Dell OptiPlex 7070 Small Form Factor

Setup and Specifications

Notes, cautions, and warnings

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

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

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

Contents

Set up your computer

1   Connect the keyboard and mouse.
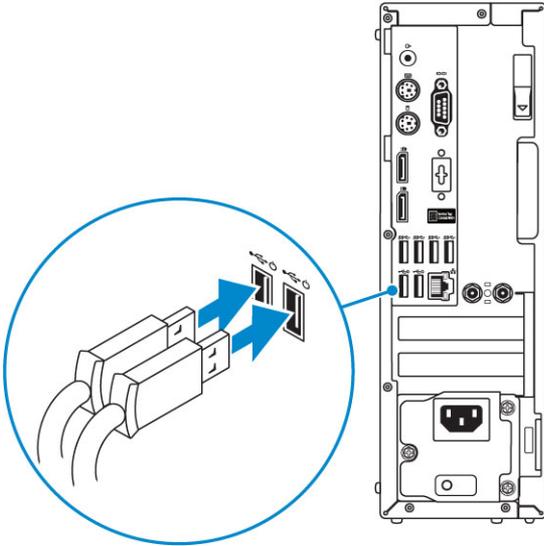
2   Connect to your network using a cable, or connect to a wireless network.
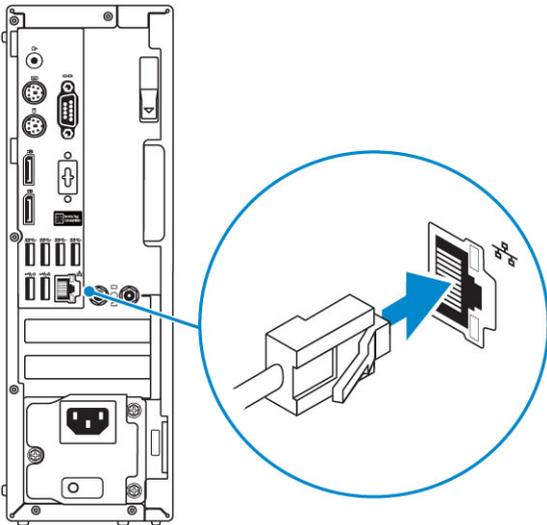
3   Connect the display.
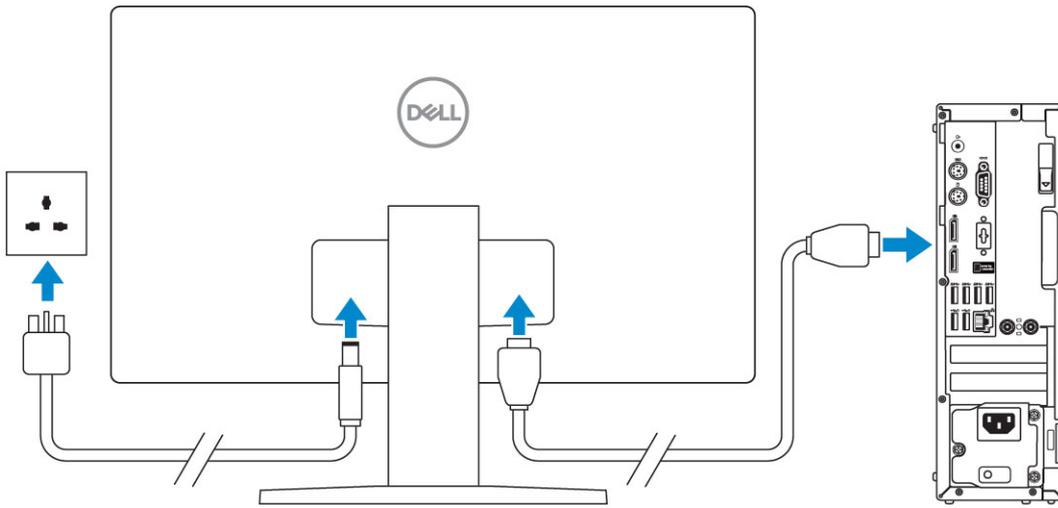
ⓘ **NOTE: If you ordered your computer with a discrete graphics card, the HDMI and the display ports on the back panel of your computer are covered. Connect the display to the discrete graphics card.**

4   Connect the power cable.
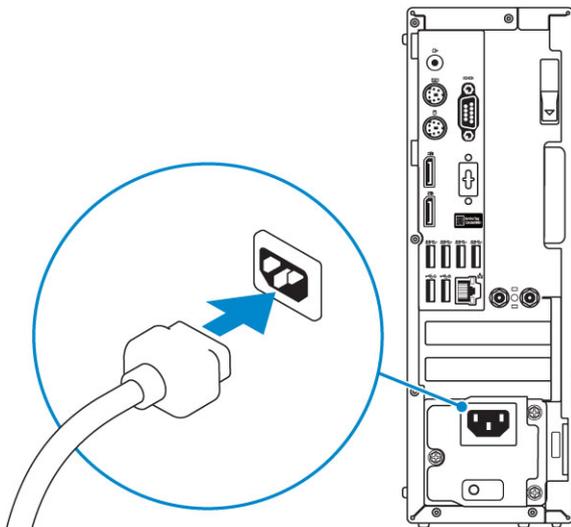
5   Press the power button.
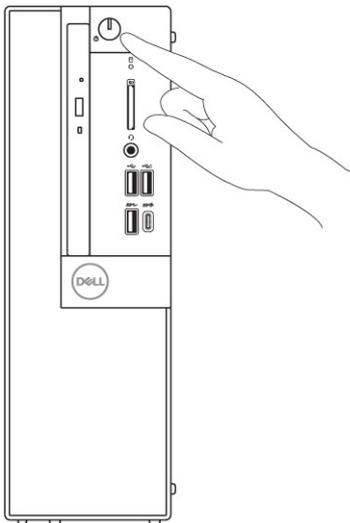
6   Follow the instructions on the screen to finish Windows setup:

a Connect to a network.
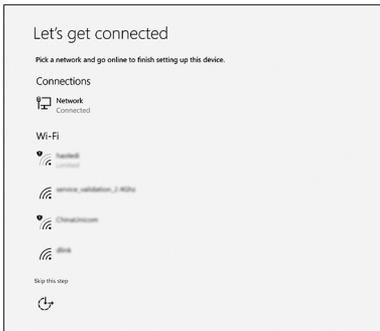
b Sign-in to your Microsoft account or create a new account.
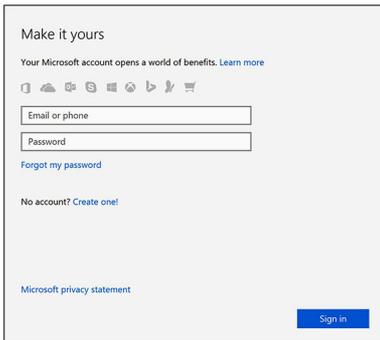
7 Locate Dell apps.

