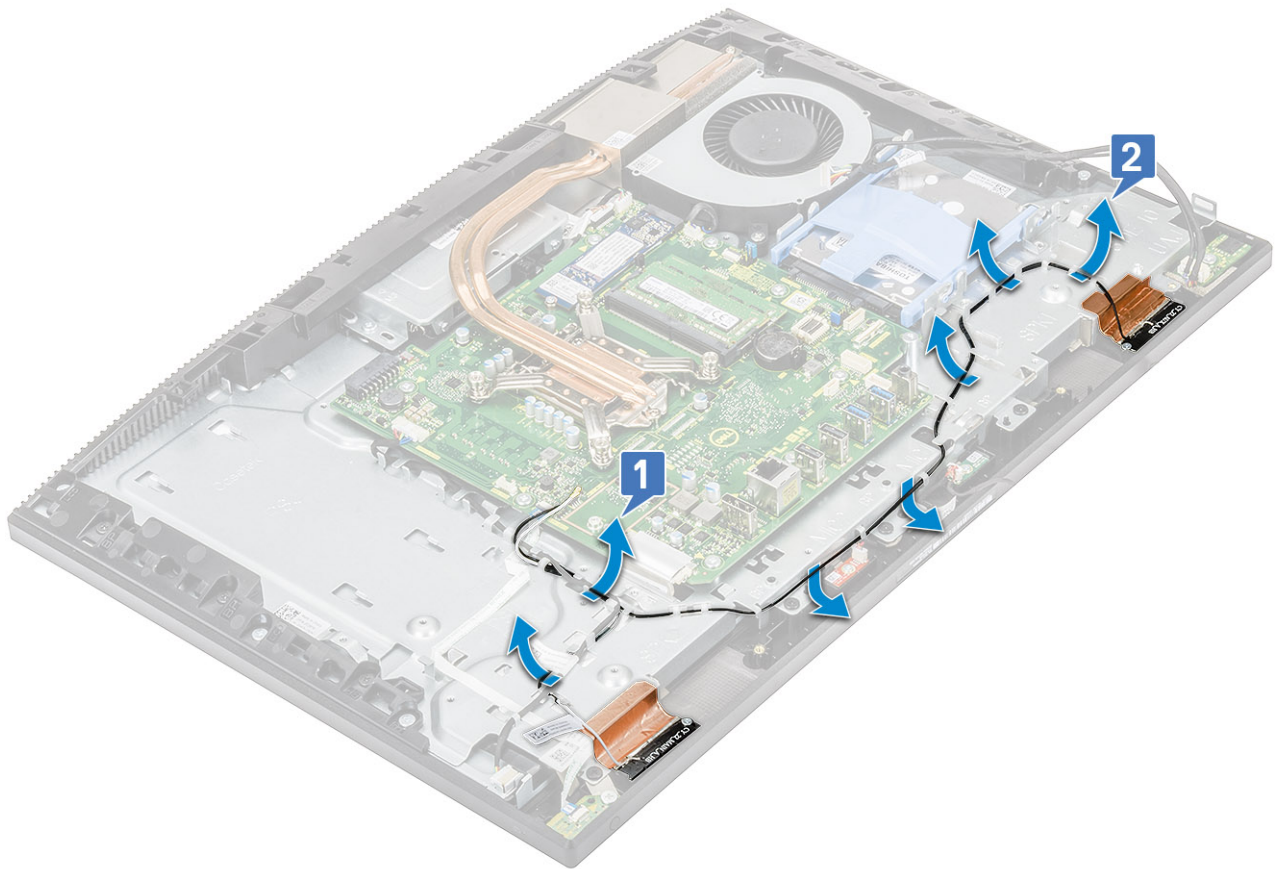
3. Install the following components:
  - a) I/O board
  - b) Speakers
  - c) I/O bracket
  - d) Base cover
  - e) System board shield
  - f) Back cover
  - g) Stand
4. Follow the procedure in [After working inside your computer](#).

