Technical Whitepaper

HP PC Commercial BIOS (UEFI) Setup

Administration Guide

For Commercial Platforms using HP BIOSphere Gen 7-10

2020 -2023

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1 Abstract

HP redesigned the 2015 and later generations of BIOS to support the requirements of the latest microprocessors and operating systems. HP took this opportunity to create a new BIOS architecture based on the UEFI specification version 2.4, with a common set of core modules and capable of supporting both notebook and desktop models. Now HP notebooks and HP desktops models using this generation of the BIOS will have a similar look and feel for the (F10) setup menu, more shared WMI strings, and more shared features.

2 Introduction

This whitepaper provides detailed information about features adjusted through the BIOS setup menu, which is accessible during system boot-up by using the 'F10' function key. In addition, the sections on computer notifications provide an explanation for the LED blink codes and screen messages that may occur during the early part of boot-up.

For decades, HP has provided an industry-leading level of built-in customer value through internally developed system firmware (BIOS). Current BIOS designs use common, publicly available UEFI core functions as a starting point extended with unique HP features and adapted for each system's unique hardware, operating system, and software requirements. The BIOS also exposes and provides the interfaces required to use unique firmware and hardware-based HP professional innovations such as HP Sure Start, HP Sure Run, HP Sure Admin, HP Sure Recover, and HP Client Security Manager.

This document has been updated to reflect new and updated features in the 'S' family of BIOS, introduced in 2020. An **S** family BIOS is a version that begins with the letter S (for example, **S71 Ver. 01.01.00)**. Previous generations of commercial PCs had BIOS family designations of **R** (2019), **Q** (2017-2018), **P** (2016), and **N** (2015) which are also covered by this whitepaper. Some of the features in the later platforms are not supported in earlier models, and some older settings may be deprecated in newer models. Many of the features and settings are dependent on specific hardware or design elements that are not present on every model. Therefore this document describes the superset of BIOS settings across the portfolio of products listed, and not all current generation products support all the BIOS features described here.

2.1 Supported models – 2020, 2021, 2022, 2023 (UEFI only)

The first set of chapters below – Chapters 3 through 5 – applies to the most recent HP commercial-grade PC products released in 2020. Commercial-grade means products designed to meet the demanding security and manageability requirements of national, regional, and local government agencies, schools, the military, international financial institutions, and retail sales companies. The models covered in this first section only support UEFI based operating systems. There is no support for legacy DOS, Windows, or Linux configurations in the products listed below:

Table 1 Notebook Generations (UEFI only)

Platforms		**2020 (most are 'S' Family)**	**2021**	**2022**	**2023**	**Processor**
UEFI Specification supported:		2.7	2.7	2.7	2.7	
HP ZBook	Firefly 14, 16, 15	G7	G8	G9	G10	Intel/AMD
HP ZBook	Fury 15, 16, 17	G7	G8	G9	G10	Intel
HP ZBook	Create	G7				Intel
HP ZBook	Studio	G7	G8	G9	G10	Intel
HP ZBook	Power	G7	G8	G9	G10	Intel / AMD
HP EliteBook	860			G9	G10	Intel
HP EliteBook	850	G7	G8			Intel
HP EliteBook	840	G7	G8	G9	G10	Intel
HP EliteBook	830	G7	G8	G9	G10	Intel
HP EliteBook	865	G7			G10	AMD
HP EliteBook	855	G7	G8	G9		AMD

Platforms		2020 (most are 'S' Family)	2021	2022	2023	Processor
HP EliteBook	845	G7	G8	G9	G10	AMD
HP EliteBook Zhan66 13 G3	835	G7	G8	G9	G10	AMD
HP ProBook	450	G7	G8	G9	G10	Intel
HP ProBook	440	G7	G8	G9	G10	Intel
HP ProBook	430	G7	G8			Intel
HP ProBook	455	G7	G8	G9	G10	AMD
HP ProBook	445	G7	G8	G9	G10	AMD
HP ProBook	435				G10	AMD
HP ProBook	655			G9	G10	AMD
HP ProBook	650	G7	G8	G9	G10	Intel
HP ProBook	645			G9	G10	AMD
HP ProBook	640	G7	G8	G9	G10	Intel
HP ProBook	635	G7	G8			AMD
HP ProBook	630		G8	G9	G10	Intel
HP EliteBook	x360 1040	G7	G8		G10	Intel
HP EliteBook	x360 1030	G7	G8			Intel
HP EliteBook	x360 830	G7	G8		G10	Intel
HP EliteBook	Folio 13.5 2-in-1		G8	G9		Intel
HP EliteBook	Dragonfly		G2	G9	G10	Intel
HP EliteBook	Dragonfly		Max			Intel
HP EliteBook	X2		G8			Intel
HP ProBook	x360 11 EE	G6	G7			Intel
HP ProBook	x360 435	G7	G8	G9		AMD
HP ProBook	X360 Fortis 11				G11	Intel
HP ProBook	Fortis 14				G11	Intel
HP ZHAN	66 Pro 15	G3				Intel
HP ZHAN	66 Pro 14	G3	G4	G5		Intel
HP ZHAN	66 Pro 13	G3				Intel
HP ZHAN	66 Pro A 14	G3	G4	G5		AMD

Table 2 Desktop Generations (UEFI only)

Platforms		**2020 'S' Family**	**2021**	**2022**	**Processor**
UEFI Specification supported:		2.7	2.7	2.7	
HP EliteDesk	800 TWR	G6	G8	G9	Intel
HP EliteDesk	800 SFF	G6	G8	G9	Intel
HP EliteDesk	800 DM	G6	G8	G9	Intel
HP EliteOne	800 AiO	G6	G8		Intel
HP EliteOne	840 AiO			G9	Intel
HP EliteOne	870 AiO			G9	Intel
HP EliteDesk	805 SFF	G6	G8		AMD
HP EliteDesk	805 DM	G6	G8		AMD
HP ProDesk	600 MT	G6		G9	Intel
HP ProDesk	680 MT	G6		G9	Intel
HP ProDesk	600 SFF	G6		G9	Intel
HP ProDesk	600 DM	G6		G9	Intel
HP ProOne	600 AiO	G6			Intel
HP ProDesk	400 SFF	G7		G9	Intel
HP ProDesk	400 MT	G7		G9	Intel
HP ProDesk	480 MT			G9	Intel
HP ProDesk	405 DM	G6			AMD
HP ProDesk	405 SFF	G6			AMD
HP ProDesk	480 MT	G7			Intel
HP ProDesk	400 DM	G6		G9	Intel
HP ProOne	400 AiO	G6			Intel
HP ProOne	420 AiO			G9	Intel
HP ProOne	480 AiO	G6			Intel
HP Retail	Engage Go 10			G9	Intel

2.2 New in 2020

This is a sampling of the new features and functionalities introduced in 2020:

- Removed legacy (DOS) support
- Added HP Sure Start ME firmware recovery (Intel systems)
- Extended DMA protection
- Introduced memory encryption setting
- Clear BIOS Passwords on RTC Battery Removal

NOTE: Some features are platform dependent.

2.3 New in 2021

This is a sampling of the new features and functionalities introduced in 2021:

- Introduced the HP Cloud Managed and Remote Device Management settings.
- Clear BIOS Passwords on RTC Battery Removal

NOTE: Some features are platform dependent.

2.4 New in 2022

This is a sampling of the new features and functionalities introduced in 2022:

- Hp Sure Recover Failover settings
- Virtualization Based BIOS Protection
- HP Camera Privacy Key
- Remote Device Management
- TILE Airplane Mode
- Clear BIOS Passwords on RTC Battery Removal

NOTE: Some features are platform dependent.

2.5 New in 2023

This is a sampling of the new features and functionalities introduced in 2023:

- Clear BIOS Passwords on RTC Battery Removal
- Network Boot TFTP Window Size

NOTE: Some features are platform dependent.

3 F10 Main Menu

The top-level tabs in BIOS Setup are:

- Main (chapters 3),
- Security (chapters 4),
- Advanced (chapters 5), and
- UEFI Drivers (chapter 9).