Table 1. Locate Dell apps

Register your computer

Dell Help & Support
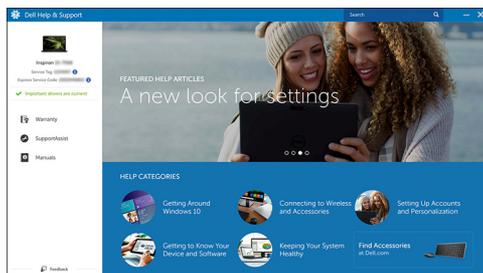
SupportAssist — Check and update your computer

Chassis

This chapter illustrates the multiple chassis views along with the ports and connectors and also explains the FN hot key combinations.

Topics:

Front view
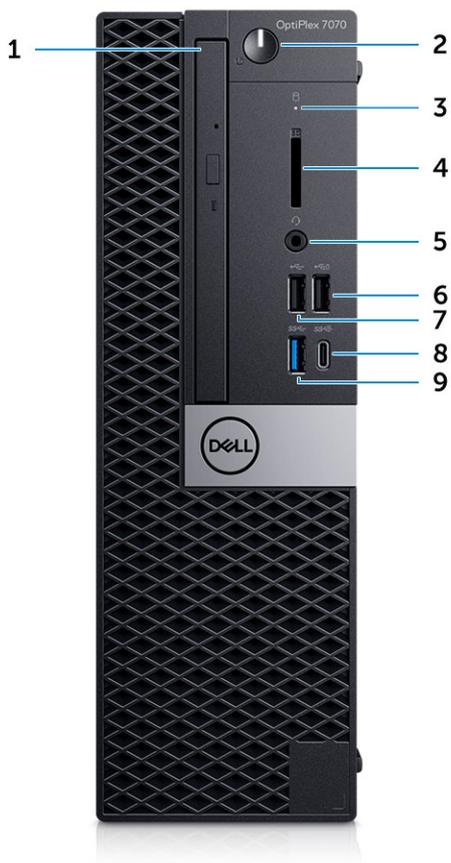
1   Optical drive (optional)

2   Power button and power light

3   Hard-drive activity light

4   Memory card reader (optional)

5   Headset/Universal audio jack port

6   USB 2.0 port with PowerShare (supports battery charge capability)

7   USB 2.0 port

8   USB 3.1 Gen 2 Type-C port with PowerShare

9   USB 3.1 Gen 1 port

Back view
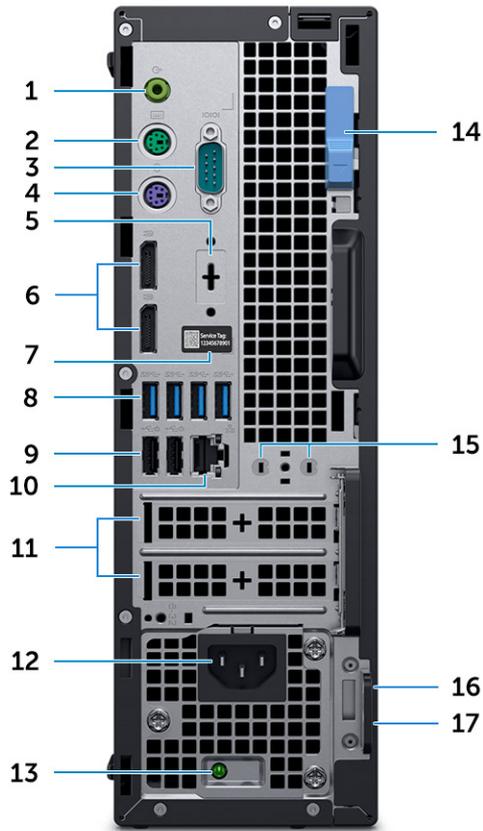
1	Line-out audio port	2	PS2 Port (Keyboard)
3	Serial port	4	PS2 Port (Mouse)
5	DisplayPort/HDMI 2.0b/VGA/USB Type-C Alt-Mode (optional)	6	DisplayPorts (2)
7	Service tag label	8	USB 3.1 Gen 1 ports (4)
9	USB 2.0 ports (2) (one supports, SmartPower On)	10	Network port
11	Expansion card slots	12	Power connector port
13	Power supply diagnostic light	14	Release latch
15	External SMA antenna connectors (optional)	16	Kensington security cable slot
17	Padlock ring		

System specifications

ⓘ **NOTE: Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.**

Topics:

Processor

ⓘ **NOTE: Processor numbers are not a measure of performance. Processor availability subject to change and may vary by region/country.**

ⓘ **NOTE: These are available offline only.**

Table 2. Processor

Intel Core Processors 9th Gen Core CPUs

Intel Core i3-9300 (4 Core/ 8 MB Smart Cache/ 4 Threads/ Turbo Frequency up to 4.3 GHz/ TDP : 65 W)

Intel Core i3-9100 (4 Core/ 6 MB/ 4T/ up to 4.2 GHz/ 65 W)

Intel Core i5-9400 (6 Core/ 9 MB/ 6T/ up to 4.1GHz/ 65 W)

Intel Core i5-9500 (6 Core/ 9 MB/ 6T/ up to 4.4 GHz/ 65 W)

Intel Core i5-9600 (6 Core/ 9 MB/ 6T/ up to 4.6 GHz/ 65 W)

Intel Core i7-9700 (8 Core/ 12 MB/ 8T/ up to 4.8 GHz/ 65 W)

Intel Core i9-9900 (8 Core/ 16 MB/ 16T/ up to 4.9 GHz/ 65 W)

Intel Core Processors 8th Gen Core CPUs

Intel Core i3-8100 (4 Cores/ 6 MB/ 4T/ up to 3.6 GHz/ 65 W)