## Antennas

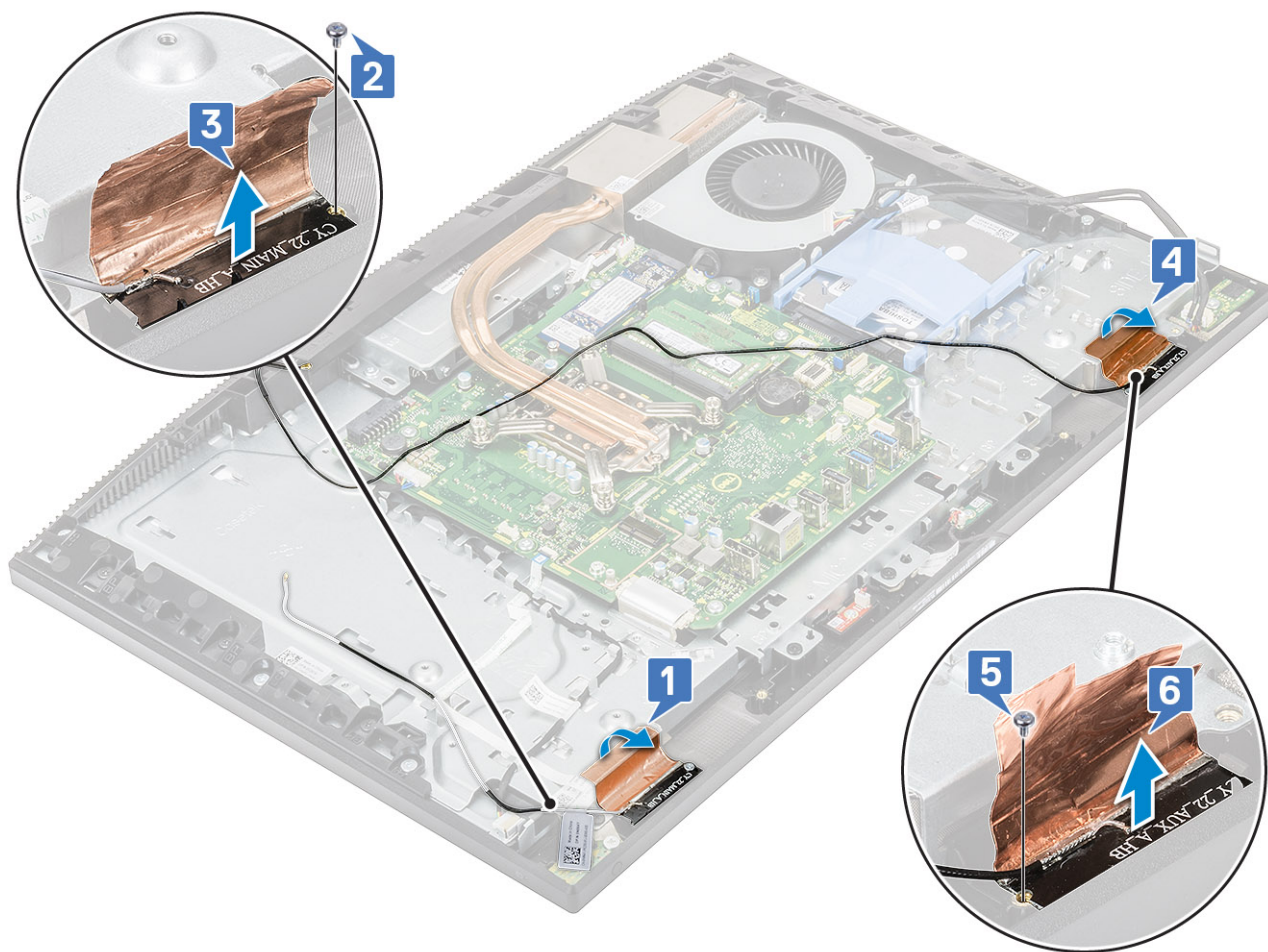
### Removing the antennas

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) System board shield
  - d) Base cover
  - e) I/O bracket
  - f) Speakers
  - g) WLAN card
  - h) I/O board

- i) PSU
  - j) PSU fan
3. To remove the antenna :
- a) Remove the antenna cables from the routing guides on the display assembly base [1,2].