Each chapter includes a diagram of the first level menu and tables listing and describing the features in each menu or submenu. The tables include the following sections:

Feature
This is the name of the feature as it appears in the Setup menu. An underlined feature or one prefaced with a box shows how it appears in the menu. In a few cases, a feature has been renamed from one generation to the next.

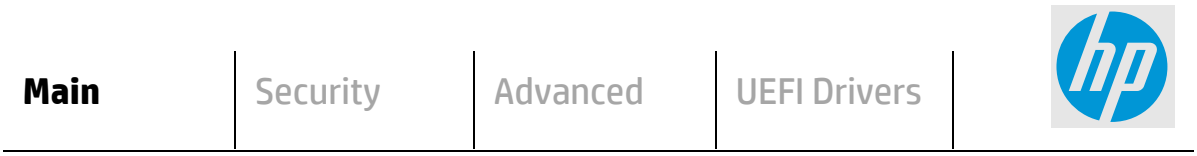
Type
Features can be settings, actions, another menu, or display-only settings. Most of the features by far are settings. A setting is a system value that you can modify, using an 'enable/disable' check box, a drop-down selection list, or a text entry box.

Description
If the feature is a setting with a drop-down box, then the choices are listed. If the feature is new or has changed its name or location from the 2014 notebooks or desktops, then the description references or includes its previous name and location. The notation to describe the location indicates the menus that the user must navigate through to access the feature. For example: Menu 1 > Menu 2 > Feature X indicates that to access Feature X, the user navigates through Menu 1 to Menu 2.

Default
For features that are settings, this column specifies the factory default setting.

Notes
Some features are not available for all types of models. The notes describe when a feature is Intel only, AMD only, notebook only, desktop only, or other dependencies.

Some actions require a reboot or physical presence. Physical presence is a menu that requires a human response to validate that a person is physically present before the action is completed. Actions that require physical presence are generally security-sensitive changes.



- ⇨ **System Information**
- ⇨ **System Diagnostics**
- ⇨ **BIOS Event Log**
- ⇨ **Update System BIOS**

- ⇨ **Change Date and Time**
- ⇨ **System IDs**

- ⇨ **Replicated Setup**
- ⇨ **Save Custom Defaults**
- ⇨ **Apply Custom Defaults and Exit**
- ⇨ **Apply Factory Defaults and Exit**
- ⇨ **Ignore Changes and Exit**
- ⇨ **Save Changes and Exit**

3.1 Main Menu

The following table describes the features in the Main menu.

Table 3 Main Menu features

Feature	Type	Description	Default	Notes
System Information	Menu	System information, such as serial number, model number, CPU type, and memory configuration.		
System Diagnostics	Menu	Application to run diagnostic tests on your system, such as start-up test, run-in test, memory test, and hard disk test.		
BIOS Event Log	Menu	Allows displaying, saving, and clearing the Event Log.		
Update System BIOS	Menu	Update system firmware from FAT32 partition on the hard drive, a USB disk-on-key, or the network.		
Change Date and Time	Menu	Configure the system Date and Time settings.		
System IDs	Menu	Identification strings that are assigned by an enterprise to track the system.		
Replicated Setup	Action	Save your current BIOS settings, and later restore your setting from this file.		
Save Custom Defaults	Action	As an alternative to factory default settings, create custom default values for all but the security settings. It is not possible to create custom default values for security settings.		Reboot required
Apply Custom Defaults and Exit	Action	Set all but the security settings to your custom default values (initially these are the same as factory defaults).		
Apply Factory Defaults and Exit	Action	Set all but the security settings to factory values. See *Security Menu (2019 and older)* to set security settings to factory values.		
Ignore Changes and Exit	Action	Exits F10 Setup without saving any changes made during current session.		
Save Changes and Exit	Action	Exits F10 Setup and saves all changes made during the current session.		

3.2 BIOS Event Log Menu

This submenu under the Main menu manages the saved log of select BIOS events and alerts.

View BIOS Event Log	Action	Immediately displays a list of events, alerts, or warnings that have been logged since the log was last cleared.		
Export to USB Key	Action	Immediately saves a file named BiosEventLog.txt containing the log entries to an inserted USB storage device.		
☐ Clear BIOS Event Log on Next Boot	Setting	When checked, the BIOS clears the event log on Save and Exit and returns the setting to Unchecked state.	Unchecked	

3.3 Update System BIOS Menu

This submenu under the Main menu provides information about the current system firmware, settings, these control updates, the ability to check for updates over the internet or on the local network, and the ability to update system firmware from a FAT32 partition on the hard drive or a USB disk-on-key.

For the BIOS flash to succeed, do not remove power or turn off the system during any phase of the process. The following description of the BIOS flash phases helps you avoid interrupting the process. The BIOS flash proceeds in four phases:

1. The system displays a progress bar. When progress is 100%, the system reboots. This is the initial BIOS flash. Because the system must reset power completely, there might be a delay of 10 to 15 seconds before power returns to the system.

2. The screen may be black initially and an LED may be on and blinking. This will occur only if the boot block needs to be updated. On some models, video cannot be displayed during this phase, so the beep/blink code indicates that the system BIOS is flashing normally. Other models may display 'Step 2 of the BIOS update is in progress' during this phase. The computer will reboot again, and this might take an additional 10 to 15 seconds to complete.

3. The message "Final step of the BIOS update is in progress" is displayed.

4. The screen is black for a short period, and then the OS starts. The BIOS update is now complete.

Table 4 Update System BIOS Menu features

Feature	Type	Description	Default	Notes
Current System BIOS Version	Display Only			
Current BIOS Release Date	Display Only			
Installation Date of Current BIOS	Display Only			
Most Recent Update Check	Display Only			
Check the Network for BIOS Updates (or) Check HP.com for BIOS Updates	Action	Updates the system BIOS by using an image stored on hp.com or another source defined in the BIOS Update Preferences menu. When BIOS Source is HP.com, then the feature appears as Check HP.com for BIOS Updates.		Reboot required
☐ Lock BIOS version	Setting	When checked, disallows BIOS updates.	Unchecked	
☐ Native OS Firmware Update Service	Setting	When checked, the OS can drive firmware updates (for example, Windows Update).	Checked	
BIOS Rollback Policy	Setting	Behavior when attempting to roll back to a previous BIOS version. The setting can be set to Unrestricted Rollback to older BIOS or Restricted Rollback to older BIOS.	Unrestricted Rollback to older BIOS	

Minimum BIOS version	Setting	Displays Minimum BIOS version required for optimal operation.		
☐ Allow BIOS Updates using a Network	Setting	When checked, automatic BIOS updates are allowed through the network on a scheduled basis.	Checked	
BIOS Update Preferences	Menu	Menu with network BIOS update settings such as source, actions when an update is available, and the frequency to check for updates.		
Network Configuration Settings	Menu	Configure the network connection to the server that is the host for your system firmware updates.		
Update System and Supported Device Firmware Using Local Media	Action	Updates the system BIOS by using files stored on local media such as the hard drive or a USB drive formatted as FAT32 or EFI system partition. The files needed to update the system can be saved to the hard drive or USB device using the HP Firmware Update & Recovery app.		Reboot required

3.4 BIOS Update Preferences Menu

The Update System BIOS submenu provides options for updating to the latest system firmware, as well as configuring where to check for system firmware updates, what to do when an update is available, and the frequency to check for them.

Table 5 BIOS Update Preferences Menu features

Feature	Type	Description	Default	Notes
☐ Check for Update on Next Reboot	Action	When checked, check if an updated BIOS is available during the next boot. This feature is only necessary from a WMI call. From the F10 Setup menu, use the feature Main > Update System BIOS > Check the Network for BIOS Updates that checks for updates without a reboot.	Unchecked	Reboot required
BIOS Source	Setting	Select the source URL for BIOS updates • HP.com • Custom URL	HP.com	
Edit Custom URL	Setting	When not using HP.com, define the custom URL here.		