Intel Core i3-8300 (4 Cores/ 8 MB/ 4T/ up to 3.7 GHz/ 65W)

Intel Core i5-8400 (6 Cores/ 9 MB/ 6T/ up to 4.0GHz/ 65 W)

Intel Core i5-8500 (6 Cores/ 9 MB/ 6T/ up to 4.1GHz/ 65 W)

Intel Core i5-8600 (6 Cores/ 9 MB/ 6T/ up to 4.3 GHz/ 65 W)

Intel Core i7-8700 (6 Cores/12 MB/ 12T/ up to 4.6 GHz/ 65 W)

Chipset

Table 3. Chipset specifications

Type	Intel Q370
Non-volatile memory on chipset	Yes
BIOS configuration SPI (Serial Peripheral Interface)	256Mbit (32MB) located at SPI_FLASH on chipset
Trusted Platform Module (Discrete TPM Enabled)	24KB located at TPM 2.0 on chipset
Firmware TPM (Discrete TPM Disabled)	Available in select countries
NIC EEPROM	LOM configuration contained within SPI flash ROM instead of LOM e-fuse

Memory

Table 4. Memory specifications

Minimum memory configuration	4 GB
Maximum memory configuration	64 GB
Number of slots	4 UDIMM
Maximum memory supported per slot	16 GB
Memory options	4 GB - 1 x 4 GB 8 GB - 1 x 8 GB 8 GB - 2 x 4 GB 16 GB - 1 x 16 GB 16 GB - 2 x 8 GB 32 GB - 2 x 16 GB 32 GB - 4 x 8 GB 64 GB - 4 x 16 GB
Type	DDR4 DRAM Non-ECC memory
Speed	2666 MHz memory will perform at 2400 MHz on i3 processors

Storage

Type	Form factor	Interface	Capacity
Solid-State Drive (SSD)	M.2 2280/ 2.5 inch	• SATA AHCI, Up to 6 Gbps • PCIe 3 x4 NVME, Up to 32 Gbps	Up to 2 TB
Hard drive (HDD)	2.5 and 3.5 inch	SATA AHCI, Up to 6 Gbps	Up to 2 TB at 5400/7200 RPM
Self-encrypting Opal drive Hard-Disk Drive (SED HDD)	One 2.5 inch	SATA AHCI, Up to 6 Gbps	2.5 inch 500 GB at 7200 RPM
Optical drive	1 Slimline	SATA AHCI, Up to 6 Gbps	
Intel Optane Memory (Optional)	M.2	PCIe NVMe	16 GB

Storage combinations

Primary/Boot drive	Secondary drive
M.2 Drive	None
M.2 Drive	2.5 inch HDD/ SSD
M.2 Drive	3.5 inch HDD
2.5 inch HDD/ SSD	None
2.5 inch HDD/ SSD	2.5 inch HDD/ SSD
3.5 inch HDD	None
2.5 inch HDD with Intel Optane	None
2.5 inch HDD with Intel Optane	2.5 inch HDD/ SSD

Audio

Controller	Realtek ALC3234
Type	Integrated
Speakers	Internal speaker (mono)
Interface	• AC511 Sound Bar (optional) • Dell AX210CR USB Stereo speakers (optional) • Dell 2.0 Speaker System - AE215 (optional) • Dell 2.1 Speaker System - AE415 (optional) • Dell Wireless 360 Speaker System - AE715 (optional) • Dell Sterio Soundbar - AX510

- Dell Professional Soundbar - AE515
- Stereo headset/mic combo

Internal speaker amplifier   2W (RMS) per channel

Video

Table 8. Video

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel UHD Graphics 630	UMA	8th Generation Intel Core Processor i3, i5,i7	Integrated	Shared system memory	DisplayPort HDMI 1.4	VGA: 1920x1200 @60Hz HDMI : 2560x1600; 4096x2160 @60Hz DP:4096x2304 @60hz
AMD Radeon R5 430	Discrete	NA	GDDR5	2GB	Two DP 1.2	1 display of 4K @ 60hz
NVIDIA GeForce GT 730	Discrete	NA	GDDR5	2GB	3 displays with 1 or 2 DP of 1.2 ports	1 display of 2560x1600; 4096x2160 @60Hz
AMD Radeon RX 550	Discrete	NA	GDDR5	4GB	DP 1.4 Two mDP 1.4	1 display of 5K @ 60hz . 3 displays 4K @ 60hz
Dual AMD Radeon R5 430	Discrete	NA	GDDR5	2GB	Two DP 1.2	1 display of 4K @ 60hz

Communications

Table 9. Communications

Network adapter	Intel i219-LM Gigabit Ethernet LAN 10/100/1000 (Remote Wake Up, PXE support and Intel Active Management Technology support)
Wireless	• Qualcomm QCA61x4A Dual-band 2x2 802.11ac Wireless with MU-MIMO + Bluetooth 4.2 • Intel Wireless-AC 9560, Dual-band 2x2 802.11ac Wi-Fi with MU-MIMO + Bluetooth 5

Ports and connectors

Table 10. Ports and connectors

Memory card reader	SD 4.0 memory card reader—optional
USB	- One USB 3.1 Gen 2 Type-C port with PowerShare (front) - One USB 3.1 Gen 1 port (front) - Two USB 2.0 ports (one with PowerShare, supports battery charge capability) (front) - Four USB 3.1 Gen 1 ports (rear) - Two USB 2.0 ports (one supports SmartPower On) (rear)
Security	Kensington security cable slot
Audio	- One headset port/Universal audio jack (front) - One line-out port (rear)
Video	- Two DisplayPorts (rear) - DisplayPort/HDMI 2.0b/VGA/USB Type-C Alt-Mode (optional) (rear)
Network adapter	One RJ-45 (10/100/1000) connector
Serial port	Serial + PS/2 (rear)

System board drive connectors

Table 11. System board drive connectors

M.2 Connectors	1 - 2230/2280 1 - 2230 (keyed to support Integrated or Discrete WiFi, Support Intel CNVi or USB2.0/PCIe)
Serial ATA (SATA) connector	3 (one Gen2 port for ODD and the rest of the ports support Gen3)
PCIe X16 slot	1 (Support Standard Rev 3.0)
PCIe X1 slot	0
PCIe X16 slot (wired x4) slot	0
PCIe X4	1 (open ended X4)