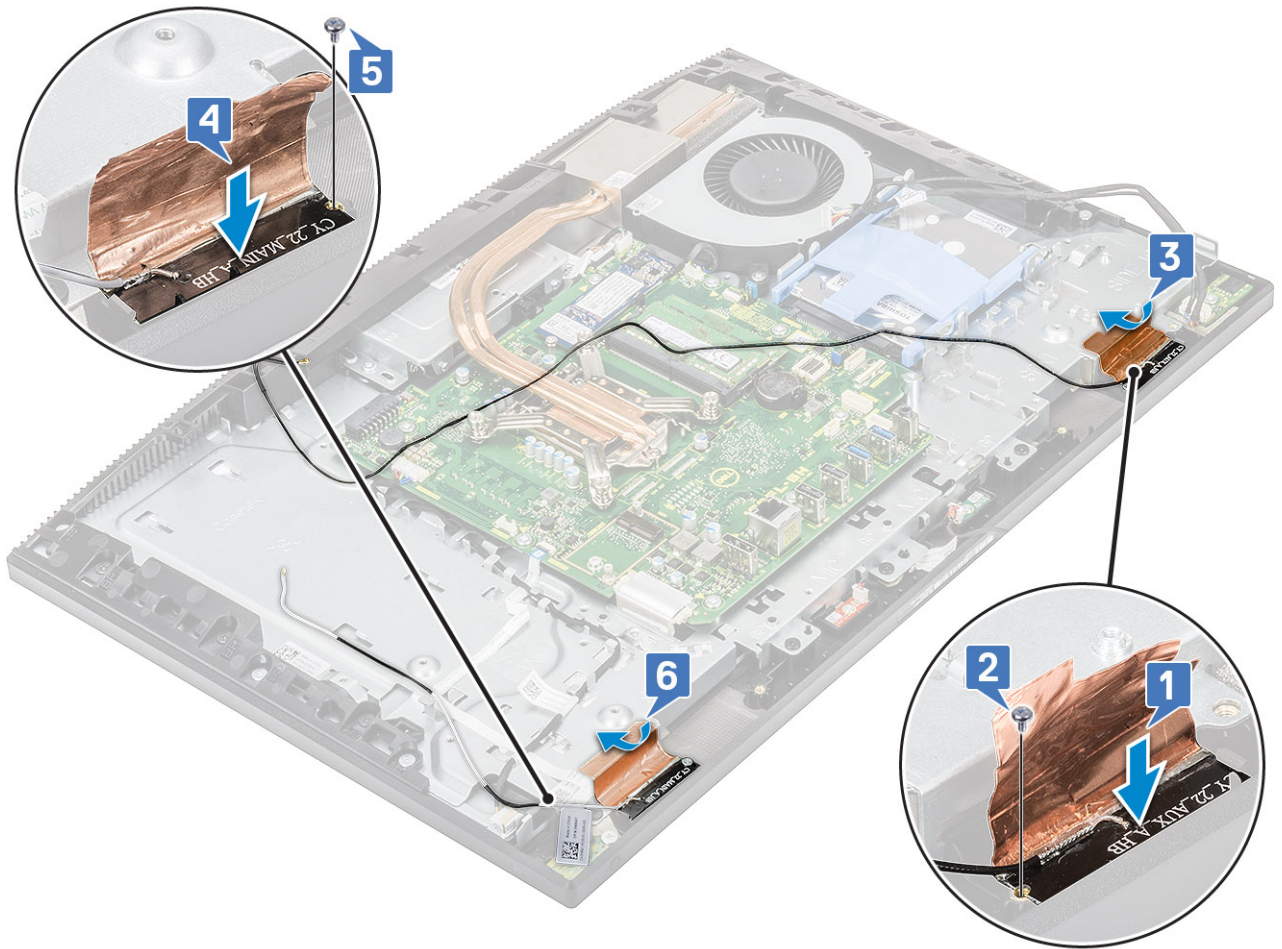


- b) Carefully peel the tape that secures the antenna cables (2) to the middle frame [1,4].
- c) Remove the two screws (M2x2.5) that secure the antenna modules (2) to the middle frame [2,5].
- d) Release the antenna modules (2) from the tabs and lift the antenna modules off the middle frame [3,6].

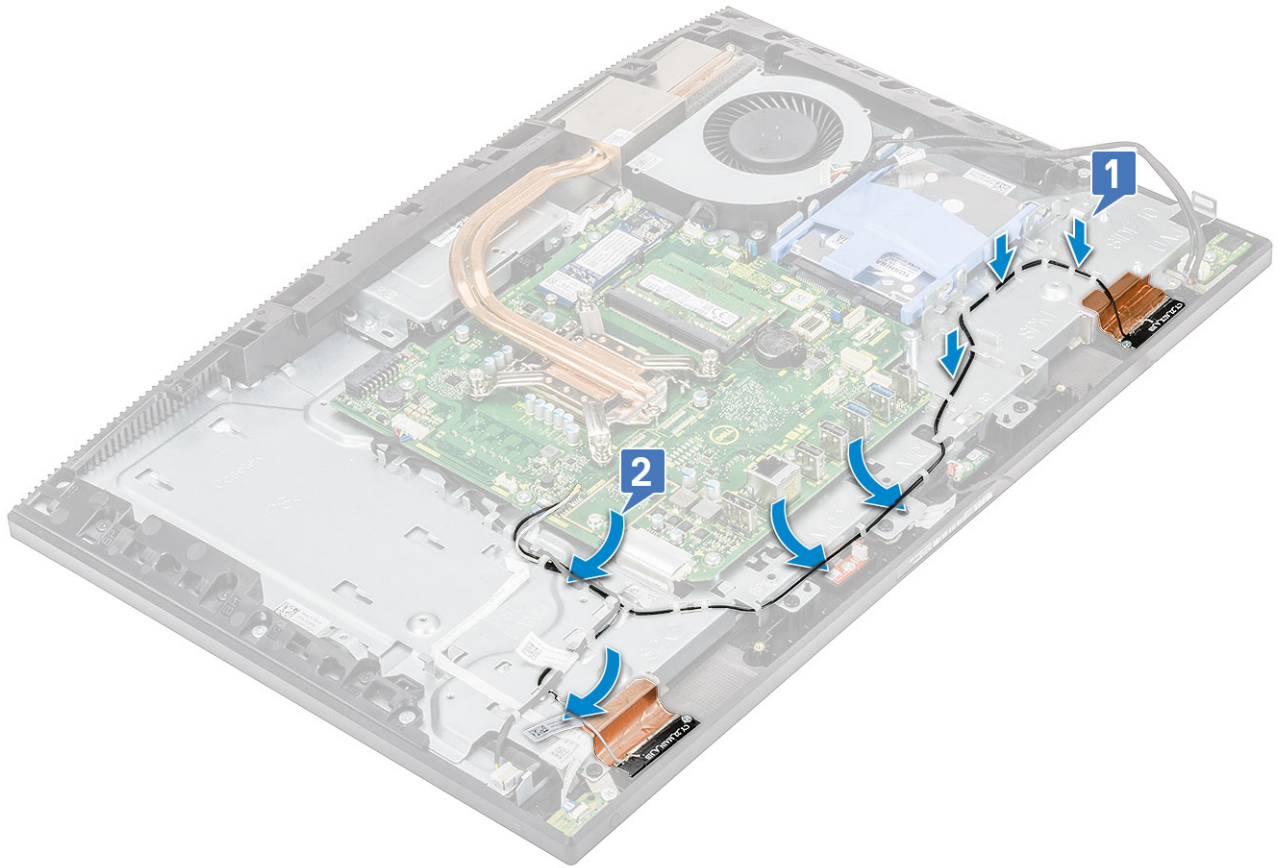


## Installing the antennas

1. To replace the antenna modules:
  - a) Align the antenna modules (2) with the slots on the middle frame [1,4].
  - b) Replace the two screws (M2x2.52) that secure the antenna modules (2) to the middle frame [2,5].
  - c) Adhere the tape that secures the antenna cables (2) to the middle frame [3,6].



d) Route the antenna cables through the routing guides on the display assembly base [1,2].