Feature	Type	Description	Default	Notes
Automatic BIOS Update Setting	Setting	Defines how automatic updates behave. The following settings are possible: • Do not update • Check for BIOS updates automatically, but let me decide whether to install them • Download and install normal BIOS update automatically • Download and install important BIOS updates automatically • Download and install normal BIOS update automatically without prompts • Download and install important BIOS updates automatically without prompts	Do Not Update	
BIOS Update Frequency	Setting	Sets the frequency of checks to the BIOS update server. If a newer version of BIOS has been made available on the network server, the system will prompt to update the BIOS. • Daily • Weekly • Monthly	Monthly	

3.5 Network Configuration Settings Menu

The System BIOS submenu configures the network connection to the server that is the host for the system firmware updates.

Table 6 Network Configuration Settings Menu features

Feature	Type	Description	Default	Notes
☐ Proxy Server	Setting	When checked, enables the use of a proxy server.	Unchecked	
Edit Proxy Server	Setting	Specify the Proxy Server Address and the Port Number through the commonly used <server>:<port> notation.		
Test Network Connection	Action	Check the network connection using current BIOS update configuration.		
IPv4 Configuration	Setting	The following settings are configurable: • Automatic • Manual	Automatic	
IPv4 Address	Setting	When IPv4 settings are manual, setup for a static IPv4 address.		
IPv4 Subnet Mask	Setting	When IPv4 settings are manual, configure a valid IPv4 address for subnet mask.		
IPv4 Gateway	Setting	When IPv4 settings are manual, configure a valid IPv4 address for gateway.		
DNS Configuration	Setting	Configure a list of DNS addresses. The following settings are possible: • Automatic • Manual	Automatic	

Feature	Type	Description	Default	Notes
DNS Addresses	Setting	When DNS configuration is manual, configure a comma-separated list of DNS addresses.		
Data Transfer Timeout	Setting	Set data transfer timeout in seconds. Allowed value ranges from 0 to 65535 seconds.	100	
☐ Force HTTP No Cache	Setting	When checked, disables HTTP caching. This means that caching in upstream proxies is disabled as well, which guarantees that the BIOS goes all the way to the content source for any updated BIN files or catalog files but might slow down downloads slightly.	Unchecked	
Preboot Wi-Fi Timeout	Setting	Set Wi-Fi data transfer timeout in seconds. Allowed value ranges from 0 to 65535 seconds.	60	
☐ Preboot Wi-Fi Master Auto Connect	Setting	When checked, system will automatically attempt to connect to a local Wi-Fi hotspot.	Checked	

3.6 Change Date and Time

Allows the system current Date and Time settings to be configured.

Feature	Type	Description	Default	Notes
Set Date (MM/DD/YYYY)	Action	Set the current date using MM/DD/YYYY format.		
Set Time (HH:MM)	Action	Set the current time using HH:MM (24 hour) format.		

3.7 System IDs Menu

This submenu provides identification strings assigned by an enterprise to track the system.

Table 7 System IDs Menu features

Level	Feature	Type	Description	Default	Notes
2	Asset Tracking Number	Setting	Allows custom configuration of an asset tag (up to 80 characters).	Serial Number	
2	Ownership Tag	Setting	Allows custom configuration of an ownership tag (up to 80 characters).	Blank	

4 Security Menu

Main	**Security**	Advanced	UEFI Drivers

HP Computer Setup

Administrator Tools

- ⇨ **Create/Change BIOS Administration Password**
- ⇨ **Create/Change POST Power-On Password**
- ⇨ **Password Policies**
- ⇨ **Administrator Authentication Policies**
- ☐ **Fingerprint Reset on Reboot** *(select products only)*

Security Configuration

- ⇨ **TPM Embedded Security**
- ⇨ BIOS Sure Start *(select products only)*
- ⇨ Secure Boot Configuration
- ⇨ Secure Platform Management (SPM) *(select products only)*
- ☐ **Physical Presence Interface**
- ⇨ **Smart Cover** *(select products only)*
- ☐ **Trusted Execution Technology (TXT)** *(select products only)*

  Intel Software Guard Extensions (SGX) *(select products only)*
- ☐ DRTM/SMM Protection *(select products only)*
- ☐ Clear BIOS Passwords on RTC Battery Removal *(select products only)*

Utilities

- ⇨ **Hard Drive Utilities**

Absolute® Persistence Module Current State

- ⇨ **Activation Status : Inactive/Active**
- ⇨ **Absolute® Persistence Module Permanent Disable : No/Yes**
- ☐ **System Management Command (SMC)**
- ⇨ **Restore Security Settings to Factory Defaults**

Table 8 Security Menu features

Feature	Type	Description	Default	Notes
Create BIOS Administrator Password (or) Change BIOS Administrator Password	Setting	The administrator password controls access to the setup menu (F10), 3rd Party Option ROM Management (F3), Update System ROM, WMI commands that change system settings, and the BIOS Configuration Utility (BCU). When no administrator password is set, anyone can change the system settings, add 3rd Party Option ROM, or update the system ROM. When the power-on password is set, use the administrator password as an alternative to power-on the system. Recommendation: Set an administrator password when a power-on password is set. When a power-on password is forgotten, an administrator can reset the power-on password by using Restore Security Settings to Factory Defaults. The Administrator password should always be set to control remote access to settings.		
Create POST Power-On Password (or) Change POST Power-On Password	Setting	Password required to power-on the PC, independent of the OS password. When no password is set, anyone can turn on the PC. In addition to the administrator password, there is only one power-on password. Recommendation: Set an administrator password when a power-on password is set. When a power-on password is forgotten, an administrator can reset the power-on password by using Restore Security Settings to Factory Defaults. The power-on password should be set when the computer is not in a secure location.		
Password Policies	Menu	Allows the administrator to set password requirements for BIOS administration and power-on regarding the use of symbols, numbers, case, and spaces.		
Administrator Authentication Policies	Menu	Allows the administrator to determine whether the administrator password is required to access various boot menus through hot keys at boot time or to update the firmware through Windows Update. NOTE: the settings in this menu were previously located in the Password Policies menu.		
☐ Fingerprint Reset on Reboot	Action	When checked, resets the fingerprint on the next reboot. After reboot, this will be unchecked again.	Unchecked	

Feature	Type	Description	Default	Notes
TPM Embedded Security	Menu	The Trusted Platform Module (TPM) is a dedicated microprocessor that provides security functions for secure communication and software and hardware integrity.		
BIOS Sure Start	Menu	Settings that control the behavior of HP Sure Start. HP Sure Start is a built-in hardware security system that protects your BIOS from accidental or malicious corruption by (1) detecting BIOS corruption and then (2) automatically restoring the BIOS to its last installed HP-certified version. Some platforms in 2019 have the capability to recover Intel ME as well.		
Secure Boot Configuration	Menu	Options for managing Secure Boot state and Secure Boot keys. Secure Boot is a UEFI feature that helps resist attacks and infection from malware. From the factory, your system comes with a list of keys that identify trusted hardware, firmware, and operating system loader code. Your system also has a list of keys to identify known malware.		Only located here on systems without legacy support.
Secure Platform Management (SPM)	Menu	Options for managing HP Sure Run, HP Sure Recover, and Sure Admin.		
☐ Physical Presence Interface		Enable or disable the local prompt to confirm that a sensitive setting change was requested by the user.	Checked	
Smart Cover	Menu	Controls settings for Cover Lock and Cover Sensor.		
☐ Trusted Execution Technology (TXT)	Setting	When checked, enables Trusted Execution Technology on select Intel-based systems. NOTE: Enabling this feature disables OS management of TPM (Embedded Security Device), prevents a reset of the TPM, and constrains the configuration of VTx, VTd, and TPM	Unchecked	Intel Only Reboot Required
Intel Software Guard Extensions (SGX)	Setting	Enables Intel Software Guard Extensions. The following settings are possible: • Disable • Enable • Software control	Software control –or– Disable (non-vPro)	Intel Only

