OptiPlex 7071 Tower

Setup and specifications guide

Regulatory Model: D28M
Regulatory Type: D28M001

Notes, cautions, and warnings

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

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

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

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Contents

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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.

4. Connect the power cable.

5. Press the power button.

6. Finish operating system setup.

   For Ubuntu:

   Follow the on-screen instructions to complete the setup. For more information about installing and configuring Ubuntu, see the knowledge base articles SLN151664 and SLN151748 at www.dell.com/support.

   For Windows: Follow the on-screen instructions to complete the setup. When setting up, Dell recommends that you:

   - Connect to a network for Windows updates.

     NOTE: If connecting to a secured wireless network, enter the password for the wireless network access when prompted.

   - If connected to the internet, sign in with or create a Microsoft account. If not connected to the internet, create an offline account.
   - On the **Support and Protection** screen, enter your contact details.

7. Locate and use Dell apps from the Windows Start menu—Recommended

Table 1. Locate Dell apps

Dell apps	Details
	Dell Product Registration Register your computer with Dell.
	Dell Help & Support Access help and support for your computer.

Dell apps	Details
	**SupportAssist** Proactively checks the health of your computer's hardware and software. **NOTE: Renew or upgrade your warranty by clicking the warranty expiry date in SupportAssist.**
	**Dell Update** Updates your computer with critical fixes and important device drivers as they become available.
	**Dell Digital Delivery** Download software applications including software that is purchased but not preinstalled on your computer.

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Chassis overview

Topics:

- Front view
- Back view
- System board layout

Front view

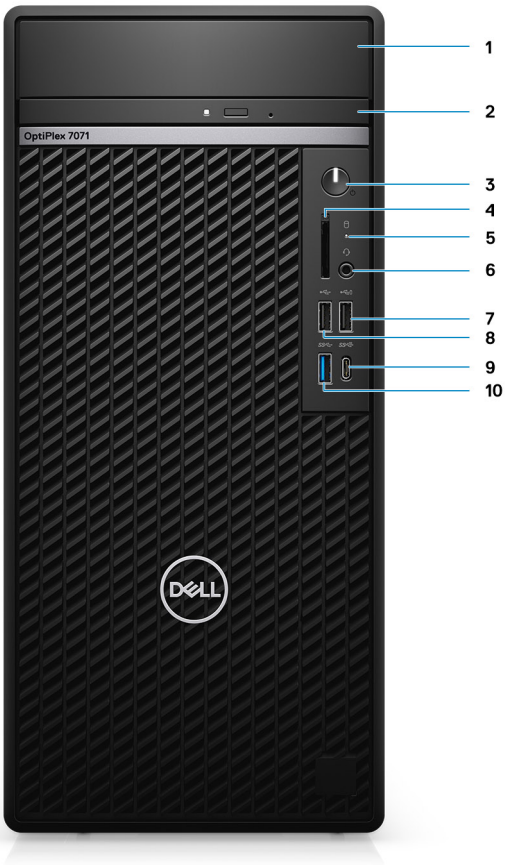


Figure 1. Front view

1. HDD bracket cover
2. Optical Disk Drive
3. Power button
4. SD 4.0 card reader—optional
5. Hard drive activity light
6. Headset/Universal audio jack port
7. USB 2.0 port with PowerShare
8. USB 2.0 port
9. USB 3.1 Gen 2 Type-C port with PowerShare

10. USB 3.1 Gen 1 port

Back view

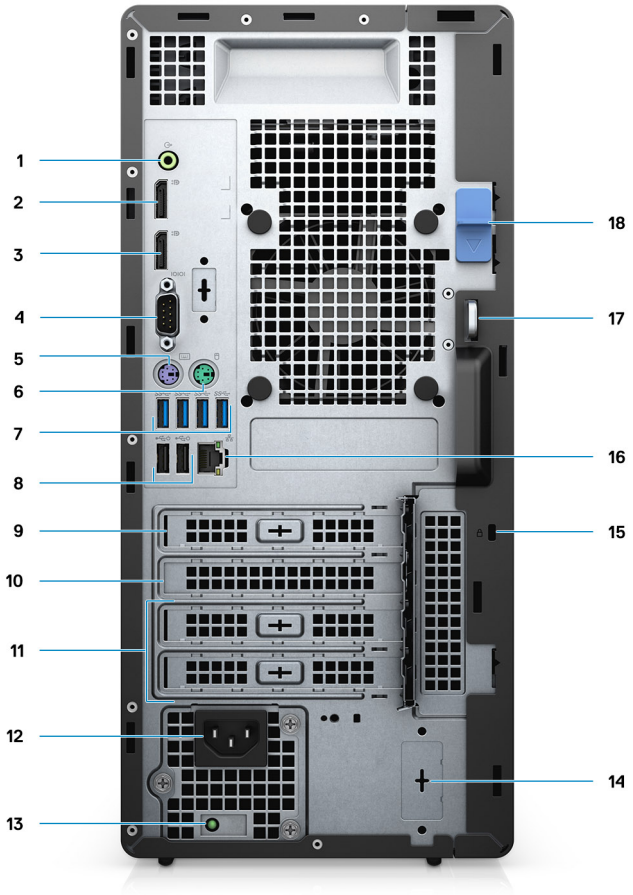
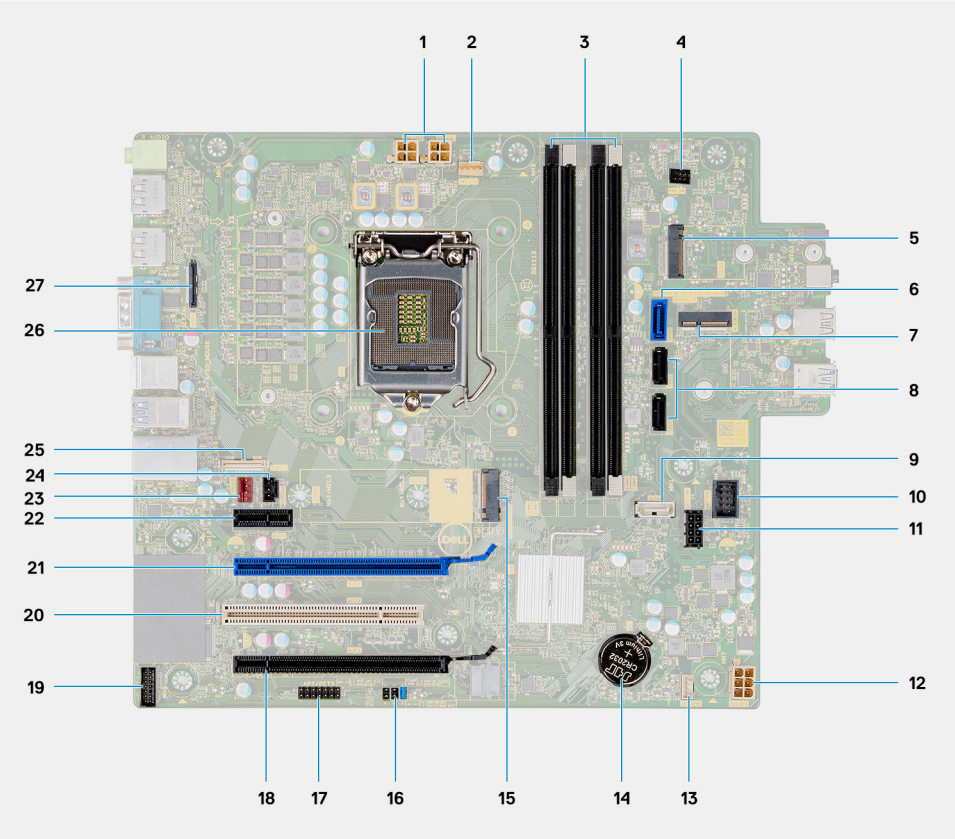