2. Install the following components:

- a) PSU fan
- b) PSU
- c) I/O board
- d) WLAN card
- e) Speakers
- f) I/O bracket
- g) Base cover
- h) System board shield
- i) Back cover
- j) Stand

3. Follow the procedure in [After working inside your computer](#).

## Display panel

### Removing the display panel

1. Follow the procedure in [Before working inside your computer](#).

2. Remove the following components:

- a) Stand
- b) Back cover
- c) System board shield
- d) Base cover
- e) I/O bracket
- f) System fan
- g) Hard drive
- h) WLAN card

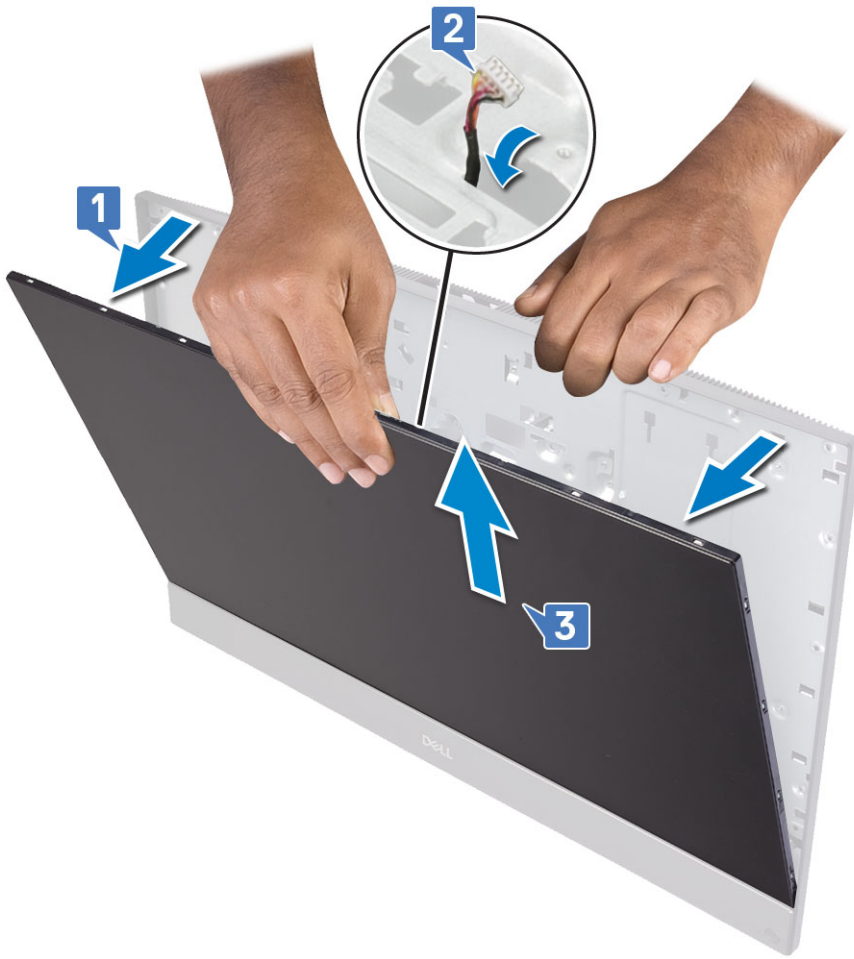
- i) System board
- j) PSU
- k) PSU fan
- l) Camera

3. Remove the display backlight cable from the routing guides on the display assembly base [1].
4. Remove the 8 screws (M3x5) that secure the middle frame and display assembly base to the display panel [2].

**NOTE:** The screws that secure the middle frame and display assembly base to the display panel are silver in color and etched with "LCD" around the screw holes.



5. Place the system in upright position, holding the display panel and display assembly base, carefully release the display panel from middle frame and display assembly base [1].
6. Slide the display backlit cable through the slot on the display assembly base [2].
7. Lift the display panel off the middle frame and display assembly base [3].



## Installing the display panel

1. Place the display assembly base in its upright position, and slide the display panel into the slot between the middle frame and the display assembly base [1].
2. Route the touchscreen cable through the routing guide on the display assembly base.
3. Push the display backlight cable through the slots on the display assembly base [2].
4. Push the display panel towards the display assembly base, closing the gap between the display panel and the middle frame [3].

**i** **NOTE:** Ensure the display cable, touchscreen cable, and display backlight cable has been fully threaded through the slots on the display assembly base before closing the gap between the display panel and the middle frame.



5. Place the display assembly base on a clean and flat surface with the display panel facing down.
6. Replace the 8 (M3x5) screws that secure the display panel to the middle frame and display assembly base 1 .
7. Route the display backlit cable through the routing guides on the display assembly base 2.

**i** **NOTE:** The screws that secure the middle frame and display assembly base to the display panel are silver in color and etched with "LCD" around the screw holes.