Operating system

Table 12. Operating system

Operating systems supported	
	• Windows 10 Home (64-bit) • Windows 10 Pro (64-bit) • Windows 10 National Academic (64-bit) • Ubuntu 18.04 LTS (64-bit) • Neokylin v6.0 SP4 (China only)

Power supply

Table 13. Power supply

Input Voltage	100-240 Vac
Input current (maximum)	3.2A
Wattage	• 200W Bronze • 200W Platinum

Physical specifications

Table 14. Physical system dimensions

Chassis volume (liters)	7.8
Chassis weight (pounds / kilograms)	11.57/5.26

Table 15. Chassis dimensions

Height (inches / centimeters)	11.42/29
Width (inches / centimeters)	3.65/9.26
Depth (inches / centimeters)	11.50/29.2
Shipping weight (pounds / kilograms – includes packaging materials)	15.09 / 6.86

Table 16. Packaging parameters

Height (inches / centimeters)	10.38/26.4
Width (inches / centimeters)	19.2/48.7

Depth (inches / centimeters)	15.5/39.4

Regulatory and environmental compliance

Product related conformity assessment and regulatory authorizations including Product Safety, Electromagnetic Compatibility (EMC), Ergonomics, and Communication Devices relevant to this product may be viewed at www.dell.com/regulatory_compliance. The Regulatory Datasheet for this product is located at http://www.dell.com/regulatory_compliance.

Details of Dell's environmental stewardship program to conserve product energy consumption, reduce or eliminate materials for disposal, prolong product life span and provide effective and convenient equipment recovery solutions may be viewed at www.dell.com/environment. Product related conformity assessment, regulatory authorizations, and information encompassing Environmental, Energy Consumption, Noise Emissions, Product Materials Information, Packaging, Batteries, and Recycling relevant to this product may be viewed by clicking the Design for Environment link on the webpage.

Table 17. Regulatory/Environmental Certifications

	Tower	SFF	Micro
Energy Star 7.0/7.1 Compliant (Windows & Ubuntu)	Yes	Yes	Yes
EPEAT 2018 Bronze Rated Configurations	Yes	Yes	Yes
NFPA 99 Leakage Current Spec (Dell ENG0011750)	Yes	Yes	Yes
TCO 8.0	Yes	Yes	Yes
BFR / PVC Free: (aka Halogen Free) : The system shall comply with the limits defined in Dell specification ENV0199 - BFR/CFR/PVC-Free Specification	No	No	Yes
California Energy Commission (CEC) MEPs - Internal PSU Requirements	Yes	Yes	No
Br/CL Reduction:	Yes	Yes	Yes

Plastic parts above 25 grams shall not contain greater than 1000 ppm chlorine or greater than 1000 ppm bromine at the homogenous level.

Following can be excluded:

- Printed circuit boards, cable and wiring, fans, and electronic components

Anticipated Required Criteria for EPEAT Revision Effective 1H 2018

Minimum 2% Post-Consumer Recycled (PCR) plastics as standard in product.	Yes	No	No

Anticipated Required Criteria for EPEAT Revision Effective 1H 2018

Higher level % Post-Consumer Recycled (PCR) plastics in product:	Yes	No	No

* DT, Workstations, Thin Clients - 10%

* Integrated Desktop Computers (AIO) 15%

(Anticipated 1 Optional point in the EPEAT Revision for higher level PCR)

System setup

System setup enables you to manage your desktop hardware and specify BIOS level options. From the System setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

- Boot menu
- Navigation keys
- System setup options
- Updating the BIOS in Windows
- System and setup password

Boot menu

Press <F12> when the Dell logo appears to initiate a one-time boot menu with a list of the valid boot devices for the system. Diagnostics and BIOS Setup options are also included in this menu. The devices listed on the boot menu depend on the bootable devices in the system. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the system. Using the boot menu does not make any changes to the boot order stored in the BIOS.

The options are:

- UEFI Boot:
    - Windows Boot Manager

-

- Other Options:
    - BIOS Setup
    - BIOS Flash Update
    - Diagnostics
    - Change Boot Mode Settings

Navigation keys

ⓘ NOTE: For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.

Keys	Navigation
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

System setup options

ⓘ **NOTE: Depending on the computer and its installed devices, the items listed in this section may or may not appear.**

General options

Table 18. General

Option	Description
System Information	Displays the following information: • System Information: Displays **BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date,** and the **Express Service Code**. • Memory Information: Displays **Memory Installed, Memory Available, Memory Speed, Memory Channel Mode, Memory Technology, DIMM 1 Size, DIMM 2 Size**. • PCI Information: Displays SLOT1, SLOT 2, SLOT1_M.2, SLOT2_M.2 • Processor Information: Displays **Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable,** and **64-Bit Technology.** • Device Information: Displays **SATA-0, SATA 4, M.2 PCIe SSD-0, LOM MAC Address, Video Controller, Audio Controller, Wi-Fi Device, and Bluetooth Device.**
Boot Sequence	Allows you to specify the order in which the computer attempts to find an operating system from the devices specified in this list. • **Windows Boot Manager** • **ONboard NIC (IPV4)** • **Onboard NIC (IPV6)**
Advanced Boot Options	Allows you to select the Enable Legacy Option ROMs option, when in UEFI boot mode. By default, this option is selected. • **Enable Legacy Option ROMs**—Default • Enable Attempt Legacy Boot
UEFI Boot Path Security	This option controls whether or not the system will prompt the user to enter the Admin password when booting a UEFI boot path from the F12 Boot Menu. • **Always, Except Internal HDD**—Default • Always, Except Internal HDD and PXE • Always • Never
Date/Time	Allows you to set the date and time settings. Changes to the system date and time take effect immediately.

.