Figure 2. Back view

1. Line-out audio jack
2. DisplayPort v1.2 (2)
3. Optional module (HDMI 2.0, DP, VGA, or USB Type-C Alt mode)
4. Serial port
5. PS/2 port for keyboard
6. PS/2 port for mouse
7. USB 3.1 Gen 1 ports (4)
8. USB 2.0 ports with Smart Power On (2)
9. PCI-Express slot
10. PCI slot
11. PCI-Express slots (2)
12. Power port
13. Power-supply diagnostics light
14. SMA connectors (2)—optional
15. Kensignton lock
16. Network port
17. Padlock loop
18. Release latch

System board layout



1. PSU power connector
2. Processor fan connector
3. Memory module connector
4. Power button connector
5. M.2 SD card reader slot/second M.2 PCIe connector
6. SATA0 connector (blue)
7. M.2 WLAN connector
8. SATA1/2 connector (black)
9. SATA3 connector (white)
10. Internal USB connector
11. SATA power cable
12. ATX power connector
13. Speaker cable connector
14. Coin-cell battery
15. M.2 2230/2280 SSD PCIe connector
16. CMOS_CLR/Password/Service_Mode jumper
17. APS/PETS connector
18. PCIe x16 (wired x4) (Slot4)
19. LPC debug card connector
20. PCI-32 (Slot3)
21. PCIe x16 (Slot2)
22. PCIe x1 (Slot1)
23. Chassis fan connector
24. Intrusion switch connector
25. Type-C connector
26. Processor socket
27. Video connector

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Specifications of OptiPlex 7071 Tower

Chipset

Table 2. Chipset

Description	Values
Chipset	Intel Q370
Processor	9th Generation Intel Core i3/i5/i7/i9
DRAM bus width	64 bit
PCIe bus	Gen 3.0

Processors

NOTE: Global Standard Products (GSP) are a subset of Dell's relationship products that are managed for availability and synchronized transitions on a worldwide basis. They ensure the same platform is available for purchase globally. This allows customers to reduce the number of configurations managed on a worldwide basis, thereby reducing their costs. They also enable companies to implement global IT standards by locking in specific product configurations worldwide.

Device Guard (DG) and Credential Guard (CG) are the new security features that only available on Windows 10 Enterprise today. Device Guard is a combination of enterprise-related hardware and software security features. When you configure together, it locks a device down so that it can only run trusted applications. If it is not a trusted application, it cannot run. Credential Guard uses virtualization-based security to isolate secrets (credentials) so that only privileged system software can access them. Unauthorized access to these secrets can lead to credential theft attacks. Credential Guard prevents these attacks by protecting NTLM password hashes and Kerberos Ticket Granting Tickets.

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

Table 3. Processors

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
9th Generation Intel Core i3-9100	65 W	4	4	3.60 GHz to 4.20 GHz	6 MB	Intel UHD Graphics 630
9th Generation Intel Core i3-9300	65 W	4	4	3.70 GHz to 4.30 GHz	8 MB	Intel UHD Graphics 630
9th Generation Intel Core i5-9400	65 W	6	6	2.90 GHz to 4.10 GHz	9 MB	Intel UHD Graphics 630
9th Generation Intel Core i5-9500	65 W	6	6	3.00 GHz to 4.40 GHz	9 MB	Intel UHD Graphics 630
9th Generation Intel Core i5-9600	65 W	6	6	3.10 GHz to 4.60 GHz	9 MB	Intel UHD Graphics 630
9th Generation Intel Core i7-9700	65 W	8	8	3.00 GHz to 4.70 GHz	12 MB	Intel UHD Graphics 630
9th Generation Intel Core i7-9700K	95 W	8	8	3.60 GHz to 4.90 GHz	12 MB	Intel UHD Graphics 630

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
9th Generation Intel Core i9-9900	65 W	8	16	3.10 GHz to 5.00 GHz	16 MB	Intel UHD Graphics 630
9th Generation Intel Core i9-9900K	95 W	8	16	3.60 GHz to 5.00 GHz	16 MB	Intel UHD Graphics 630

Operating system

- Windows 10 Home (64-bit)
- Windows 10 Professional (64-bit)
- Windows 10 Enterprise Ready
- Ubuntu 18.04 LTS 64-bit
- NeoKylin (64-bit)

Commercial platform Windows 10 N-2 and 5-year operating system supportability:

All newly introduced 2019 and later commercial platforms (Latitude, OptiPlex, and Dell Precision) will qualify and ship with the most current factory installed SemiAnnual Channel Windows 10 version (N) and qualify (but not ship) the previous two versions (N-1, N-2). This device platform OptiPlex 7070 will RTS with Windows 10 version v19H1 at time of launch, and this version will determine the N-2 versions that are initially qualified for this platform.

For future versions of Windows 10, Dell continues to test the commercial platform with coming Windows 10 releases during device production and for five years post-production, including both fall and spring releases from Microsoft.

For additional information about N-2 and 5-year Windows operating system supportability, see the Dell Windows as a Service (WaaS), at dell.com/support.

Memory

NOTE: Memory modules should be installed in pairs of matched memory size, speed, and technology. If the memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. The entire memory range is available to 64-bit operating systems.

Table 4. Memory specifications

Description	Values
Slots	4 UDIMM slots
Type	Dual-channel DDR4
Speed	2666 MHz
Maximum memory	128 GB
Minimum memory	4 GB
Memory size per slot	4 GB, 8 GB, 16 GB, 32 GB
Configurations supported	• 4 GB (1 x 4 GB) • 8 GB (2 x 4 GB, 1 x 8 GB) • 16 GB (2 x 8 GB, 1 x 16 GB) • 32 GB (1 x 32 GB, 4 x 8 GB, 2 x 16 GB) • 64 GB (2 x 32 GB, 4 x 16 GB) • 128 GB (4 x 32 GB)

Storage

Your computer supports one of the following configurations:

- One 2.5-inch hard drive
- Two 2.5-inch hard drives
- One 3.5-inch hard drive
- Two 3.5-inch hard drives
- One 2.5-inch hard drive and one 3.5-inch hard drive
- One M.2 2230/2280 solid-state drive (class 35, 40)
- One M.2 2230/2280 solid-state drive (class 35, 40) and one 3.5-inch hard drive
- One M.2 2230/2280 solid-state drive (class 35, 40) and one 2.5-inch hard drive/solid-state drive
- One M.2 2230/2280 solid-state drive (class 35, 40) and dual 2.5-inch hard drives
- One M.2 2230/2280 solid-state drive and one M.2 2230 solid-state drive through media card reader
- One 2.5-inch hard drive and one M.2 16 GB Intel Optane memory
- Dual 2.5-inch hard drives and one M.2 16 GB Intel Optane memory
- One 3.5-inch hard drive and one M.2 16 GB Intel Optane memory
- One 3.5-inch/2.5-inch hard drive and one M.2 16 GB Intel Optane memory

The primary hard drive of your computer varies with the storage configuration. For computers:

- with a M.2 solid-state drive, the M.2 solid-state drive is the primary drive
- without a M.2 drive, either the 3.5-inch hard drive or one of the 2.5-inch hard drives is the primary drive

NOTE: For dual 2.5-inch hard drive and Intel Optane memory configuration, you must disconnect the 2nd hard drive from the controller to support Intel Optane memory in the Windows operating system.