8. Install the following components:

- a) Camera
- b) PSU fan
- c) PSU
- d) System board
- e) WLAN card
- f) Hard drive
- g) System fan
- h) I/O bracket
- i) Base cover
- j) System board shield
- k) Back cover
- l) Stand

9. Follow the procedure in [After working inside your computer](#).

## Display cable

### Removing the display cable

- 1. Follow the procedure in [Before working inside your computer](#).
- 2. Remove the following components:
  - a) Stand
  - b) Back cover
  - c) Hard drive

- d) System board shield
- e) WLAN card
- f) System fan
- g) Camera
- h) Base cover
- i) PSU
- j) PSU fan
- k) I/O bracket
- l) System board
- m) Speakers
- n) Power button board
- o) Microphones
- p) I/O board
- q) Headset port
- r) Antennas
- s) Display panel

3. To remove the display cable:
  - a) To release the cable, press the tabs on both sides [1].
  - b) Disconnect the cable, and lift it away from the display assembly base [2].



## Installing the display cable

1. To install the display cable:
  - a) Press and hold the tabs on both sides [1].

b) Connect the cable to the display assembly base.[2].



2. Install the following components:

- a) Display panel
- b) Antennas
- c) Headset port
- d) I/O board
- e) Microphones
- f) Power button board
- g) Speakers
- h) System board
- i) I/O bracket
- j) PSU fan
- k) PSU
- l) Base cover
- m) Camera
- n) System fan
- o) WLAN card
- p) System board shield
- q) Hard drive
- r) Back cover
- s) Stand

3. Follow the procedure in [After working inside your computer](#).

## Middle frame

### Removing the middle frame

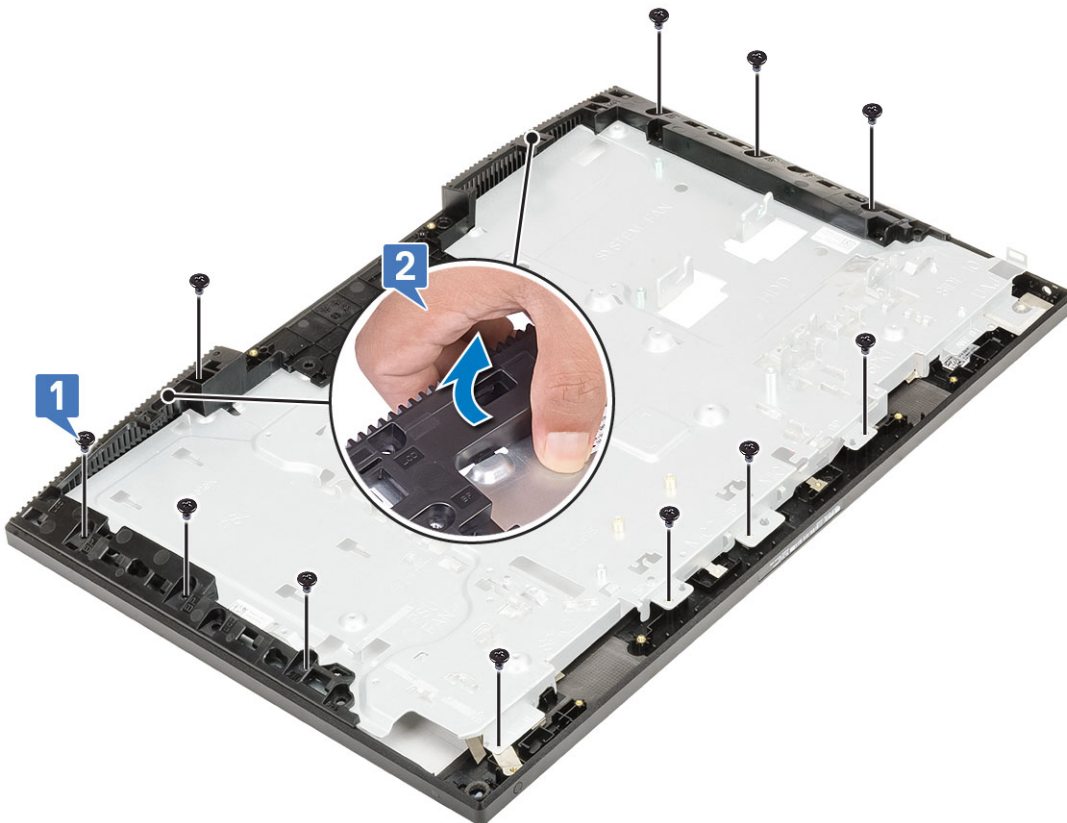
1. Follow the procedure in [Before working inside your computer](#).

2. Remove the following components:

- a) Stand
- b) Back cover
- c) Hard drive
- d) System board shield
- e) WLAN card
- f) System fan
- g) Camera
- h) Base cover
- i) PSU
- j) PSU fan
- k) I/O bracket
- l) System board
- m) Speakers
- n) Power button board
- o) Microphones
- p) I/O board
- q) Headset port
- r) Antennas
- s) Display panel