Feature	Type	Description	Default	Notes
☐ DRTM/SMM Protection	Setting	Enables Dynamic Root of Trust for Measurement and additional SMM Protections to support operating system secure launch. **NOTE:** Enabling this feature constrains the configuration of VTx, VTd, TPM, and SVM CPU Virtualization.	Unchecked	AMD PRO Processor Only Reboot Required
☐Clear BIOS Passwords on RTC Battery Removal	Setting	Clear BIOS Passwords on RTC Battery Removal has 2 options: • Disable • Enable When Disable is selected, the removal of the RTC battery WILL NOT clear the BIOS Administrator Password (BAP) and Power-on Password (POP). When Enable is selected, the removal of the RTC battery WILL clear the BIOS Administrator Password (BAP) and Power-on Password (POP). If Cover Removal Sensor is enabled and select to Administrator password or Administrator credential, then the RTC Battery Removal policy cannot be enabled and is also greyed out in F10. If the RTC Battery Removal policy is enabled, then Cover Removal Sensor Administrator password and Administrator credential cannot be enabled and is also greyed out in F10.	Unchecked	Desktop only, exclusive with Cover Removal Sensor administrator settings (Administrator password/Administrator credential) Reboot Required
Hard Drive Utilities	Menu	Utilities to protect private information on individual hard drives: Drive Lock and Secure Erase.		
Absolute Persistence Module	Label	A subscription service that provides PC theft recovery, tracking and data delete solutions.		
Activation Status	Display Only	The subscription status can be inactive, active, or permanently disabled.	Inactive	
Absolute Persistence Module Permanent Disable	Display Only	Shows current state of the Absolute Persistence module (Yes = disabled, No = available).	No	

Feature	Type	Description	Default	Notes
☐ System Management Command	Setting	When checked, allows authorized HP service personnel in possession of the PC to reset security settings in case of a customer service event. For customers that require more BIOS security, uncheck this to prevent this type of HP service command. **NOTE:** If BIOS password is lost and this option is disabled, HP authorized personnel cannot remove a lost password.	Checked	Reboot Required
Restore Security Settings to Default	Action	Apply factory defaults to all security settings. **NOTE**: Escaping (ESC) at the Reset Request screen will leave settings as they were except for the Administrator & Power-on passwords which are still cleared.		Reboot Required

4.1 Password Policies Menu

This submenu allows the administrator to set text requirements controlling the use of symbols, numbers, case, and spaces for the BIOS administrator password and the power-on password. To access this menu, a password must be already set. Changes to these policies do not apply retroactively to existing passwords.

Table 9 Password Policies Menu features

Feature	Type	Description	Default	Notes
Password Minimum Length	Setting	Allows the administrator to specify the minimum number of characters required for a password. • Minimum: 4 • Maximum: 32	8	
☐ At least one symbol required in Administrator and User passwords	Setting	When checked, passwords require at least one symbol, such as $, %, ^, &, or #	Unchecked	
☐ At least one number required in Administrator and User passwords	Setting	When checked, passwords require at least one number	Unchecked	
☐ At least one upper-case character required in Administrator and User passwords	Setting	When checked, passwords require at least one upper case character	Unchecked	
☐ At least one lower-case character required in Administrator and User passwords	Setting	When checked, passwords require at least one lowercase character	Unchecked	
☐ Are spaces allowed in Admin and User passwords?	Setting	When checked, passwords can have one or more spaces	Unchecked	
Allow User to Modify Power-on Password	Setting	Options are No, Change Only, and Change or Delete	Change or Delete	

Feature	Type	Description	Default	Notes
Wake on LAN Power-on Policy	Setting	Options are Require Password and Bypass Password	Require Password	

4.2 Administrator Authentication Policies Menu

This submenu allows the administrator to set limitations to some boot features, such as administrator permissions, requiring the user to enter an administrator password. To access this menu, a password or a Sure Admin Local Access Key must be already set.

Table 10 Password Policies Menu features

Feature	Type	Description	Default	Notes
☐ Prompt for Admin authentication on F9 (Boot Menu)	Setting	When checked, the administrator password is required to enter the boot menu.	Unchecked	
☐ Prompt for Admin authentication on F11 (System Recovery)	Setting	When checked, the administrator password is required to enter system recovery.	Unchecked	
☐ Prompt for Admin authentication on F12 (Network Boot)	Setting	When checked, the administrator password is required to enter the network boot menu.	Unchecked	
☐ Prompt for Admin authentication on Capsule Update	Setting	When checked, the administrator password is required to process a firmware capsule update.	Unchecked	Removed from 2022 platforms
☐ BIOS Administrator visible at Power-on Authentication	Setting	When *not* checked, there is only a prompt for the Power-on password.	Checked	

4.3 Trusted Platform Module (TPM) Embedded Security Menu

This submenu is for the Trusted Platform Module (TPM). TPM is a dedicated microprocessor that provides security functions for secure communication and software and hardware integrity. The built-in TPM hardware solution is more secure than a software-only solution.

Table 11 TPM Embedded Security Menu features

Feature	Type	Description	Default	Notes
TPM Specification Version	Display Only	The Trusted Computing Group (TCG) is an industry group that defines specifications for a TPM. As of this writing, possible TPM specification versions are 1.2 or 2.0. NOTE: Windows 10 requires TPM 2.0 capability.	2.0	
TPM Device	Setting	Makes the TPM available. The following settings are possible: • Available • Hidden	Available	Reboot, Physical Presence Required
☐ TPM State	Setting	When checked, enables the ability for the OS to take ownership of the TPM (v1.2) or enables OS and application access to the various security capabilities of the TPM (v2.0).	Checked	Reboot, Physical Presence Required
Clear TPM	Action	When selected, clears the TPM on the next boot. After clearing the TPM, this resets to No. The following settings are possible: • No • On next boot	No	Reboot Required
TPM Activation Policy	Setting	This setting allows an administrator to choose between convenience and extra security. The extra security is to ensure that the user of the system will at least see that the TPM device upgraded its firmware (F1 to Boot), or at most the user has the ability to reject the upgrade of the TPM device (Allow user to reject). These user prompts limit the impact of remote attacks on the system by requiring a user to be physically present for the upgrade. When security of the system is of less concern, the third option (No prompts) removes any requirement for a user to acknowledge the upgrade. This last option is the most convenient for remotely upgrading many systems at once. The following settings are possible: • F1 to Boot • Allow user to reject • No prompts	Allow user to reject	HP recommends an option that requires the physical presence of the user

4.4 BIOS Sure Start Menu

Settings menu for enhanced hardware-based assurance that only HP approved Embedded Controller firmware will run on the HP Embedded Controller and that only HP approved BIOS will run on the host CPU.

Table 12 BIOS Sure Start Menu features

Feature	Type	Description	Default	Notes
☐ Verify Boot Block on Every Boot	Setting	When not checked, HP Sure Start verifies the integrity of HP firmware in the nonvolatile (flash) memory before resume from Sleep, Hibernate, or Off. When checked, HP Sure Start verifies the integrity of HP firmware in the nonvolatile (flash) memory across operating system restart (warm reset) in addition to resume from Sleep, Hibernate Off. This setting provides higher security assurance but could increase the time required to restart the operating system.	Unchecked	Reboot Required
BIOS Data Recovery Policy	Setting	The following settings are possible for HP Sure Start–Recovery Policy: • Automatic • Manual **Automatic**: HP Sure Start automatically repairs any HP firmware integrity issues in the nonvolatile (flash) memory. **Manual**: HP Sure Start will not repair any HP firmware integrity issues in the nonvolatile (flash) memory until the Windows key + Up Arrow key + Down Arrow key are pressed. NOTE: • Manual recovery is intended for use by the system administrator if forensic investigation is desired before HP Sure Start repairs the issue. It is not recommended for the typical user. • 2020 and later platforms only have automatic recovery policy but not Manual recovery policy. Therefore, this setting is not available as an option in those systems.	Automatic	Reboot Required
Network Controller Configuration Restore	Action	Network Controller Configuration Restore This action restores the network controller parameters to the factory state saved in the HP Sure Start Private nonvolatile (flash) memory. NOTE: This process can take up to 30 seconds. You need to restore this only when the Network Controller Configuration mismatch warning is set.		Reboot Required
☐ Prompt on Network Controller Configuration Change	Setting	When enabled, HP Sure Start will monitor the network controller configuration and prompt the local user if any changes are detected compared to the factory configuration. The local user has the option to ignore the prompt or restore the network controller to the factory configuration when prompted.	Checked	Intel Only Reboot Physical Presence Required