System information

Option	Description
Integrated NIC	Allows you to control the on-board LAN controller. The option 'Enable UEFI Network Stack' is not selected by default. The options are: • Disabled • Enabled • **Enabled w/PXE** (default) ⓘ NOTE: **Depending on the computer and its installed devices, the items listed in this section may or may not appear.**
Serial Port	Determines how the built-in serial port operates. Choose any one option: • Disabled • **COM1** (default) • COM2 • COM3 • COM4
SATA Operation	Allows you to configure the operating mode of the integrated hard drive controller. • Disabled = The SATA controllers are hidden • AHCI = SATA is configured for AHCI mode • **RAID ON** = SATA is configured to support RAID mode (selected by default)
Drives	Allows you to enable or disable the various drives on-board: • **SATA-0** • **SATA-2** • **SATA**-3 • **SATA-4** • **M.2 PCIe SSD-0**
Smart Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. The **Enable Smart Reporting option** is disabled by default.
USB Configuration	Allows you to enable or disable the integrated USB controller for: • Enable USB Boot Support • Enable Front USB Ports • Enable Rear USB Ports All the options are enabled by default.
Front USB Configuration	Allows you to enable or disable the front USB ports. All the ports are enabled by default.
Rear USB Configuration	Allows you to enable or disable the rear USB ports. All the ports are enabled by default.
USB PowerShare	This option allows you to charge the external devices, such as mobile phones, music player. This option is enabled by default.

Option	Description
Audio	Allows you to enable or disable the integrated audio controller. The option **Enable Audio** is selected by default. • **Enable Microphone** • **Enable Internal Speaker** Both the options are selected by default.
Dust Filter Maintenance	Allows you to enable or disable BIOS messages for maintaining the optional dust filter installed in your computer. BIOS will generate a pre-boot reminder to clean or replace the dust filter based on the interval set. • **Disabled** (default) • 15 days • 30 days • 60 days • 90 days • 120 days • 150 days • 180 days
Miscellaneous Devices	• **Enable Secure Digital SD Card (default)** • Secure Digital SD Card • Secure Digital SD Card Read-Only Mode

Video screen options

Table 20. Video

Option	Description
Primary Display	Allows you to select the primary display when multiple controllers are available in the system. • **Auto** (default) • Intel HD Graphics ⓘ NOTE: **If you do not select Auto, the on-board graphics device will be present and enabled.**

Security

Table 21. Security

Option	Description
Strong Password	This option lets you enable or disable strong passwords for the system. The option is disabled by default.
Password Configuration	Allows you to control the minimum and maximum number of characters allowed for a administrative password and the system password. The range of characters is between 4 and 32.
Password Bypass	This option lets you bypass the System (Boot) Password and the internal HDD password prompts during a system restart.

Option	Description
	• **Disabled** — Always prompt for the system and internal HDD password when they are set. This option is enabled by default. • Reboot Bypass — Bypass the password prompts on Restarts (warm boots). ⓘ **NOTE: The system will always prompt for the system and internal HDD passwords when powered on from the off state (a cold boot). Also, the system will always prompt for passwords on any module bay HDDs that may be present.**
Password Change	This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set. **Allow Non-Admin Password Changes** - This option is enabled by default.
UEFI Capsule Firmware Updates	This option controls whether this system allows BIOS updates via UEFI capsule update packages. This option is selected by default. Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS)
TPM 2.0 Security	Allows you to control whether the Trusted Platform Module (TPM) is visible to the operating system. • TPM On (default) • Clear • PPI Bypass for Enable Commands • PPI Bypass for Disable Commands • PPI Bypass for Clear Commands • Attestation Enable (default) • Key Storage Enable (default) • SHA-256 (default) Choose any one option: • Disabled • Enabled (default)
Absolute	This field lets you Enable, Disable or Permanently Disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. • **Enabled** (default) • Disabled • Permanently Disabled
Chassis Intrusion	This field controls the chassis intrusion feature. Choose any one of the option: • **Disabled** (default) • Enabled • On-Silent
OROM Keyboard Access	• Disabled • **Enabled** (default) • One Time Enable
Admin Setup Lockout	Allows you to prevent users from entering Setup when Admin password is set. This option is not set by default.
SMM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protections. This option is not set by default.

Secure boot options

Table 22. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable Secure Boot feature • Secure Boot Enable This option is not selected by default.
Secure Boot Mode	Allows you to modify the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. • **Deployed Mode** (default) • Audit Mode
Expert key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: • **PK** (default) • KEK • db • dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: • **Save to File**- Saves the key to a user-selected file • **Replace from File**- Replaces the current key with a key from a user-selected file • **Append from File**- Adds a key to the current database from a user-selected file • **Delete**- Deletes the selected key • **Reset All Keys**- Resets to default setting • **Delete All Key**s- Deletes all the keys ⓘ NOTE: **If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.**

Intel Software Guard Extensions options

Table 23. Intel Software Guard Extensions

Option	Description
Intel SGX Enable	This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. Click one of the following options: • Disabled • Enabled

Option	Description
	• **Software controlled**—Default
Enclave Memory Size	This option sets **SGX Enclave Reserve Memory Size** Click one of the following options: • **32 MB** • **64 MB** • **128 MB**—Default

Performance

Table 24. Performance

Option	Description
Multi Core Support	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. • **All**—Default • **1** • **2** • **3**
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep mode of processor. • **Enable Intel SpeedStep** This option is set by default.
C-States Control	Allows you to enable or disable the additional processor sleep states. • **C states** This option is set by default.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. • **Enable Intel TurboBoost** This option is set by default.
Hyper-Thread Control	Allows you to enable or disable the HyperThreading in the processor. • Disabled • **Enabled**—Default

Power management

Table 25. Power Management

Option	Description
AC Recovery	Determines how the system responds when AC power is re-applied after a power loss. You can set the AC Recovery to: • Power Off • Power On • Last Power State This option is set to **Power Off** by default.
Enable Intel Speed Shift Technology	Allows you to enable or disable Intel Speed Shift Technology support. The option **Enable Intel Speed Shift Technology** is set by default.
Auto On Time	Sets time to automatically turn on the computer. Time is kept in standard 12-hour format (hour:minutes:seconds). Change the startup time by typing the values in the time and AM/PM fields. ⓘ **NOTE: This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if Auto Power is set to disabled.**
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled. • **Disabled (default)** • Enabled in S5 only • Enabled in S4 and S5
Fan Control Override	The option is not set by default
USB Wake Support	Allows you to enable the USB devices to wake the computer from standby mode. The option "**Enable USB Wake Support**" is selected by default
Wake on LAN/WWAN	This option allows the computer to power up from the off state when triggered by a special LAN signal. This feature only works when the computer is connected to AC power supply. • **Disabled** - Does not allows the system to power on by special LAN signals when it receives a wake-up signal from the LAN or wireless LAN. • **LAN** or **WLAN** - Allows the system to be powered on by special LAN or wireless LAN signals. • **LAN Only** - Allows the system to be powered on by special LAN signals. • **LAN with PXE Boot** - A wakeup packet sent to the system in either the S4 or S5 state, that will cause the system to wake-up and immediately boot to PXE. • **WLAN Only** - Allows the system to be powered on by special WLAN signals. This option is set to **Disabled** by default.
Block Sleep	Allows you to block entering to sleep (S3 state) in OS environment. This option is disabled by default.