3. Remove the 11 screws (M3x5) that secure the middle frame to the display assembly base [1].

4. Slide and lift to release the tabs on the middle frame from the slots on the display assembly base [2].



5. Lift the middle frame off the display assembly base [1].

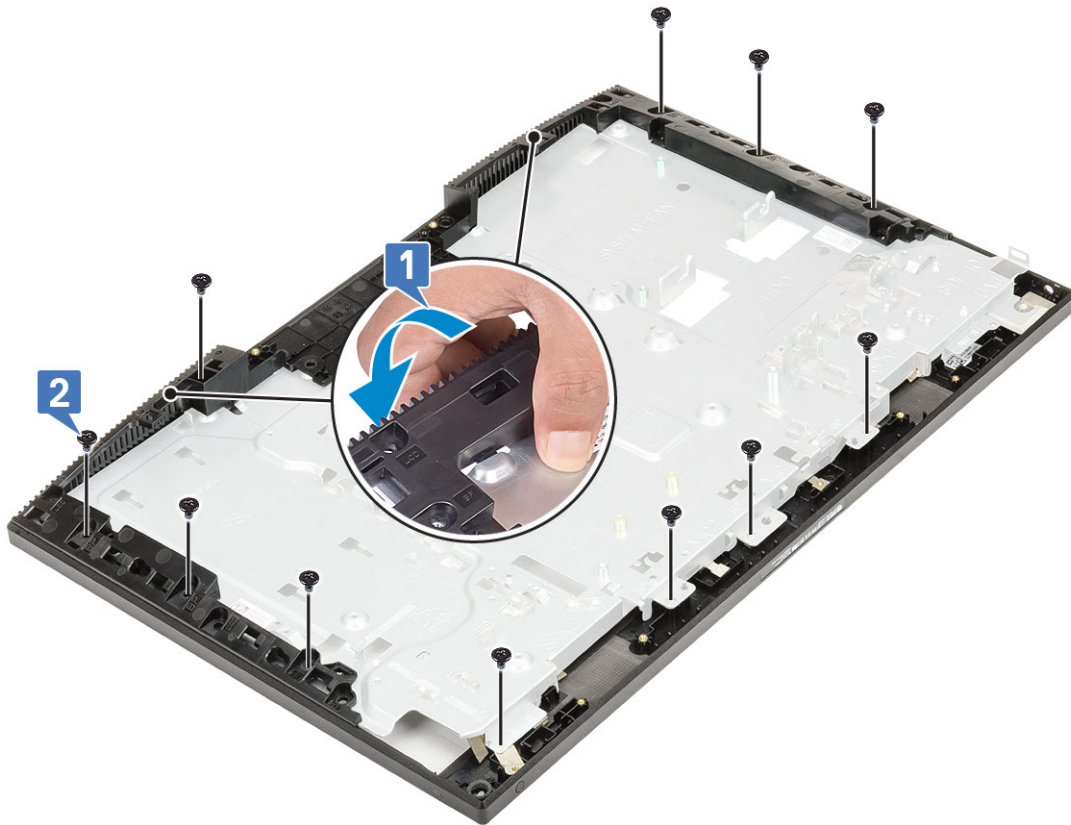


## Installing the middle frame

1. Starting from the location shown, slide and align the middle frame to the slots on the display assembly base, and then snap the middle frame into place on the display assembly base [1,2].



2. Press and secure and the tabs on the middle frame to the slots on the display assembly base [1].
3. Replace the 11 screws (M3x5) that secure the middle frame to the display assembly base [2].



4. Install the following components:

- a) Display panel
- b) Antennas
- c) Headset port
- d) I/O board
- e) Microphones
- f) Power button board
- g) Speakers
- h) System board
- i) I/O bracket
- j) PSU fan
- k) PSU
- l) Base cover
- m) Camera
- n) System fan
- o) WLAN card
- p) System board shield
- q) Hard drive
- r) Back cover
- s) Stand

5. Follow the procedure in [After working inside your computer.](#)

# ការដោះស្រាយបញ្ហាលើកុំព្យូទ័ររបស់អ្នក

## ការវិនិច្ឆ័យលើការវាយតម្លៃប្រព័ន្ធប្រតិបត្តិការដែលបានកែលម្អ - ការវិនិច្ឆ័យ ePSA

ការវិនិច្ឆ័យ ePSA (ជាទូទៅស្គាល់ថាការវិនិច្ឆ័យប្រព័ន្ធ) អនុវត្តការត្រួតពិនិត្យលើប្រព័ន្ធនៃផ្នែករឹងរបស់អ្នក។ ePSA គឺជាឧបករណ៍ BIOS ហើយដំណើរការដោយ BIOS ខាងក្នុង។ បញ្ហាប្រព័ន្ធដែលបានភ្ជាប់ផ្តល់នូវជម្រើសសម្រាប់បកសម្រួលបញ្ហាដែលបានកើតឡើង។ ប្រកបដោយប្រសិទ្ធភាពខ្ពស់។

- ដំណើរការធ្វើតេស្តដោយស្វ័យប្រវត្តិ ឬក្នុងម៉ូដអន្តរកម្ម
- ធ្វើតេស្តម្តងទៀត
- បង្ហាញ ឬរក្សាទុកលទ្ធផលតេស្ត
- ដំណើរការធ្វើតេស្តហ្វឺតដោយដើម្បីបង្ហាញពីជម្រើសតេស្តបន្ថែមដើម្បីផ្តល់ព័ត៌មានបន្ថែមអំពីបកសម្រួលដែលបានខូច
- មើលសេចក្តីណែនាំដែលប្រាប់អ្នកប្រសិនបើការវិនិច្ឆ័យត្រូវបានបញ្ចប់ដោយជោគជ័យ
- មើលសេចក្តីណែនាំដែលប្រាប់អ្នកអំពីបញ្ហាដែលជួបប្រទះអំពីប្រព័ន្ធដោលធ្វើតេស្ត