Feature	Type	Description	Default	Notes
☐ Dynamic Runtime Scanning of Boot Block	Setting	When checked, allows HP Sure Start to verify the integrity of the HP firmware in the nonvolatile (flash) memory every 15 minutes while the system is on and the operating system is running. NOTE: Available on both NB and DT Intel platforms.	Checked	Intel only
☐ Sure Start BIOS Settings Protection	Setting	Protects critical BIOS Settings by saving a backup copy and restoring them if altered.	Unchecked	Not accessible with no Admin credentials set
☐ Sure Start Secure Boot Keys Protection	Setting	Saves backup copy of Secure Boot Keys so that they can be recovered if someone attempts to alter them in an unauthorized manner.	Checked	
☐ Enhanced HP Firmware Runtime Intrusion Prevention and Detection	Setting	Monitors key areas of memory for corruption or attack, notifies user of attack (based on the settings in Sure Start Security Event Policy), and prevents the attack from taking place. NOTE: Available on Intel Sure Start platforms that support this feature. Available on AMD Sure Start platforms 2020 and later.	Checked	
☐ HP Firmware Runtime Intrusion Detection	Setting	Monitors key areas of memory for corruption or attack and notifies user of attack (based on the settings in Sure Start Security Event Policy). NOTE: Available on AMD Sure Start platforms prior to 2020.	Checked	
Sure Start Security Event Policy	Setting	Determines how to respond to a detected event: • Log event only - Log the event in the audit log. • Log Event and notify user - Log the event in the audit log and prompt the user to acknowledge the event. • Log Event and power off system - Log the event in the audit log and power off the system. NOTE: Not available prior to 2016.	Log Event and notify user	
Sure Start Security Event Boot Notification		Enable a warning message at boot screen if there is a Sure Start event (BIOS recovery, Memory intrusion, etc.)	Require Acknowledgment	
☐ Virtualization Based BIOS Protection	Setting	Uses virtualization hardware to protect HP BIOS from UEFI Expansion driver and PCI Expansion ROM driver modules that attempt to access BIOS resources and hardware configuration. This protection is put in place during early boot of BIOS to protect BIOS code/critical platform resources from these drivers and unloads when BIOS passes control to OS. NOTE: On Intel platforms, enabling this setting requires Virtualization Technology (VTx) to be enabled. On AMD platforms, enabling this setting requires SVM CPU Virtualization to be enabled.	Checked	Reboot required

Feature	Type	Description	Default	Notes
☐ Virtualization Based BIOS Protection Manual Recovery	Setting	This setting determines the behavior of the system when an issue is detected by the Virtualization Based BIOS Protection feature. When unchecked, the system will restart and boot with limited functionality to display an error message to the user and query the user for the action to take. When checked, the system will halt allowing the administrator to perform forensics. When the manual recovery sequence is provided by the user, the system will follow the same behavior as when unchecked.	Unchecked	Reboot required

4.5 Secure Boot Configuration Menu

This submenu controls settings for the Secure Boot OS loader feature.

Table 13 Secure Boot Menu features

Feature	Type	Description	Default	Notes
☐ Secure Boot	Setting	When checked, enables the Secure Boot capability.	Enable	
☐ Import Custom Secure Boot keys	Setting	When checked and system is rebooted, custom secure boot keys are imported from the EFI\HP directory from the hard drive or USB device. The custom keys consist of PK, KEK, DB, and Dbx .bin files. When import succeeds or fails, a preboot prompt shows the results of each key bin file.	Unchecked	Reboot Required
☐ Clear Secure Boot Keys	One Time Action	When checked, clears the Secure Boot keys one time on next save and exit. This setting will be unchecked again when you return from exit. This action is not available when no imported keys are present.	Unchecked	Reboot Required
☐ Reset Secure Boot keys to factory defaults	One Time Action	When checked, restores secure boot keys to factory defaults one time on next save and exit. This setting will be unchecked again when you return from exit.	Unchecked	Reboot Required
☐ Enable MS UEFI CA key	Setting	When checked, the Microsoft (MS) UEFI Certificate Authority (CA) key is trusted by Secure Boot NOTE: Uncheck this to support Windows 10 Device Guard feature	Checked	
Ready BIOS for Device Guard Use	Action	Ready BIOS for Device Guard Use includes a drop-down box that automatically configures the BIOS settings that Windows requires to enable Device Guard or to change the configuration back to the configuration before Device Guard was enabled. Device Guard is a Windows feature that enables higher security around drivers and BIOS behavior. The following settings are possible: • Configure on Next Boot • Clear Configuration on Next Boot When set to Configure on Next Boot, the BIOS changes the following settings to the states required by Device Guard after saving changes and exit. • Virtualization features are enabled.		

		• Removable and network boot devices are disabled (for example, USB boot, CD-ROM boot, Thunderbolt™ boot, etc.). • MS UEFI CA Key is disabled. When set to Clear Configuration on Next Boot, the BIOS sets the listed features to their Custom Default state if custom defaults have been saved. If custom defaults have not been saved, the BIOS restores the listed features to their factory default states.		

4.6 Secure Platform Management (SPM)

This submenu controls settings for Secure Platform Management that are used for secure enablement and management of the HP Sure Run, Sure Recover, and Sure Admin (Enhanced BIOS Authentication Mode) capabilities.

You cannot provision SPM and activate HP Sure Run directly from the BIOS Setup interface. You can provision SPM using HP Client Security Manager Software or the HP Manageability Integration Kit. When provisioned, the controls in this menu can be used to deprovision the system or deactivate HP Sure Run.

Table 14 Secure Platform Management Menu features

Feature	Type	Description	Default	Notes
SPM Current State	Setting (Display Only)	• Provisioned • Not provisioned	Not provisioned	
Unprovision SPM	Action	This action deprovisions SPM, which causes HP Sure Run to revert to the Inactive state, and returns HP Sure Recover to default settings.		
HP Sure Run Current State	Setting (Display Only)	• Active • Inactive	Inactive	
Deactivate HP Sure Run	Action	This action deactivates HP Sure Run without deprovisioning SPM.		
HP Sure Admin – EBAM Current State	Setting (Display Only)	• Enabled • Disabled	Disabled	
HP Cloud Managed State	Setting (Display Only)	• Enabled • Disabled • Permanently Disabled If permanently disabled, the feature cannot be used and requires a HP Service to re-enable. (This setting was introduced in the second half of 2021)		Default to the value by HP Cloud Managed setting
HP Cloud Managed		This setting allows the machine to trust requests from HP management consoles, allowing management of the machine in a simple, admin-friendly manner. (This setting was introduced in the second half of 2021)	Enabled	

		• Enable • Disable		
Display Enrolled Management Keys				Shows User: Key Owner List
Remote Device Management Status	Setting (Display Only)	• Enabled • Disabled • Permanently Disabled If permanently disabled, the feature cannot be used and requires a HP Service to re-enable. (This setting was introduced in the second half of 2021)		Default to the value by Remote Device Management setting
Remote Device Management		This setting allows a highly secure set of remote management operations (e.g. lock and wipe) to be performed on the machine. (This setting was introduced in the second half of 2021) • Enable • Disable	Enabled	
Disable EBAM	Action	This action disables Enhanced BIOS Authentication Mode (EBAM)		
Local Access Key	Setting (Display Only)	• Present • Not Present	Not Present	
Clear EBAM Local Access Key(s) and Reboot	Action	This action deletes all currently established local access keys created for Enhanced BIOS Authentication Mode (EBAM)		

4.7 Smart Cover Menu

This submenu controls settings for Cover Lock and Cover Sensor Including those associated with the HP Tamper Lock feature. These settings are only present when the implied optional devices are installed in the system.