Table 5. Storage specifications

Storage type	Interface type	Capacity
2.5-inch, 7200 rpm, SATA hard drive	SATA, up to 6 Gbps	Up to 1 TB
2.5-inch, 7200 rpm, FIPS Self-Encrypting Opal 2.0 hard drive	SATA, up to 6 Gbps	Up to 500 GB
2.5-inch, 5400 rpm, hard drive	SATA, up to 6 Gbps	Up to 2 TB
3.5-inch, 5400 rpm, SATA hard drive	SATA, up to 6 Gbps	Up to 4 TB
3.5-inch, 7200 rpm, SATA hard drive	SATA, up to 6 Gbps	Up to 2 TB
M.2 2230, PCIe NVMe, Class 35 solid-state drive	PCIe NVMe Gen3 x4	Up to 512 GB
M.2 2280, PCIe NVMe, Class 40 solid-state drive	PCIe NVMe Gen3 x4	Up to 2 TB
M.2 2280, PCIe NVMe, Class 40 Self-Encrypting Opal 2.0 solid-state drive	PCIe NVMe Gen3 x4	Up to 1 TB

Intel Optane memory

Intel Optane memory functions only as a storage accelerator. It neither replaces nor adds to the memory (RAM) installed on your computer.

NOTE: Intel Optane memory is supported on computers that meet the following requirements:

- **7th Generation or higher Intel Core i3/i5/i7 processor**
- **Windows 10 64-bit version or higher (Anniversary Update)**
- **Latest version of Intel Rapid Storage Technology driver**
- **UEFI boot mode configuration**

Table 6. Intel Optane memory

Description	Values
Type	Storage

Description	Values
Interface	PCIe 3.0x4
Connector	M.2 2230/2280
Configurations supported	16 GB
Capacity	Up to 32 GB

Ports and connectors

Table 7. External ports and connectors

Description	Values
External:	
Network	1 RJ-45 port 10/100/1000 Mbps (rear)
USB	• 1 USB 2.0 port with PowerShare (front) • 1 USB 2.0 port (front) • 2 USB 2.0 ports with Smart Power On (rear) • 1 USB 3.1 Gen 2 Type-C port with PowerShare (front) • 1 USB 3.1 Gen 1 port (front) • 4 USB 3.1 Gen 1 ports (rear)
Audio	• 1 Universal audio jack (front) • 1 Line-out audio jack (rear)
Video	• 2 DisplayPort v1.2 • 1 Optional 3rd video port—HDMI 2.0, DP, VGA, or USB Type-C Alt mode)
Media card reader	1 SD 4.0 card—optional
Docking port	Not supported
Power adapter port	AC-in
Serial	1 port
PS/2	2 ports
Security	• 1 Kensington slot • 1 Padlock loop
Antenna	2 SMA connectors—optional

Table 8. Internal ports and connectors

Description	Values
Internal:	
Expansion	• 1 full-height Gen 3 PCIe x16 slot • 1 full-height PCIe x16 (wired x4) slot • 1 full-height PCI-32 slot • 1 full-height PCIe x1 slot
SATA slots	4 SATA slots for 3.5-inch HDD, 2.5-inch HDD/SSD, and slim Optical Disk Drive (ODD)

Description	Values
M.2	• 1 M.2 2230 slot for WiFi • 1 M.2 2230/2280 slot for solid-state drive or Intel Optane Memory • 1 M.2 2230 slot for solid-state drive through media card reader **NOTE: To learn more about the features of different types of M.2 cards, see the knowledge base article SLN301626.**

Media-card reader

NOTE: Media-card reader is mutually exclusive with a dual M.2 configuration.

Table 9. Media-card reader specifications

Description	Values
Type	1 SD 4.0 card
Cards supported	• Secure Digital (SD) • Secure Digital High Capacity (SDHC) • Secure Digital Extended Capacity (SDXC) • MultiMedia Card (MMC) • MMC+

Audio

Table 10. Audio specifications

Description		Values
Controller		Realtek ALC3246
Stereo conversion		Supported
Internal interface		High Definition Audio interface
External interface		Universal audio jack
Speakers		1
Internal speaker amplifier		Not supported
External volume controls		Keyboard shortcut controls
Speaker output:		
	Average	2 W
	Peak	2.5 W
Subwoofer output		Not supported
Microphone		Not supported

Video

Table 11. Discrete graphics specifications

Discrete graphics			
Controller	**External display support**	**Memory size**	**Memory Type**
AMD Radeon RX 550	DP 1.4/2 x mDP	4 GB	GDDR5
NVIDIA GeForce RTX 2080	3 x DP1.4/1 x HDMI 2.0b	8 GB	GDDR6
NVIDIA GeForce GTX 1660	HDMI 2.0b/DVI-D/DP 1.4a	6 GB	GDDR5

Table 12. Integrated graphics specifications

Integrated graphics			
Controller	**External display support**	**Memory size**	**Processor**
Intel UHD Graphics 630	2 x DP 1.2	Shared system memory	9th Generation Intel Core i3/i5/i7/i9

Communications

Ethernet

Table 13. Ethernet specifications

Description	Values
Model number	Intel i219LM
Transfer rate	10/100/1000 Mbps

Wireless module

Table 14. Wireless module specifications

Description	Values	
Model number	Qualcomm QCA9377	Intel AX200
Transfer rate	Up to 433 Mbps	Up to 2400 Mbps
Frequency bands supported	2.4 GHz, 5 GHz	2.4 GHz, 5 GHz
Wireless standards	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac)	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6 (WiFi 802.11ax)
Encryption	• 64-bit/128-bit WEP • AES-CCMP • TKIP	• 64-bit/128-bit WEP • AES-CCMP • TKIP
Bluetooth	Bluetooth 4.2	Bluetooth 5