**ចំណាំ:** អន្តរាគមន៍របស់អ្នកអាចបណ្តាលឱ្យមានការខូចខាតទៅលើឧបករណ៍ផ្សេងៗទៀត។ ពិនិត្យការណែនាំអំពីការដោះស្រាយបញ្ហាដែលបានកើតឡើង។

## ការដំណើរការវិនិច្ឆ័យ ePSA

បើកកុំព្យូទ័រវិនិច្ឆ័យដោយវិធីសាស្ត្រដែលបានណែនាំខាងក្រោម៖

1. បើកកុំព្យូទ័រ
2. ពេលដែលកុំព្យូទ័រចាប់ផ្តើម <F12> ខណៈពេលដែលវាចាប់ផ្តើមក្រុមហ៊ុន Dell បង្ហាញឡើង។
3. នៅក្នុងអត្រង់ជម្រើសប្រព័ន្ធប្រតិបត្តិការ ចុចលើ **វិនិច្ឆ័យ** ហើយចុច **Enter (បញ្ជូន)**។

**ចំណាំ:** ឆ្លង កាត់ការវិនិច្ឆ័យដែលបានកែលម្អ រាយការណ៍ទាំងអស់ដែលបានកើតឡើងនៅក្នុងកុំព្យូទ័រ។ ការវិនិច្ឆ័យចាប់ផ្តើមតេស្តលើបកសម្រួលប្រតិបត្តិការ។

4. ចុចលើសញ្ញាត្រួតពិនិត្យ ទៅក្នុងខាងស្តាំ ដើម្បីចូលទៅទំព័រដែលបានកែលម្អរបស់បកសម្រួល។ បកសម្រួលដែលបានកើតឡើង ត្រូវបានកែលម្អ និងធ្វើតេស្ត។
5. ដើម្បីដំណើរការធ្វើតេស្តវិនិច្ឆ័យលើបកសម្រួលទាំងអស់ ចុចលើ <ESC> រួចចុច **Yes (បាទ/ចាស)** ដើម្បីបញ្ចប់ការធ្វើតេស្តវិនិច្ឆ័យ។
6. រុក្ខីសរសៃបកសម្រួលទាំងអស់ខាងឆ្វេង រួចចុចលើ **Run Tests (ដំណើរការធ្វើតេស្ត)**។
7. ប្រសិនបើមានបញ្ហាណាមួយ លេខកូដកំហុសនឹងបង្ហាញឡើង។ កត់ត្រាកូដកំហុស ហើយទាក់ទងទៅក្រុមហ៊ុន Dell។

## Diagnostics

**Power status light:** Indicates the power status.

**Solid Amber** – The system is unable to boot to the operating system. This indicates that the power supply or another device in the system is failing.

**Blinking Amber** – The system is unable to boot to the operating system. This indicates that the power supply is normal but another device in the system is failing or not installed properly.

**NOTE:** To determine the device that is failing, see the light patterns .

**Off** – System is in hibernation or turned off.

The power status light blinks amber along with beep codes indicating failures.

For example, the power status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 2,3 pattern continues until the computer is turned off indicating the Recovery image is not found.

The following table shows different light patterns and what they indicate:

**Table 4. Diagnostic LED/Beep codes**

LED # of Flashes	Problem description	Faults
2,1	Faulty system board	Faulty system board
2,2	Faulty system board, power supply unit (PSU), or cabling	Faulty system board, power supply unit (PSU), or cabling
2,3	Faulty system board, CPU, or DIMMS	Faulty system board, power supply unit (PSU), or DIMMS
2,4	Faulty coin cell battery	Faulty coin cell battery
2,5	BIOS Recovery	AutoRecovery trigger, recovery image is not found or is invalid
2,6	CPU	CPU Error
2,7	Memory	Memory SPD failure
3,3	Memory	No memory detected
3,5	Memory	Modules incompatible or invalid configuration
3,6	BIOS Recovery	On-demand trigger, recovery image is not found
3,7	BIOS Recovery	On-demand trigger, recovery image is invalid

The system may emit a series of beeps during start-up if the errors or problems cannot be displayed. The repetitive beep codes help the user troubleshoot problems with the system.

## Camera status indicator

**Camera status light:** Indicates whether the camera is in use.

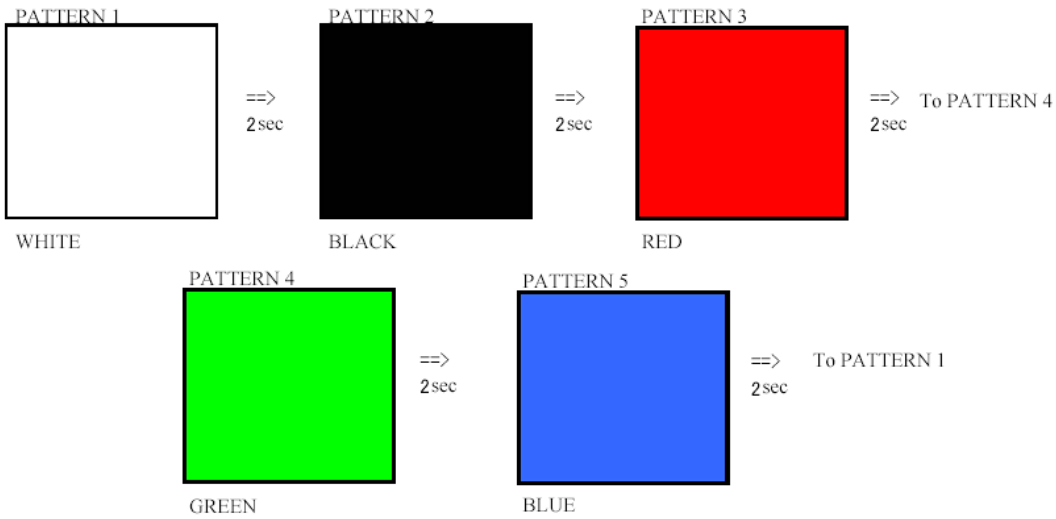
- Solid white – Camera is in use.
- Off – Camera is not in use.