Table 15 Smart Cover Menu features

Feature	Type	Description	Default	Notes
Cover Lock	Setting	The Smart Cover Lock is a software-controllable solenoid lock. This lock restricts unauthorized access to the system's internal components. The following settings are possible: • Lock • Unlock	Unlock	Desktop with Cover Lock Reboot Required
Cover Removal Sensor	Setting	The Cover Removal Sensor has the following settings: • **Disabled**	Disable	System with Cover Sensor Reboot Required

		• **Notify the User:** Displays warning message on next boot if opened. • **Administrator Password** (when password is set or Sure Admin Enhanced BIOS Authentication Mode is enabled with a Local Access Key set)**:** Requires entering the administrator password or the PIN (if Local Access Key is present) before continuing to boot after the cover is opened. • **Administrator Credential:** exactly the same behavior as Administrator Password.		Administrator Credential may not be available on all systems that support Smart Cover.
☐ Power off upon cover removal	Setting	When checked, if the cover is removed while the system is on or asleep (S3 or Modern Standby), then the system will immediately power down. This setting is only active and can only be modified while Cover Sensor Removal is enabled. This only affects cover removals that occur after the setting is set.	Disable	May not be available on all systems that support Smart Cover.
☐ Clear TPM on boot after cover removal	Setting	When enabled, if the cover is removed, then TPM will be cleared on the boot after the cover was removed. This setting is only active and can only be modified while Cover Removal Sensor is enabled. These only affects cover removals that occur after the setting is set.	Disable	May not be available on all systems that support Smart Cover.
Last Cover Removal and Count	Setting (Display Only)	This reports the last time the cover was removed and how many times it has been removed and acknowledged since it left the factory, in the following format: MM/DD/YYYY HH:MM:SS. X times. Depending on system factors, consecutive cover removals may count as a single cover removal. The date and time may be reported as all 0's in cases where the value cannot be determined such as real-time clock power loss.	0 times	May not be available on all systems that support Smart Cover.

4.8 Hard Drive Utilities Menu

This submenu provides features that protect the data on individual hard drives, such as recovering the master boot record (MBR), preventing unauthorized access, and erasing data.

Table 16 Hard Drive Utilities Menu features

Feature	Type	Description	Default	Notes
☐ Save/Restore GPT of System Hard Drive	Setting	When checked, saves a baseline GUID Partition Table that can be restored if a change is detected. **NOTE:** Not applicable for Legacy boot modes **NOTE: Not** available prior to 2016.	Unchecked	Reboot Required
Boot Sector (GPT) Recovery Policy	Setting	Allows selection of the default action when an MBR/GPT event occurs.	Local User Control	
DriveLock/Automatic DriveLock	Menu	DriveLock prevents unauthorized access to the contents of a selected hard drive.		
Secure Erase Select a Drive...	Action	Uses hardware-based methods safely to erase all data and personal information from a selected Hard Drive.		Reboot Required
☐ Allow OPAL Hard Drive SID Authentication	Setting	BIOS supports drive encryption using DriveLock feature by creating the storage device's ownership key. If BIOS creates the key, any 3rd party applications (including other encryption software) are not allowed to perform certain drive operations such as establishing their own key using SID. Encryption software applications may or may not be limited by SID authentication lockout depending on how they are designed.	Unchecked	Reboot Required

4.9 DriveLock/Automatic DriveLock Menu

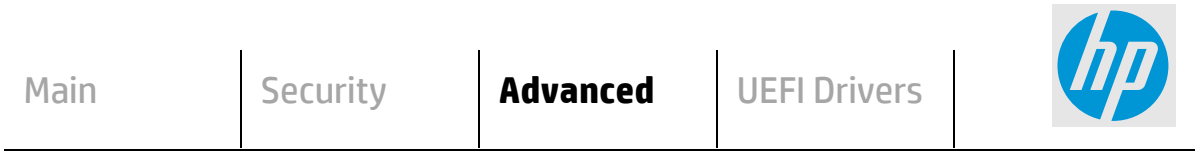
DriveLock prevents unauthorized access to the contents of a selected hard drive. Enter a password to access the drive and the drive is accessible only when attached to a PC.

NOTE: DriveLock states cannot change after a warm reboot for SATA drives. Power off the system and then boot directly to the BIOS setup to access these menus. The DriveLock Master/Administrator and User passwords cannot be changed if you enable Automatic DriveLock.

Table 17 DriveLock Menu features

Feature	Type	Description	Default	Notes
☐ Automatic DriveLock	Setting	This feature is intended to prevent someone from accessing data on your drive after they have physically removed it from your system. A BIOS administrator password is required for this feature. When this feature is enabled, the BIOS sets a randomly generated user password, sets the master password with the BIOS administrator password, and marks the drive as a member of an Automatic DriveLock group. Thereafter, the BIOS automatically unlocks the drive while it is attached to its host system. If the drive is physically removed from its host system and attached to another system, the user is prompted for the DriveLock password. The user must provide the BIOS administrator password from the original host system to access the drive.	Disable	Power cycle required
Set DriveLock Master Password Set DriveLock User Password	Setting	Creates another password to access a hard drive with DriveLock protection.		Power cycle required
Enable DriveLock	Setting	Enables DriveLock protection and creates a user password distinct from the master password that allows access to the hard drive (SATA drives). For NVMe type drives in the M.2 slot, this requires setting an administrator password instead of a user password.	Disable	Power cycle required
Change DriveLock User Password	Action	Displayed only if DriveLock is enabled and a valid password was supplied at the DriveLock POST prompt. Allows the user password to be changed when selected.		Power cycle required
Change DriveLock Master/Administrator Password	Action	Displayed only if DriveLock is enabled and a valid password was supplied at the DriveLock POST prompt. Allows the master (SATA) or administrator (NVMe) password to be changed when selected.		Power cycle required
Disable DriveLock	Action	Displayed only if DriveLock is enabled and a valid password was supplied at the DriveLock POST prompt. Allows DriveLock to be disabled when it is enabled.		Power cycle required

5 Advanced Menu



- ⇨ **Display Language**
- ⇨ **Scheduled Power-On**

- ⇨ **Boot Options**
- ⇨ **HP Sure Recover**
- ⇨ **System Options**
- ⇨ **Built-In Device Options**
- ⇨ **Port Options**
- ⇨ **Network Settings**
- ⇨ **Power Management Options**
- ⇨ **Remote Management Options** (Intel Only)
- ⇨ **Electronic Labels** (Notebook & AiO Only)
- ⇨ **MAC Address Pass Through** (Notebook Only)
- ⇨ **Thunderbolt™ Options** (2019+ with TBT)

Remote HP PC Hardware Diagnostics

- ⇨ **Settings**
- ⇨ **Execute Remote HP PC Hardware Diagnostics**

5.1 Advanced Menu

For detailed information on the features in the advanced menu, see the following table:

Table 18 Advanced Menu features

Feature	Type	Description	Default	Notes
Display Language	Menu	Select the display language and the keyboard language. Choose between 15 languages. You can display the menu in English, French, German, Spanish, Italian, Dutch, Danish, Japanese, Norwegian, Portuguese, Swedish, Finnish, Simplified Chinese, Traditional Chinese, or Russian. **NOTE:** Affects the BIOS menus, not the OS nor the WMI commands. Russian language support is only available in the most recent product generations.		
Scheduled Power On	Menu	Choose days of the week and a single time of day for the system to turn on. This feature wakes the system up from a turned-off state.		
Boot Options	Menu	Settings that control the behavior of the system during boot up.		
HP Sure Recover	Menu	Settings that control when and how the BIOS should attempt to reinstall the operating system. Also called *OS Recovery*.		
Secure Boot Configuration	Menu	Starting with Windows 8, Secure Boot is a UEFI feature that helps resist attacks and infection from malware. From the factory, your system comes with a list of keys that identify trusted hardware, firmware, and operating system loader code. Your system also has a list of keys to identify known malware.		Only available on systems with legacy support.
System Options	Menu	Settings that control the CPU, PCI, PCIe, the power button, and function keys.		
Built in Device Options	Menu	Settings of other devices built into the PC.		
Port Options	Menu	Settings that enable or disable ports and interrupts on the system.		
Option ROM Launch Policy	Menu	Configure the Device Option ROMs that load at boot time.		Only available on systems with legacy support.
Power Management Options	Menu	Settings that control power saving features and the behavior of the system in low power modes.		
Remote Management Options	Menu	Settings that control Intel Active Management technology that provides out-of-band remote management of the system.		Intel Only
Electronic Labels	Display Only	Mandatory certification marks, for example the Federal Communication Commission (FCC) Declaration of Conformity (Doc) and the CE marking for Europe.		Notebook and All-in-One Only

Feature	Type	Description	Default	Notes
MAC Address Pass Through	Menu	Configure a custom Host Based MAC Address (HBMA) for the system as well as define the priority of Network Interface Cards (NIC).		Notebook Only
Remote HP PC Hardware diagnostics	Label	Remote HP PC Hardware diagnostics.		
Settings	Menu	Settings for Remote HP PC Hardware diagnostics.		
Execute Remote HP PC Hardware Diagnostics	Action	When selected, will download and run HP Remote Diagnostics.		