Power supply unit

Table 15. Power supply unit specifications

Description		Values
Type	D9 260 W EPA Bronze	D10 460 W EPA Bronze
Diameter (connector)	Not supported	Not supported
Input voltage	90 VAC to 264 VAC	90 VAC to 264 VAC
Input frequency	47 Hz to 63 Hz	47 Hz to 63 Hz
Input current (maximum)	4.20 A	7 A
Output current (continuous)	• +12 VA/16.50 A • +12 VB/16 A • +12 VSB/2.50 A Standby mode: • +12 VA/0.5 A • +12 VB/2.5 A	• +12 VA1/18 A • +12 VA2/18 A • +12 VB/18 A • +12 VC/18 A Standby mode: • +12 VA1/1.50 A • +12 VA2/1.50 A • +12 VB/2.50 A
Rated output voltage	• +12 VA • +12 VB	• +12 VA1 • +12 VA2 • +12 VB • +12 VC
Temperature range:		
Operating	5°C to 45°C (41°F to 113°F)	5°C to 45°C (41°F to 113°F)
Storage	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)

Dimensions and weight

Table 16. Dimensions and weight

Description	Values
Height:	
Front	367 mm (14.45 in.)
Rear	367 mm (14.45 in.)
Width	169 mm (6.65 in.)
Depth	300.80 mm (11.84 in.)
Weight (maximum)	9.11 kg (20.08 lb) **NOTE: The weight of your computer depends on the configuration ordered and the manufacturing variability.**

Add-in cards

Table 17. Add-in cards

Add-in cards
Additional VGA video port for Tower
Additional HDMI 2.0 video port Tower
USB 3.1 Gen 2 Type-C PCIe card
USB 3.1 Gen 2 Type-C Alt mode port for Tower
USB 3.1 Gen 2 PCIe card
Additional DisplayPort for Tower
Serial and parallel port PCIe card
Intel Gigabit NIC PCIe card
Aquantia AQtion AQN-108 5/2.5 GbE NIC adapter
Powered Serial card PCIe FH for Tower

Security

Table 18. Security

Security options	OptiPlex 7071 Tower
Kensington lock	Supported
Padlock	Supported
Lockable port cover	Optional
Windows Hello support	Optional through security input device
Chassis Intrusion Switch	Standard
Dell Smartcard Keyboard	Optional

Data security

Table 19. Data security

Data security options	Values
Dell Data Protection—Endpoint Security Suite and Endpoint Security Suite Enterprise	Supported
Dell Data Protection—SW Encryption	Supported
Dell Data Protection—External Media Encryption	Not supported
Windows 10 Device Guard and Credential Guard (Enterprise SKU)	Supported
Microsoft Windows BitLocker	Supported
Local hard drive data wipe through BIOS (secure erase)	Supported
FIPS Self-Encrypting Opal 2.0 hard drive	Supported

Environmental

Table 20. Environmental specifications

Feature	OptiPlex 7071 Tower
Recyclable packaging	Yes
BFR/PVC—free chassis	No
Vertical orientation packaging support	Yes
MultiPack packaging	Yes (DAO only)
Energy-Efficient Power Supply	Standard
ENV0424 compliant	Yes

NOTE: Wood-based fiber packaging contains a minimum of 35% recycled content by total weight of wood-based fiber. Packaging that contains without wood-based fiber can be claimed as Not Applicable. Anticipated Required Criteria for EPEAT Revision Effective 1H 2018.

Energy Star and Trusted Platform Module (TPM)

Table 21. Energy Star and TPM

Features	Specifications
Energy Star	Compliant
TPM	Hardware Trusted Platform Module (Discrete TPM Enable)

Computer environment

Airborne contaminant level: G1 as defined by ISA-S71.04-1985

Table 22. Computer environment

Description	Operating	Storage
Temperature range	10°C to 35°C (50°F to 95°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	20% to 80% (non-condensing)	5% to 95% (non-condensing)
Vibration (maximum)*	0.26 GRMS	1.37 GRMS
Shock (maximum)	40 G†	105 G†
Altitude (maximum)	0 m to 3048 m (32 ft to 10000 ft)	0 m to 10668 m (32 ft to 35000 ft)

* Measured using a random vibration spectrum that simulates user environment.

† Measured using a 2 ms half-sine pulse when the hard drive is in use.

4

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

To initiate a one-time boot menu with a list of the valid boot devices for the system, press <F12> when the Dell logo is displayed. Diagnostics and BIOS Setup options are also in this menu. The devices that are 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, do not change the boot order that is stored in the BIOS.

The options are:

- Legacy External Device Boot
  - Onboard NIC
- UEFI Boot:
  - UEFI: TOSHIBA MQ01ACF050
- Other Options:
  - BIOS Setup
  - Device Configuration
  - BIOS Flash Update
  - Diagnostics
  - Intel (R) Management Engine BIOS Extension (MEBx)
  - 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.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.

Keys	Navigation
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 23. General

Option	Description
System Information	Displays the following information: • **System Information**: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Manufacture Date, Ownership Date, and Express Service Code. • **Memory Information**: Displays Memory Installed, Memory Available, Memory Speed, Memory Channel Mode, Memory Technology, DIMM 1 Size, DIMM 2 Size, DIMM 3 Size, and DIMM 4 Size. • **PCI Information**: Displays Slot1, Slot2, Slot3, Slot4, Slot5_M.2, Slot6_M.2, and Slot7_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. **Boot Sequence**: By default, the **UEFI: TOSHIBA MQ01ACF050** option is enabled. **Boot List Option**: • Legacy External Devices • UEFI—The **UEFI** option is enabled by default.
Advanced Boot Options	Allows you to select the Enable Legacy Option ROMs option, when in UEFI boot mode. • Enable Legacy Option ROMs—The **Enable Legacy Option ROMs** option is enabled by 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—The **Always, Except Internal HDD** option is enabled by default. • Always, Except Internal HDD&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

Table 24. System Configuration

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: The **Enabled w/PXE** option is enabled by default. **NOTE: Depending on the computer and its installed devices, the items that are listed in this section may or may not be display.**
Serial Port	This option determines how the integrated serial port operates. The options are: • Disabled • COM1: The **COM1** option is enabled by default. • COM2 • COM3 • COM4
SATA Operation	This option enables you to configure the operating mode of the integrated SATA hard drive controller. The options are: • Disabled—The SATA controllers are hidden • AHCI—SATA is configured for AHCI mode • RAID ON—SATA is configured to support RAID mode. This option is enabled by default.
Drives	Allows you to enable or disable various drives on-board: • SATA-0 • SATA-1 • SATA-2 • SATA-3 • SATA-4 • M.2 PCIe SSD-0 • M.2 PCIe SSD-1
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. The options are: • Enable USB Boot Support—enabled by default • Enable Front USB Ports—enabled by default • Enable Rear USB Ports—enabled by default
Front USB Configuration	Allows you to enable or disable the front USB ports. The options are: • Front Port 1(Bottom Right)*—enabled by default • Front Port1 w/PowerShare (Top Right)—enabled by default • Front Port 2(Bottom Left)*—enabled by default • Front Port 2(Top Left)—enabled by default
Rear USB Configuration	Allows you to enable or disable the rear USB ports. All the ports are enabled by default.