## LCD built in self test - BIST

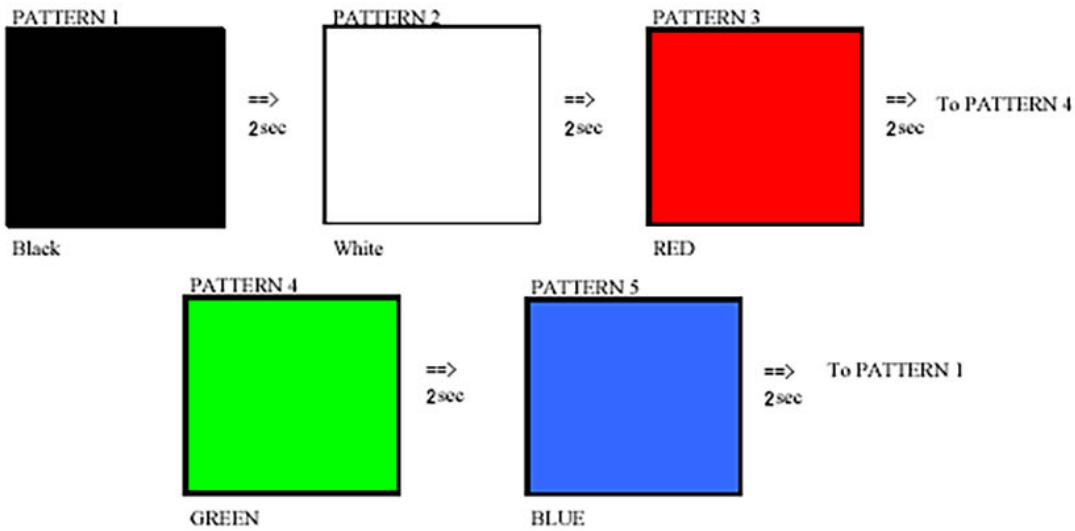
All-in-One (AIO) systems supports LCD BIST similar to any other Dell systems that have BIST test implemented. It allows the user to isolate the LCD during troubleshooting to determine which sub-system is at fault. The main difference is the lack of an integrated keyboard scan controller in the AIO. When BIST is initiated, an internal generated pattern from the LCD will be emitted for user's observation. This pattern will go by sequence through this pattern, Red- Green-Blue-White-Blue where each pattern is emitted for 2 to 3 seconds.

The following images displays the pattern of the colors on the LCD:

Standard display



Alternative display



## Invoking BIST

To invoke the LCD BIST, turn on the system and press and hold the **Display Built-in Self Test** button plus the **Power** button together. Release the buttons when Red- Green-Blue-White-Blue pattern is displayed on screen.

ប្រធានបទ :

- ការទំនាក់ទំនងមកក្រុមហ៊ុន Dell

## ការទំនាក់ទំនងមកក្រុមហ៊ុន Dell

**ចំណាំ:** ប្រសិនបើអ្នកកំពុងអានសៀវភៅនេះ សូមស្វែងរកព័ត៌មានទំនាក់ទំនងលើវិទ្យុយប្រព័ន្ធអេឡិចត្រូនិច ឬ កាតាឡុកផលិតផល Dell ។

ក្រុមហ៊ុន Dell ផ្តល់នូវជម្រើសសេវាគាំទ្រតាមទូរស័ព្ទ និងអេឡិចត្រូនិច ។ ជម្រើសទាំងនេះអាចប្តូរប្រយោជន៍ទៅតាមប្រទេស និងផលិតផល ហើយនិងសេវាកម្មមួយចំនួនប្រហែលជាមិនមាននៅក្នុងតំបន់របស់អ្នក។ ដើម្បីទាក់ទងមកក្រុមហ៊ុន Dell ចំពោះបញ្ហាផ្នែកលក់ ការគាំទ្រផ្នែកបច្ចេកទេស ឬ ការបម្រើសេវាអតិថិជន។

1. ចូលមើលគេហទំព័រ [Dell.com/support](http://Dell.com/support)។
2. ជ្រើសយកប្រទេសគាំទ្ររបស់អ្នក។
3. រៀងផ្ទាល់ប្រទេស ឬតំបន់នៅក្នុងបញ្ជីម្នាក់ **Choose a Country/Region**(ជ្រើសយកប្រទេស/តំបន់) នៅខាងក្រោមនៃទំព័រនេះ។
4. ជ្រើសយកគំណរណ៍កម្ម ឬគាំទ្រដែលសមស្របបំផុតទៅតាមតម្រូវការរបស់អ្នក។