5.2 Display Language Menu

This submenu allows for selection of the display language and the keyboard language. For each setting, choose from the following languages:

- English
- Deutsch
- Español
- Italiano
- Français
- 日本語
- Português
- Danske
- Svenska
- Nederlands
- Norsk
- Suomi
- 简体中文
- 繁體中文
- Русский

NOTE: Affects the BIOS menus, not the OS nor the WMI commands.

Table 19 Display Language Menu features

Feature	Type	Description	Default	Notes
Select Language	Setting	Language used by BIOS setup menus.	English	
Select Keyboard Layout	Setting	Language of the keyboard layout used by BIOS setup menus.	English	

5.3 Scheduled Power-On Menu

This submenu controls the days of the week and a single time of day for the system to turn on the computer. This feature wakes the system up from a powered-off state.

Table 20 Scheduled Power-On Menu features

Feature	Type	Description	Default	Notes
☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday	Setting	Days of the week selection.		Reboot Required
Hour	Setting	Time selection.	0	Reboot Required
Minute	Setting	Hour: 0 – 23, Minute: 0 – 59.	0	Reboot Required

5.4 Boot Options Menu

This submenu controls the behavior of the system during boot up.

Table 21 Boot Options Menu features

Feature	Type	Description	Default	Notes
Startup Delay (sec.)	Setting	Select the number of seconds (0 – 60) to pause the boot before starting the OS. Increasing the delay gives more time to press a key that accesses one of the startup options, such as BIOS Setup (F10).	0	
☐ Fast Boot	Setting	When checked, reduces boot up time by bypassing boot to USB, CD-ROM, and PXE. This skips some preboot initialization steps. **NOTE:** When a power-on password, other security features, or current boot order have been modified, Fast Boot is ignored.	Checked	
☐ CD-ROM Boot	Setting	When checked, allows the system to boot from CD-ROM.	Checked	
☐ USB Storage Boot	Setting	When checked, allows the system to boot from USB devices.	Checked	
☐ Network (PXE) Boot	Setting	When checked, allows the system to boot from a network card if it supports PXE or UEFI network boot capability.	Checked	
☐ IPv6 during UEFI Boot	Setting	When checked, allows the system to process IPv6 packets in pre-boot.	Checked	
☐ Network Boot TFTP Window Size	Setting	Select the TFTP Window Size (1-65535) used during a Network Boot. The Window Size refers to the number of consecutive blocks transmitted before stopping and waiting for the reception of the acknowledgment of the last block transmitted.	4	The default value is set by EDK2.

Feature	Type	Description	Default	Notes
☐ Power On When AC Detected	Setting	When checked, the notebook will turn on when it is off, when AC power has not been available and then becomes available.	Unchecked	Notebook Only
☐ Power On When Lid is Open	Setting	When checked, the system turns on when the lid opens.	Unchecked	Notebook Only
☐ Prompt on Battery Errors	Setting	When checked, the system pauses during system boot to warn about battery errors.	Checked	Notebook Only
☐ Prompt on Memory Size Change	Setting	When checked, notify the user during the boot process when a memory size change has been detected.	Checked	
☐ Prompt on Fixed Storage Change	Setting	When checked, notify the user during the boot process when a fixed storage change has been detected. **NOTE:** This feature will not report a change within a RAID configuration.	Unchecked	
☐ Audio Alerts During Boot	Setting	When checked, errors trigger audible beeps during POST.	Checked	
☐ Numlock on at Boot	Setting	Set the keyboard Num Lock control to be on or off when system is booted.	Unchecked	
☐ UEFI Boot Order		When checked, allows the system to boot from UEFI devices. When Legacy Boot is Disabled, the check boxes for UEFI Boot Order and Legacy Boot Order will be disabled, because only UEFI devices can boot in this mode. When UEFI Boot Order is enabled, the system attempts to boot from all UEFI devices before any non-UEFI devices. Arrange the boot order from the UEFI devices found. By default, the system will arrange the boot order by device type using the following precedence: 1. USB 2. SATA DVD (Desktop Only) 3. SATA Hard Drives 4. M.2 devices 5. Network Boot Highlight the list and press Enter to adjust the order of the boot entries. If a new bootable device is added to the system, it appears at the bottom of the list, unless it is a USB device that uses the order of the USB placeholder already in the list.	Checked	

5.5 HP Sure Recover

Table 22 HP Sure Recover

Feature	Type	Description	Default	Notes
HP Sure Recover	Setting	If this setting is enabled and HP Sure Recover is launched, the system firmware honors local and remote requests	Checked	

Feature	Type	Description	Default	Notes
		to reinstall the OS. If it is disabled, all requests to reinstall the OS are ignored.		
Recover from Network	Setting	If this is enabled, the system firmware obtains the recovery agent from the network. Otherwise, the system firmware obtains the recovery agent from a local drive.	Checked	Assuming Windows 10 is preinstalled. Gray when HP Sure Recover is disabled
Recover after Boot Failure	Setting	If this setting is enabled and no bootable UEFI OS is found, the system firmware launches HP Sure Recover.	Checked	Assuming Windows 10 is preinstalled. Gray when HP Sure Recover is disabled
Prompt before Boot Failure Recovery	Setting	If this setting is enabled and HP Sure Recover is launched because of a boot failure, the user is notified of the boot failure and asked to choose whether to start or cancel HP Sure Recover.	Checked	Not shown if Recover after Boot Failure is unchecked
Recovery Agent	Label			
URL:		Location of the current recovery agent URL.		Not shown unless Recover from Network checked
Username:		Username (optional) to access the recovery agent.		Not shown unless Recover from Network checked
Provisioning Version:		Version of the recovery agent's provisioning data. This value will be 0 until a scheduled download occurs after a change is made to the recovery agent URL.		Not shown unless Recover from Network checked
OS Recovery Agent Version		Version of the recovery agent stored in the embedded secure storage device. The Version will be displayed when first time do an update on eMMC.		Not shown unless an embedded secure storage device is installed.
Recovery Image	Label			
URL:		Location of the current recovery image URL.		Not shown unless Recover from Network checked
Username:		Username (optional) to access the recovery image.		Not shown unless Recover from Network checked
Provisioning Version:		Version of the recovery image's provisioning data. This value will be 0 until a scheduled download occurs after a change is made to the recovery image URL.		Not shown unless Recover from Network checked
OS Recovery Image Version		Version of the recovery image stored in the embedded secure storage device. The Version will be displayed when first time do an update on eMMC.		Not shown unless an embedded

Feature	Type	Description	Default	Notes
				secure storage device is installed.
OS Recovery Driver Version		Version of the recovery driver stored in the embedded secure storage device.		Not shown unless an embedded secure storage device is installed.
Recovery Image Failover Repositories		Shows User: Failover URLs, Usernames, and Provisioning versions		
Failover Repository 1	Label			Not shown unless Recover from Network checked and Failover Repository 1 is populated
URL:		Location of the Failover 1 recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 1 is populated
Username:		Username (optional) to access the Failover 1 recovery image.		Not shown unless Recover from Network checked and Failover Repository 1 is populated
Provisioning Version:		Version of the Failover 1 recovery image's provisioning data. This value will be 0 until a scheduled download occurs after a change is made to the recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 1 is populated
Failover Repository 2	Label			Not shown unless Recover from Network checked and Failover Repository 2 is populated
URL:		Location of the Failover 2 recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 2 is populated