Option	Description
USB PowerShare	This option enables you to charge the external devices, such as mobile phones, music player. The **Enable USB PowerShare** option is disabled by default.
Audio	Allows you to enable or disable the integrated audio controller. The option **Enable Audio** is enabled by default. • Enable Microphone—enabled by default • Enable Internal Speaker—enabled by default
Dust Filter Maintenance	Allows you to enable or disable BIOS messages for maintaining the optional dust filter that is installed on your computer. BIOS generates a preboot reminder to clean or replace the dust filter based on the interval set. • Disabled—enabled by default • 15 days • 30 days • 60 days • 90 days • 120 days • 150 days • 180 days
Miscellaneous Devices	Allows you to enable or disable various on board devices. The options are: • Enable PCI Slot—enabled by default • Enable Secure Digital (SD) Card—enabled by default • Secure Digital (SD) Card • Secure Digital (SD) Card Read-Only Mode

Video screen options

Table 25. 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 26. Security

Option	Description
Admin Password	Allows you to set, change, and delete the admin password.
System Password	Allows you to set, change, and delete the system password.
Internal HDD-0 Password	Allows you to set, change, and delete the computer internal hard drive.
Strong Password	This option lets you enable or disable strong password for the system. The option is disabled by default.
Password Configuration	Allows you to control the minimum and maximum number of characters that are enabled for an administrative password and the system password. The range of characters is 4–32.

Option	Description
Password Bypass	This option enables you to bypass the System (Boot) password and the internal hard drive password prompts during a system restart. • **Disabled**—Always prompt for the system and internal hard drive password when they are set. This option is enabled by default. • Reboot Bypass—Bypass the password prompts on restarts (warm boots). **NOTE: The system always prompts for the system and internal hard drive passwords when powered on from the off state (a cold boot). Also, the system prompts 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 enables BIOS updates through UEFI capsule update packages. This option is enabled by default. Disabling this option blocks 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—enabled by default • Clear • PPI Bypass for Enable Commands • PPI Bypass for Disable Commands • PPI Bypass for Clear Commands • Attestation Enable—enabled by default • Key Storage Enable—enabled by default • SHA-256—enabled by default The options are: • Disabled • Enabled—enabled by default
Absolute	This field enables you to enable, disable, or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. • Enabled—enabled by default • Disabled • Permanently Disabled
Chassis Intrusion	This field controls the chassis intrusion feature. The options are: • Disabled—enabled by default • Enabled • On-Silent
OROM Keyboard Access	This option determines whether users can enter Option ROM Configuration screens through hotkeys during the system boot. • Disabled • Enabled—enabled by default • One Time Enable
Admin Setup Lockout	Allows you to prevent users from entering the setup when Admin password is set. This option is disabled by default.
Master Password Lockout	When enabled, this option disables master password support. This option is disabled by default.
SMM Security Mitigation	Allows you to enable or disable another UEFI SMM Security Mitigation protections. This option is disabled by default.

Secure boot options

Table 27. 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 28. 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. The options are: • Disabled • Enabled • Software controlled—enabled by default
Enclave Memory Size	This option sets **SGX Enclave Reserve Memory** size. The options are: • 32 MB • 64 MB • 128 MB—enabled by default

Performance

Table 29. 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 30. Power Management

Option	Description
AC Recovery	Determines how the system responds when AC power restored after a power loss. You can set the AC Recovery to: · Power Off—enabled by default · Power On · Last Power State
Enable Intel Speed Shift Technology	Allows you to enable or disable **Intel Speed Shift Technology** option. This option is enabled by default.
Auto On Time	This option enables you to set time to automatically turn on the computer. The options are: · Disabled—enabled by default · Every Day · Weekdays · Select Days

Option	Description
Deep Sleep Control	This option determines how aggressively the system conserves power while shut down (SS) or in the Hibernate (S4) mode. The options are: • Disabled • Enabled in S5 only • Enabled in S4 and S5—enabled by default
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/WLAN	This option enables 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 enables 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 causes the system to wake up and immediately boot to PXE. • **WLAN Only** - Allows the system to be powered on by special WLAN signals. The **Disabled** option is enabled by default.
Block Sleep	Allows you to block entering to sleep (S3 state) in operating system environment. This option is disabled by default.

Post behavior

Table 31. 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 32. Manageability

Option	Description
Intel AMT Capability	This option enables you to enable or disable Intel AMT capability. The options are: • Disabled • Enabled—enabled by default • Restrict MEBx Access
USB provision	This option is disabled by default.
MEBx Hotkey	This option is enabled by default.

Virtualization support

Table 33. Virtualization Support

Option	Description
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can use the additional hardware capabilities that are provided by the Intel Virtualization technology. The option **Enable Intel Virtualization Technology** is enabled by default.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from using the additional hardware capabilities that are provided by the Intel Virtualization technology for direct I/O. The option **Enable VT for Direct I/O** is enabled by default.
Trusted Execution	This option specifies whether a Measured Virtual Machine Monitor (MVMM) can use the additional hardware capabilities that are provided by Intel Trusted Execution Technology. The option **Trusted Execution** is disabled by default.

Wireless options

Table 34. 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 35. Maintenance

Option	Description
Service Tag	Displays the service tag of your computer.
Asset Tag	If an asset tag is not set, this option enables you to create a system asset tag. This option is disabled by default.

Option	Description
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. The option **Allow BIOS Downgrade** is enabled by default.
Data Wipe	This option enables you to securely erase data from all the internal storage devices. The process adheres to SerialATA Security Erase and eMMC JEDEC Sanitize specifications. The option **Wipe on Next Boot** is disabled 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 hard drive or an external USB drive. **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 36. System Logs

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

Advanced configuration

Table 37. 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 reinstall. For more information about 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/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.

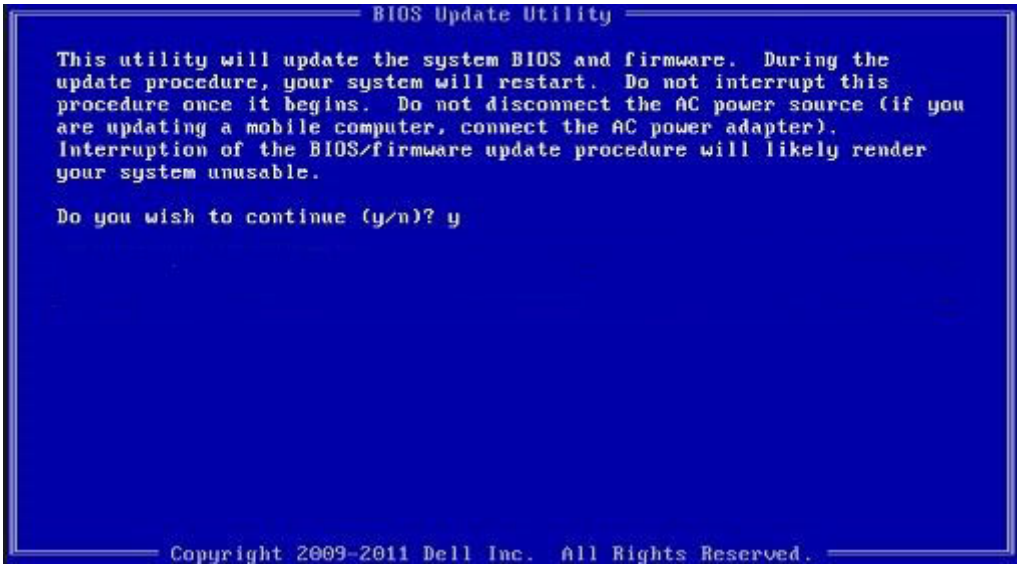


Figure 3. DOS BIOS Update Screen

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/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.