Post behavior

Table 26. POST Behavior

Option	Description
Numlock LED	Allows you to enable or disable the Numlock feature when your computer starts. This option is enabled by default.
Keyboard Errors	Allows you to enable or disable the keyboard error reporting when the computer starts. The option **Enable Keyboard Error Detection** is enabled by default.
Fast Boot	This option can speed up the boot process by bypassing some compatibility steps: • Minimal — The system boots quickly, unless the BIOS has been updated, memory changed, or the previous POST did not complete. • Thorough — The system does not skip any steps in the boot process. • Auto — This allows the operating system to control this setting (this works only when the operating system supports Simple Boot Flag). This option is set to **Thorough** by default.
Extend BIOS POST Time	This option creates an additional pre-boot delay. • **0 seconds** (default) • 5 seconds • 10 seconds
Full Screen Logo	This option will display full screen logo if your image match screen resolution. The option Enable Full Screen Logo is not set by default.
Warnings and Errors	This option causes the boot process to only pause when warning or errors are detected. Choose any one of the option: • **Prompt on Warnings and Errors** (default) • Continue on Warnings • Continue on Warnings and Errors

Manageability

Table 27. Manageability

Option	Description
USB provision	This option is not selected by default.
MEBx Hotkey	This option is selected by default.

Virtualization support

Option	Description
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by the Intel Virtualization technology. · **Enable Intel Virtualization Technology** This option is set by default.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by the Intel Virtualization technology for direct I/O. · **Enable VT for Direct I/O** This option is set by default.

Wireless options

Table 29. Wireless

Option	Description
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. The options are: · **WLAN/WiGig** · **Bluetooth** All the options are enabled by default.

Maintenance

Table 30. Maintenance

Option	Description
Service Tag	Displays the service tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
SERR Messages	Controls the SERR message mechanism. This option is set by default. Some graphics cards require that the SERR message mechanism be disabled.
BIOS Downgrade	Allows you to flash previous revisions of the system firmware. · **Allow BIOS Downgrade**

Option	Description
	This option is set by default.
Bios Recovery	**BIOS Recovery from Hard Drive**—This option is set by default. Allows you to recover the corrupted BIOS from a recovery file on the HDD or an external USB key. **BIOS Auto-Recovery**— Allows you to recover the BIOS automatically.
First Power On Date	Allows you the set Ownership date. The option **Set Ownership Date** is not set by default.

System logs

Table 31. System Logs

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

Advanced configuration

Table 32. Advanced configuration

Option	Description
ASPM	Allows you to set the ASPM level. • Auto (default) - There is handshaking between the device and PCI Express hub to determine the best ASPM mode supported by the device • Disabled - ASPM power management is turned off at all time • L1 Only - ASPM power management is set to use L1

Updating the BIOS in Windows

It is recommended to update your BIOS (System Setup), when you replace the system board or if an update is available.

> ⓘ NOTE: **If BitLocker is enabled, it must be suspended prior to updating the system BIOS, and then re-enabled after the BIOS update is completed.**

1 Restart the computer.
2 Go to **Dell.com/support**.
   • Enter the **Service Tag** or **Express Service Code** and click **Submit**.
   • Click **Detect Product** and follow the instructions on screen.
3 If you are unable to detect or find the Service Tag, click **Choose from all products**.
4 Choose the **Products** category from the list.

> ⓘ NOTE: **Choose the appropriate category to reach the product page**

5 Select your computer model and the **Product Support** page of your computer appears.
6 Click **Get drivers** and click **Drivers and Downloads**.
   The Drivers and Downloads section opens.
7 Click **Find it myself**.
8 Click **BIOS** to view the BIOS versions.

9   Identify the latest BIOS file and click **Download**.

10   Select your preferred download method in the **Please select your download method below** window, click **Download File**.

The **File Download** window appears.

11   Click **Save** to save the file on your computer.

12   Click **Run** to install the updated BIOS settings on your computer.

Follow the instructions on the screen.

Updating BIOS on systems with BitLocker enabled

⚠ **CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694**

Updating your system BIOS using a USB flash drive

If the system cannot load into Windows but there is still a need to update the BIOS, download the BIOS file using another system and save it to a bootable USB Flash Drive.

ⓘ **NOTE: You will need to use a bootable USB Flash drive. Please refer to the following article for further details: https://www.dell.com/support/article/us/en/19/sln143196/**

1   Download the BIOS update .EXE file to another system.

2   Copy the file e.g. O9010A12.EXE onto the bootable USB Flash drive.

3   Insert the USB Flash drive into the system that requires the BIOS update.

4   Restart the system and press F12 when the Dell Splash logo appears to display the One Time Boot Menu.

5   Using arrow keys, select **USB Storage Device** and click Return.

6   The system will boot to a Diag C:\> prompt.

7   Run the file by typing the full filename e.g. O9010A12.exe and press Return.

8   The BIOS Update Utility will load, follow the instructions on screen.


```
════════ BIOS Update Utility ════════

This utility will update the system BIOS and firmware.  During the
update procedure, your system will restart.  Do not interrupt this
procedure once it begins.  Do not disconnect the AC power source (if you
are updating a mobile computer, connect the AC power adapter).
Interruption of the BIOS/firmware update procedure will likely render
your system unusable.

Do you wish to continue (y/n)? y




             Copyright 2009-2011 Dell Inc.  All Rights Reserved.
```

Figure 1. DOS BIOS Update Screen

Updating the Dell BIOS in Linux and Ubuntu environments

If you want to update the system BIOS in a Linux environment such as Ubuntu, see https://www.dell.com/support/article/us/en/19/sln171755/.