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

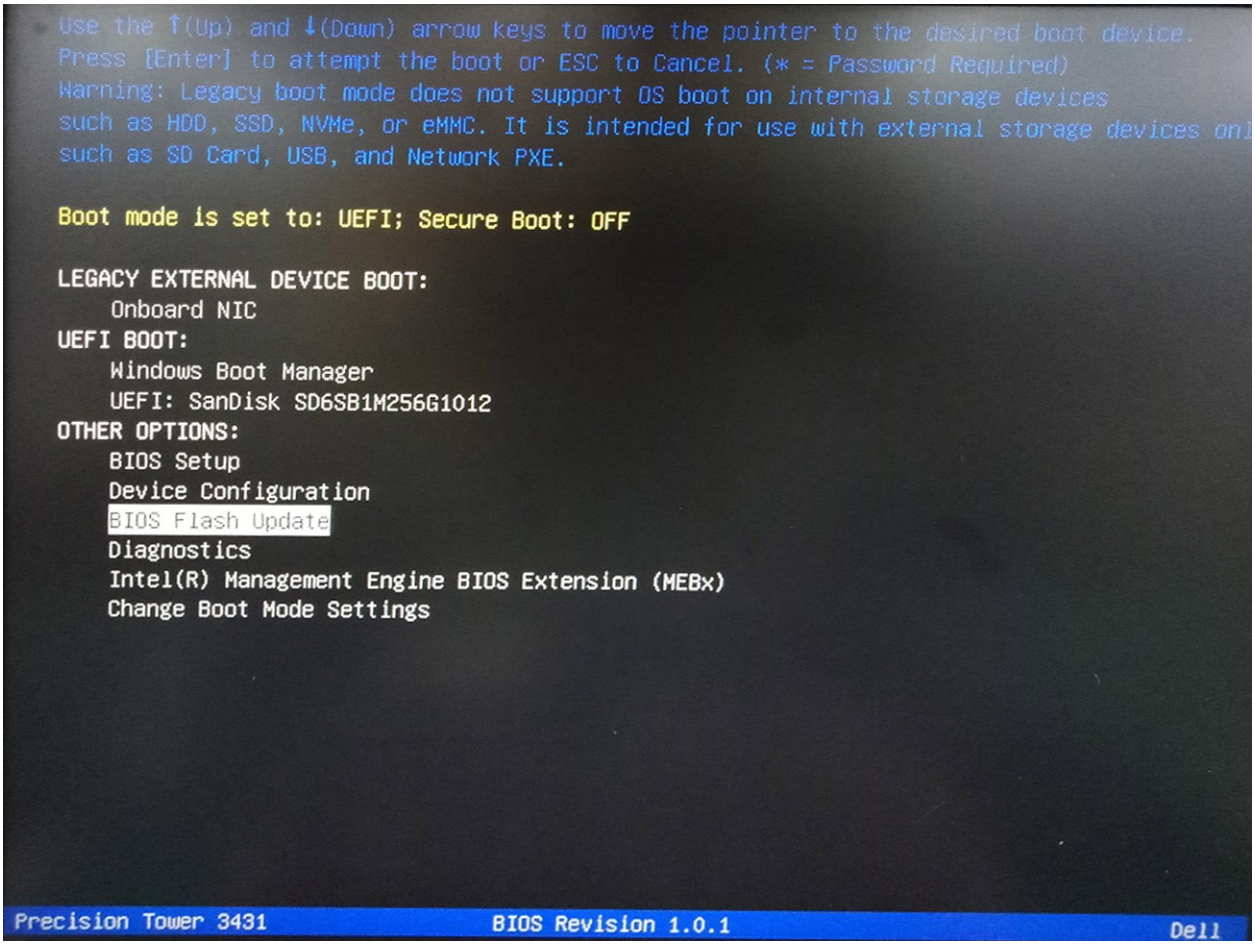
To update your BIOS from the F12 One-Time boot menu, you will need:

- 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

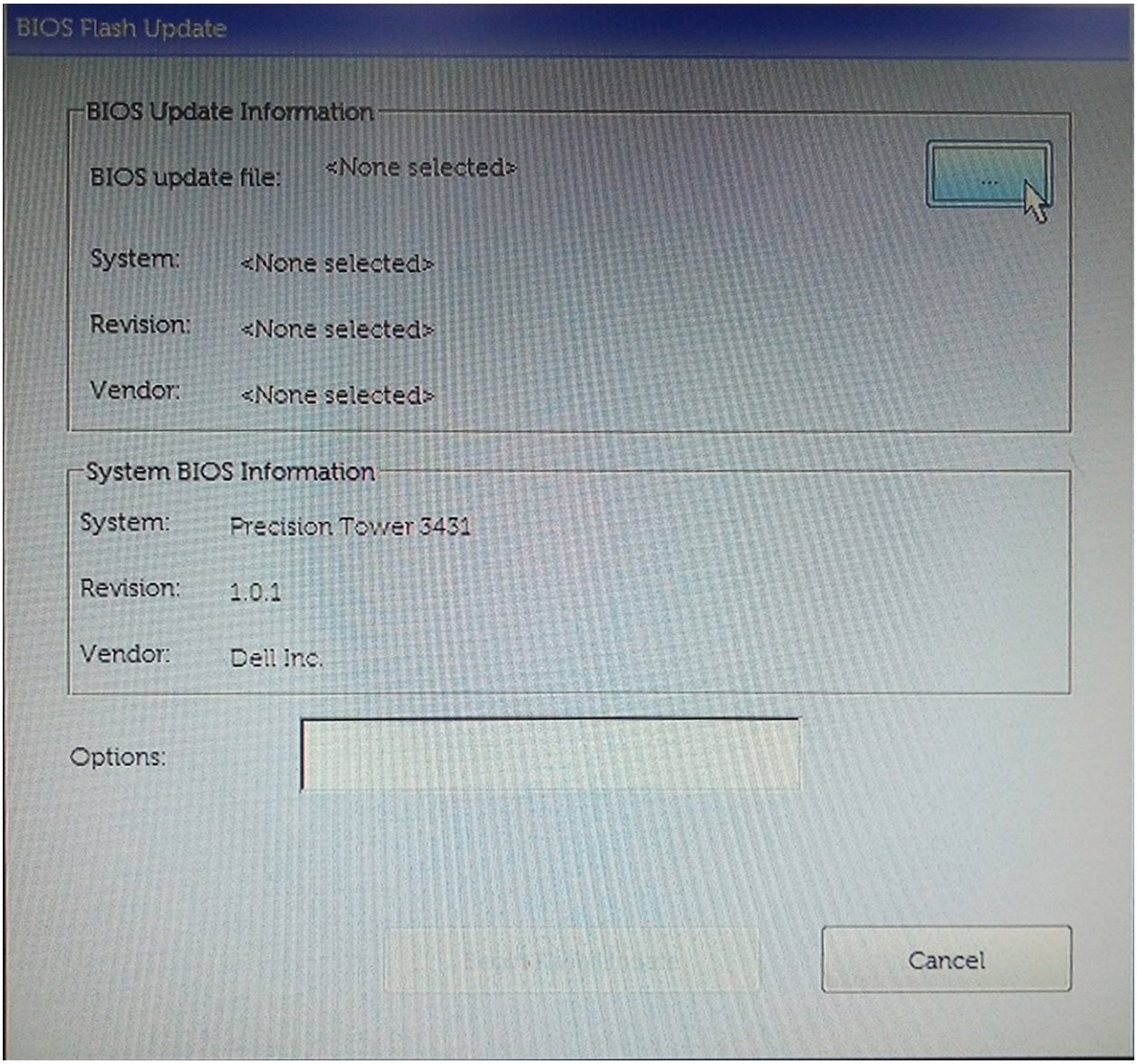
Perform the following steps to execute the BIOS update flash process from the F12 menu:

CAUTION: Do not power off the system during the BIOS update process. Powering off the system could make the system fail to boot.

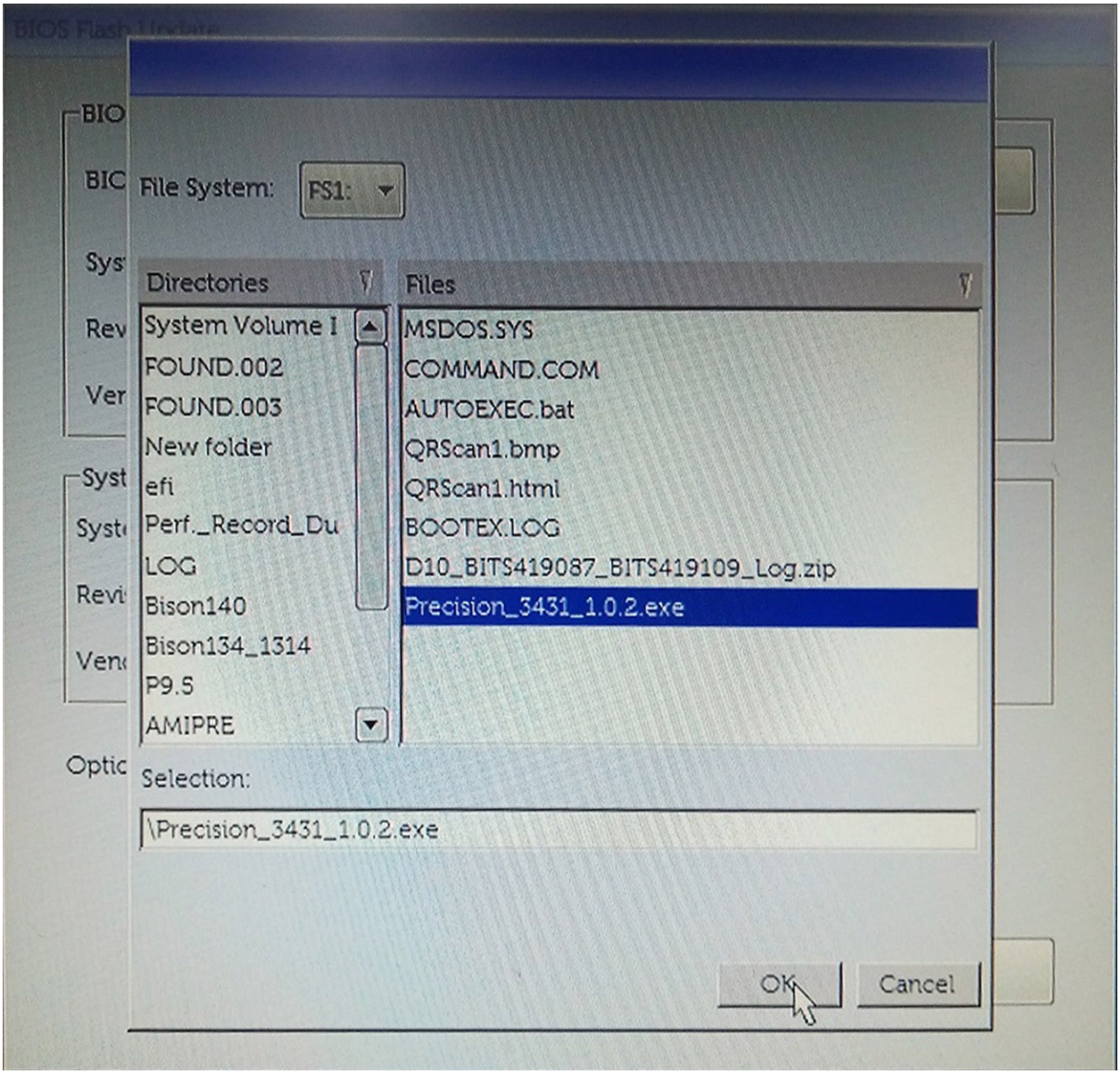
1. From a power off state, insert the USB key where you copied the flash into a USB port of the system .
2. Power on the system and press the F12 key to access the One-Time Boot Menu, Highlight **BIOS Flash Update** using the arrow keys then press **Enter**.