Flashing the BIOS from the F12 One-Time boot menu

Updating your system BIOS using a BIOS update .exe file copied to a FAT32 USB key and booting from the F12 one time boot menu.

BIOS Update

You can run the BIOS update file from Windows using a bootable USB key or you can also update the BIOS from the F12 One-Time boot menu on the system.

Most Dell systems built after 2012 have this capability and you can confirm by booting your system to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your system. If the option is listed, then the BIOS supports this BIOS update option.

> (i) | NOTE: Only systems with BIOS Flash Update option in the F12 One-Time Boot Menu can use this function.

Updating from the One-Time Boot Menu

To update your BIOS from the F12 One-Time boot menu, you will need:

- USB key formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB key
- AC power adapter connected to the system
- Functional system battery to flash the BIOS

Perform the following steps to execute the BIOS update flash process from the F12 menu:

> ⚠ | CAUTION: Do not power off the system during the BIOS update process. Powering off the system could make the system fail to boot.
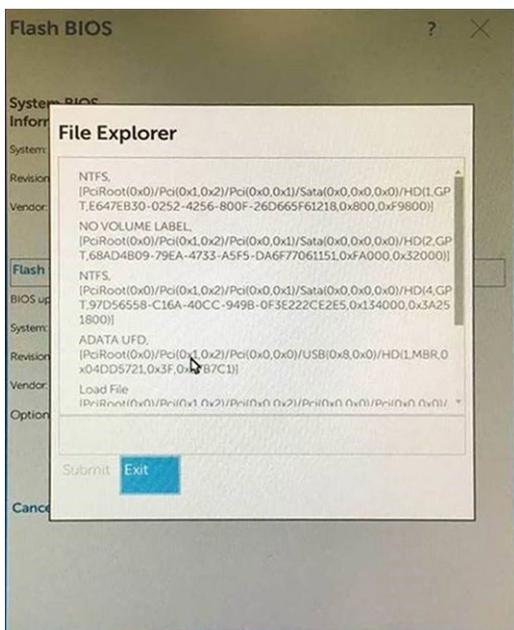
1 From a power off state, insert the USB key where you copied the flash into a USB port of the system .
2 Power on the system and press the F12 key to access the One-Time Boot Menu, Highlight BIOS Update using the mouse or arrow keys then press **Enter**.
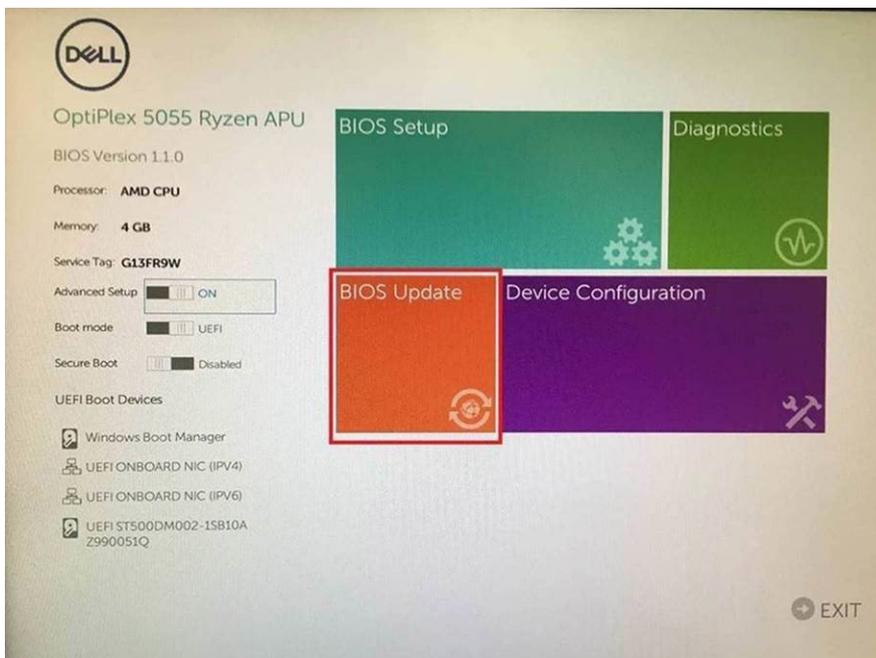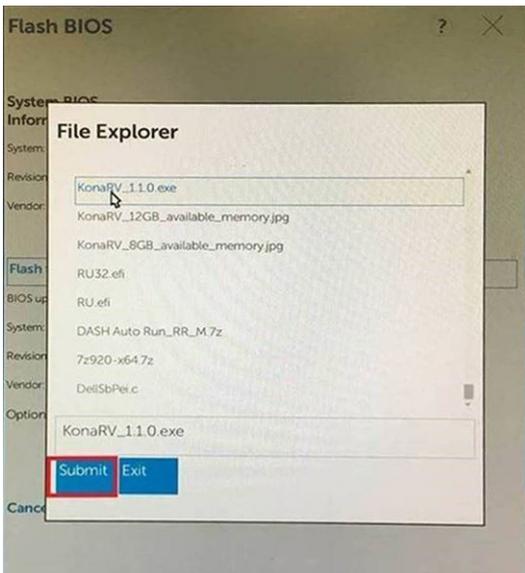
3   The Bios flash menu will open then click the **Flash from file**.
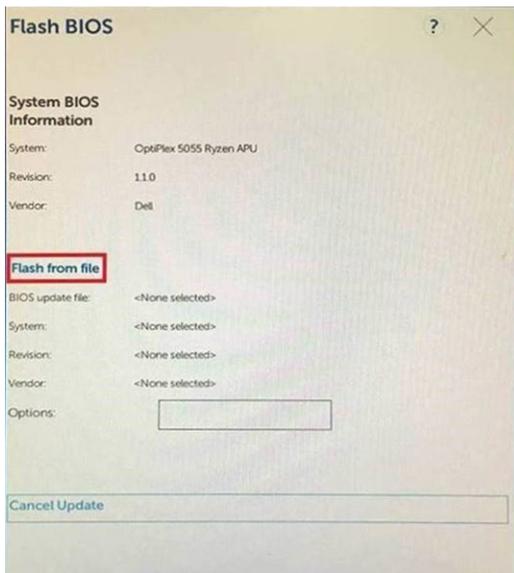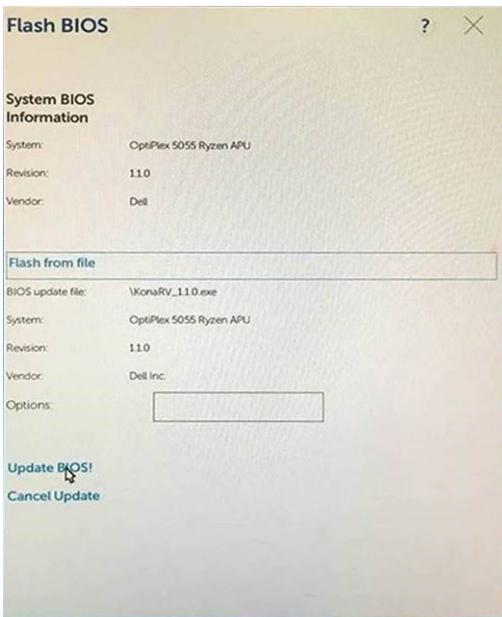

4   Select external USB device

5   Once the file is selected, Double click the flash target file, then press submit .

6   Click the **Update BIOS** then system will reboot to flash the BIOS.

7   Once complete, the system will reboot and the BIOS update process is completed.

System and setup password

Table 33. System and setup password

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

You can create a system password and a setup password to secure your computer.

⚠ **CAUTION: The password features provide a basic level of security for the data on your computer.**

△ **CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.**

ⓘ **NOTE: System and setup password feature is disabled.**

Assigning a system setup password

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

To enter the system setup, press F2 immediately after a power-on or re-boot.

1   In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
    The **Security** screen is displayed.
2   Select **System/Admin Password** and create a password in the **Enter the new password** field.
    Use the following guidelines to assign the system password:
    - A password can have up to 32 characters.
    - The password can contain the numbers 0 through 9.
    - Only lower case letters are valid, upper case letters are not allowed.
    - Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).
3   Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4   Press Esc and a message prompts you to save the changes.
5   Press Y to save the changes.
    The computer reboots.

Deleting or changing an existing system setup password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.
To enter the System Setup, press F2 immediately after a power-on or reboot.

1   In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
    The **System Security** screen is displayed.
2   In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3   Select **System Password**, alter or delete the existing system password and press Enter or Tab.
4   Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

    ⓘ **NOTE: If you change the System and/or Setup password, re-enter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.**
5   Press Esc and a message prompts you to save the changes.
6   Press Y to save the changes and exit from System Setup.
    The computer reboot.

Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

Downloading drivers

1. Turn on the desktop.
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your desktop, and then click **Submit**.

   ⓘ **NOTE: If you do not have the Service Tag, use the auto detect feature or manually browse for your desktop model.**
4. Click **Drivers and Downloads**.
5. Select the operating system installed on your desktop.
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your desktop.
8. After the download is complete, navigate to the folder where you saved the driver file.
9. Double-click the driver file icon and follow the instructions on the screen.

System device drivers

Verify if the system device drivers are already installed in the system.

- ∨ 📁 System devices
  - 📁 ACPI Fan
  - 📁 ACPI Fan
  - 📁 ACPI Fan
  - 📁 ACPI Fan
  - 📁 ACPI Fan
  - 📁 ACPI Fixed Feature Button
  - 📁 ACPI Power Button
  - 📁 ACPI Processor Aggregator
  - 📁 ACPI Thermal Zone
  - 📁 CannonLake LPC Controller (Q370) - A306
  - 📁 CannonLake SMBus - A323
  - 📁 CannonLake SPI (flash) Controller - A324
  - 📁 CannonLake Thermal Subsystem - A379
  - 📁 Composite Bus Enumerator
  - 📁 High Definition Audio Controller
  - 📁 High precision event timer
  - 📁 Intel(R) Management Engine Interface
  - 📁 Intel(R) Power Engine Plug-in
  - 📁 Intel(R) Serial IO GPIO Host Controller - INT3450
  - 📁 Intel(R) Serial IO I2C Host Controller - A368
  - 📁 Intel(R) Xeon(R) E3 - 1200/1500 v5/6th Gen Intel(R) Core(TM) Gaussian Mixture Model - 1911
  - 📁 Microsoft ACPI-Compliant System
  - 📁 Microsoft System Management BIOS Driver
  - 📁 Microsoft UEFI-Compliant System
  - 📁 Microsoft Virtual Drive Enumerator
  - 📁 Microsoft Windows Management Interface for ACPI
  - 📁 Microsoft Windows Management Interface for ACPI
  - 📁 Microsoft Windows Management Interface for ACPI
  - 📁 Microsoft Windows Management Interface for ACPI
  - 📁 Microsoft Windows Management Interface for ACPI
  - 📁 NDIS Virtual Network Adapter Enumerator
  - 📁 Numeric data processor
  - 📁 PCI Express Root Complex
  - 📁 PCI standard host CPU bridge
  - 📁 PCI standard RAM Controller
  - 📁 Plug and Play Software Device Enumerator
  - 📁 Programmable interrupt controller
  - 📁 Remote Desktop Device Redirector Bus
  - 📁 System CMOS/real time clock

Serial IO driver

Verify if the drivers for Touchpad, IR camera, and keyboard and are installed.
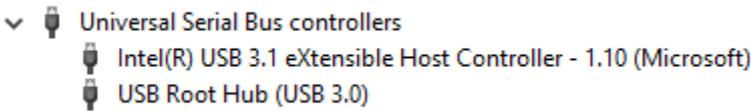
Figure 2. Serial IO driver

Security drivers

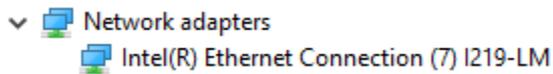Verify if the security drivers are already installed in the system.

USB drivers

Verify if the USB drivers are already installed in the computer.
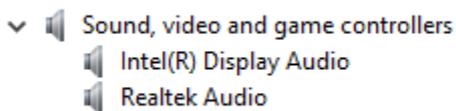
Network adapter drivers

Verify if the Network adapter drivers are already installed in the system.

Realtek Audio

Verify if audio drivers are already installed in the computer.

Storage controller

Verify if the storage control drivers are already installed in the system.

∨ 🗄 Storage controllers
    🗄 Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller
    🗄 Microsoft Storage Spaces Controller

Getting help

Contacting Dell

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

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

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