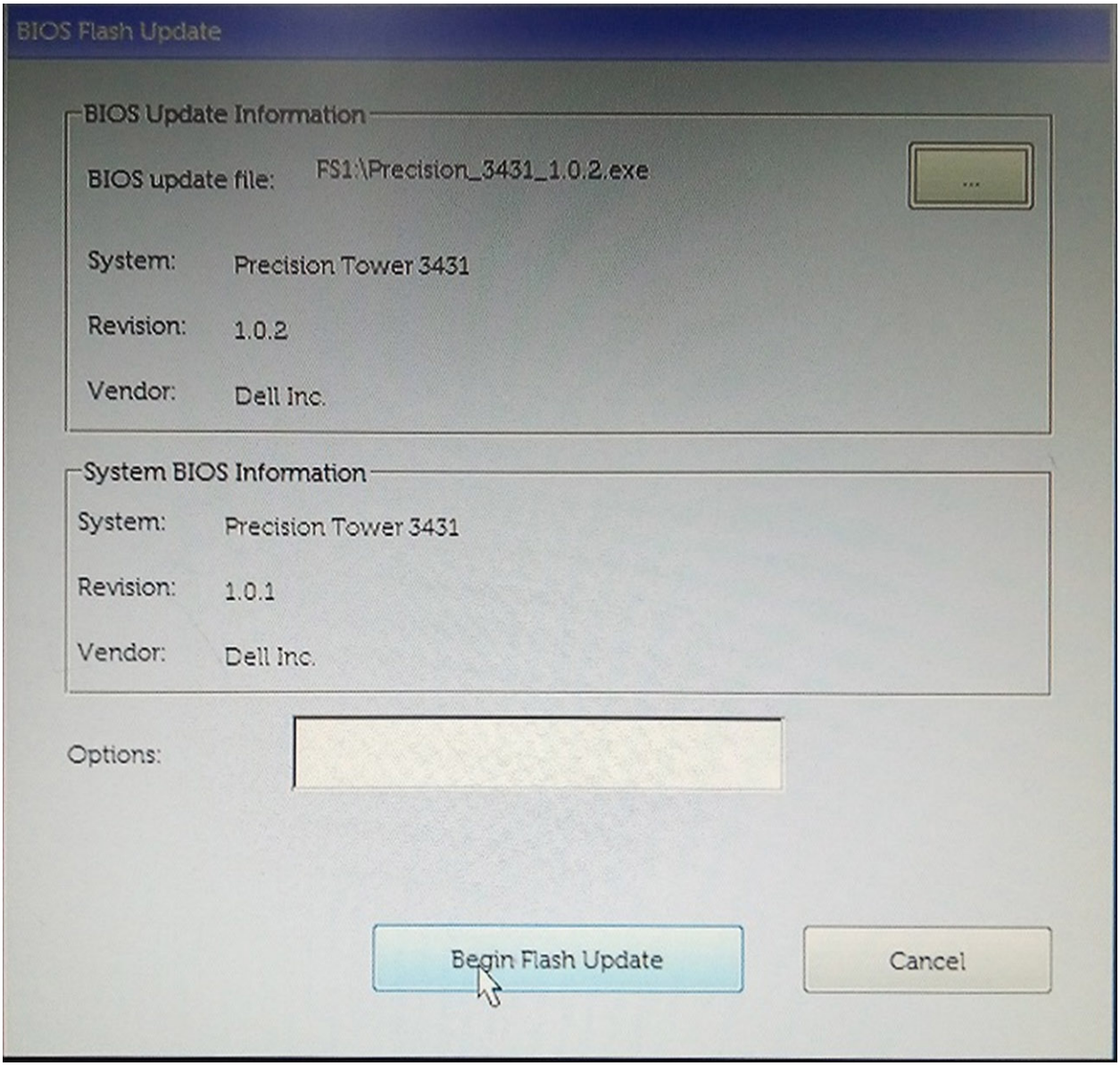
3. The Bios Flash Update dialog box menu is opened. Click **BIOS Update file** browse button to select the BIOS file.



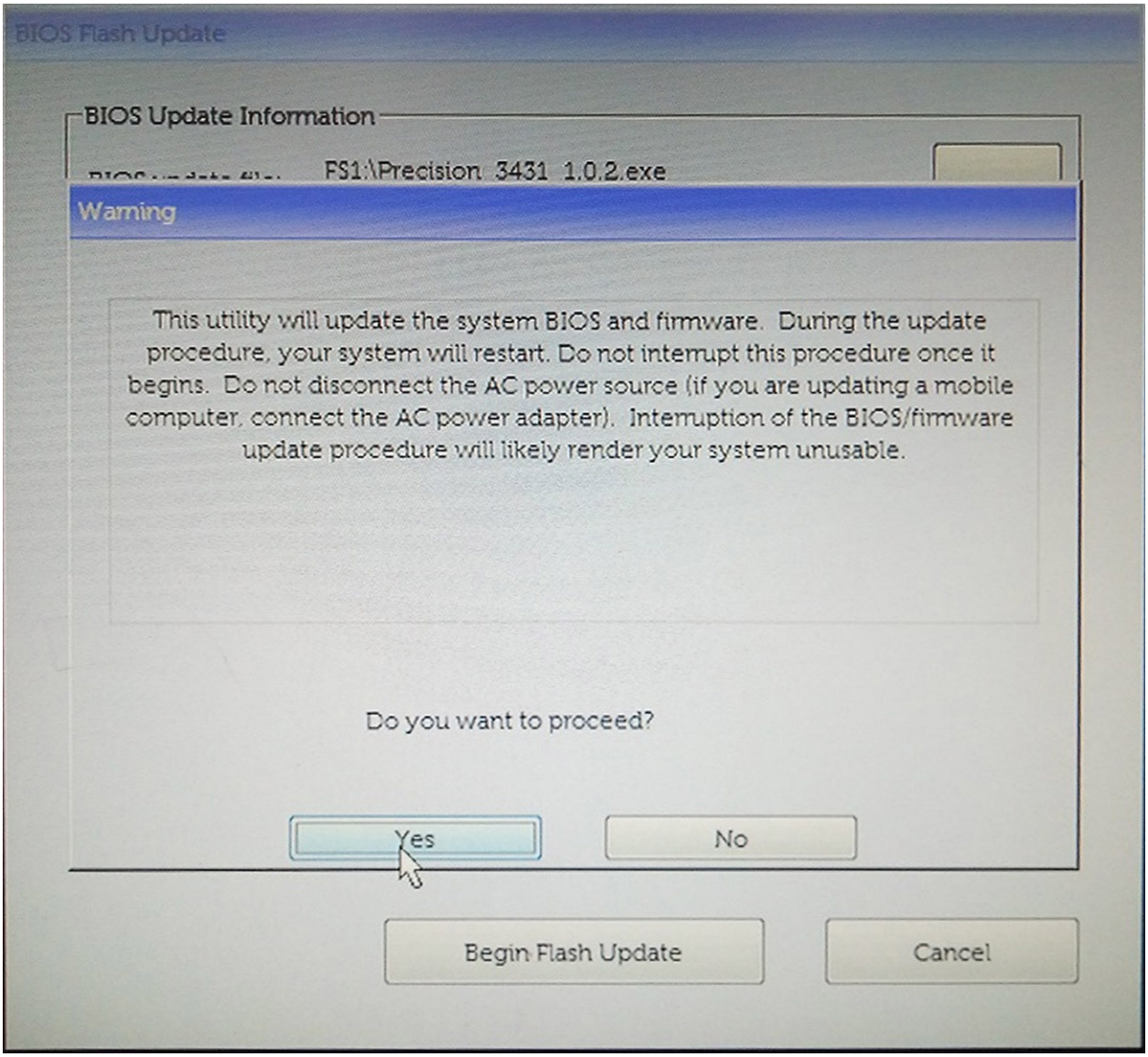
4. Select the BIOS executable file and then press **OK**. Switch to correct catalogue of your external USB device by **File system** if you do not find the BIOS executable file.



5. Click **Begin Flash Update**, and then a warning message is displayed.



6. Click **Yes**. The systems restarts automatically and starts BIOS Flash.



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

System and setup password

Table 38. 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.

5

Software

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

Topics:

- Downloading 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.

6

Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Table 39. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows www.dell.com/support/linux
Troubleshooting information, user manuals, setup instructions, product specifications, technical help blogs, drivers, software updates, and so on.	www.dell.com/support
Dell knowledge base articles for a variety of computer concerns.	1. Go to www.dell.com/support. 2. Type the subject or keyword in the **Search** box. 3. Click **Search** to retrieve the related articles.
Learn and know the following information about your product: • Product specifications • Operating system • Setting up and using your product • Data backup • Troubleshooting and diagnostics • Factory and system restore • BIOS information	• Select **Detect Product**. • Locate your product through the drop-down menu under **View Products**. • Enter the **Service Tag number** or **Product ID** in the search bar.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

NOTE: Availability varies by country/region and product, and some services may not be available in your country/region.

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.