Feature	Type	Description	Default	Notes
Username:		Username (optional) to access the Failover 2 recovery image.		Not shown unless Recover from Network checked and Failover Repository 2 is populated
Provisioning Version		Version of the Failover 2 recovery image's provisioning data. This value will be 0 until a scheduled download occurs after a change is made to the recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 2 is populated
Failover Repository 3	Label			Not shown unless Recover from Network checked and Failover Repository 3 is populated
URL:		Location of the Failover 3 recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 3 is populated
Username		Username (optional) to access the Failover 3 recovery image.		Not shown unless Recover from Network checked and Failover Repository 3 is populated
Provisioning Version		Version of the Failover 3 recovery image's provisioning data. This value will be 0 until a scheduled download occurs after a change is made to the recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 3 is populated
Failover Repository 4	Label			Not shown unless Recover from Network checked and Failover Repository 4 is populated

Feature	Type	Description	Default	Notes
URL:		Location of the Failover 4 recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 4 is populated
Username:		Username (optional) to access the Failover 4 recovery image.		Not shown unless Recover from Network checked and Failover Repository 4 is populated
Provisioning Version		Version of the Failover 4 recovery image's provisioning data. This value will be 0 until a scheduled download occurs after a change is made to the recovery image URL.		Not shown unless Recover from Network checked and Failover Repository 4 is populated
Embedded Storage for Recovery	Label	Reports the size of the embedded secure storage device.	Currently 32 GB.	Not shown unless an embedded secure storage device is installed.

5.6 System Options Menu

Table 23 System Options Menu features

Feature	Type	Description	Default	Notes
☐ Configure Storage Controller for RAID	Setting	When checked, configures SATA Controller for RAID mode.	Unchecked	Select products only
☐ Configure Storage Controller for Intel Optane	Setting	Enables driver support for NVMe Intel® Optane® storage module. Requires additional configuration by Intel Rapid Storage Technology software application. IMPORTANT: After Optane is initialized in the OS, do not boot with this setting disabled. The OS may become corrupted unless Optane is unconfigured first.	Unchecked	Intel Only
☐ Configure Storage Controller for VMD	Setting	When checked, the Intel Volume Management Device (VMD) controls the storage devices in the system, allowing support of RAID and Optane features.	Depends on factory storage configuration	Select products only

Feature	Type	Description	Default	Notes
Limit PCIe Speed	Setting	Allows you to restrict the maximum speed of the PCI Express devices to previous generations. The following settings are possible: • Auto • Gen 1 (2.5Gbps) • Gen 2 (5Gbps) • Gen 3 (8Gbps)	Auto	Desktop Workstations Only
☐ Turbo Boost	Setting	When checked, enables Intel Turbo Boost Technology to improve performance when operation conditions allow.	Checked	Intel Only
☐ Hyper-threading (Intel® HT)	Setting	When checked, enables hyperthreading capability on Intel processors Intel HT Technology (HT) is designed to improve performance of multithreaded software products and requires a computer system with a processor supporting HT and an HT-enabled chipset, BIOS and OS. Contact your software provider to determine compatibility. Not all customers or software applications will benefit from the use of HT. See http://www.intel.com/info/hyperthreading for more information.	Checked	Intel CPU with Hyper-Threading Only
☐ Virtualization Technology (VTx)	Setting	When checked, enables VT on Intel-based systems. NOTE: This setting cannot be disabled when Virtualization Based BIOS Protection is enabled.	Checked	Intel Only
☐ Virtualization Technology for Directed I/O (VTd)	Setting	When checked, grants virtual machines direct access to peripheral devices on select Intel-based systems.	Checked	Intel Only
☐ SVM CPU Virtualization	Setting	When checked, enables AMD-V and AMD-Vi virtualization features on AMD-based systems. NOTE: This setting cannot be disabled when Virtualization Based BIOS Protection is enabled.	Checked	AMD Only
☐ Enhanced Hello Sign-in	Setting	When checked, enables Enhanced Hello Sign-in for supported versions of Windows by reporting available Secure Devices to the operating system.	Unchecked	Select products only
☐ DMA Protection	Setting	When checked, enables DMA redirection using IOMMU for enhanced security. **NOTE:** Requires Legacy Support disabled and VTd enabled.	Checked	Intel 2019+ AMD 2020+

Feature	Type	Description	Default	Notes
Pre-boot DMA Protection	Setting	Secures memory access through DMA to allowed regions prior to OS startup. The following settings are possible: • All PCIe Devices • All PCIe devices with approved exceptions • Thunderbolt™ only (for systems with TBT) • Disable (for systems without TBT)	Notebooks: All PCIe Devices Desktops: Thunderbolt™ only - or - Disable	Intel 2019+ AMD 2021+ This setting requires DMA Protection to be enabled
☐ Full encryption of main memory (DRAM)	Setting	When checked, the system stores all data to DRAM in an encrypted format.	Checked	Select products only
☐ PCI Express x16 Slot 1	Setting	When checked, the PCI Express x16 slot is available for an expansion card. When unchecked, slot is disabled.	Checked	Desktop Only
☐ PCI Express x1 Slot 1 (2) (3)	Setting	When checked, the PCI Express x1 slot is available.	Checked	Desktop Only
☐ PCI Express x4 Slot 1 (2)	Setting	When checked, the PCI Express x4 slot is available.	Checked	Desktop Only
☐ PCI Slot 1 (2) (3)	Setting	When checked, the PCI slot is available.	Checked	Select products only
☐ M.2 SSD (1) (2)	Setting	When checked, the M.2 slot typically used for NVMe storage modules is available.	Checked	Desktop Only
☐ M.2 WLAN/BT	Setting	When checked, the M.2 slot typically used for the WLAN module is available.	Checked	Desktop Only
☐ Fast Charge	Setting	When checked, battery charge rate is actively managed by the system using current battery and charger parameters. When unchecked, rate is fixed.	Checked	Notebook Only
Power Button Protection	Setting	Disables the power button while off or suspended and the lid is closed to prevent the system turning on when stored (for instance, when in a bag). The following settings are possible: • On Battery Only • Always • Never	On Battery Only	Select products only
☐ Power button delay before sleep or power down	Setting	For products with the power button located on the keyboard, enabling this setting will increase the press time required to activate the button to 300 ms. With the setting disabled the button responds to a keypress in 50 ms.	Checked	Select products only

Feature	Type	Description	Default	Notes
Power Button Override	Setting	Sets the time required to hold the power button down for the desktop to turn off, overriding the power button behavior defined by the operating system. The following settings are possible: • Disable • 4 sec • 15 sec	4 sec	Desktop Only
☐ Swap fn and ctrl (Keys)	Setting	When checked, switches functionality between fn and ctrl keys.	Unchecked	Notebook Only
☐ Launch Hotkeys without fn keypress	Setting	When checked, allows the fn+fx hot key combinations to be activated by just pressing the fx key, where fx is a key from f1 to f12 (for instance, f4 instead of fn+f4). The 'Auto' setting is available on systems with an LED on the fn key. In Auto mode, fn+shift toggles the fn lock state. • LED off: Checked • LED on: Unchecked	Unchecked or Auto (if available)	Notebook Only
☐ Swap Arrow Up/Down and Page Up/Down Function	Setting	When checked, switches functionality between Up / Down keys and Page Up / Page Down keys for platforms with shared keys.	Unchecked	Select products only
☐ Special Keys mapped to fn+key	Setting	When checked, maps these key combinations to the legacy keys: • fn+r → Break • fn+s → Sys Rq • fn+c → Scroll lock • fn+w → Pause • fn+e → Insert NOTE: This setting only applies for systems without these legacy keys.	Unchecked	Select products only
☐ Max DC Performance (2019+)	Setting	When checked, allows Intel Turbo Boost Technology to activate when a power adapter is not connected. Previously called *Enable Turbo Boost on DC* (2018 and older).	Unchecked	Intel Notebook Only
Intel Dynamic Tuning	Setting	Manages power and thermal conditions to keep system from overheating. Previously called DPTF.	Checked	Intel Notebook Only
Sanitization Mode Countdown Timer	Setting	Duration of sanitization mode: 15 – 300 (by 15) in seconds (max 255 for some)	120	Select products only
Pre-Sanitization Mode Countdown Timer	Setting	Delay before sanitization mode starts: 0 – 10 (by 1) in seconds	3	Select products only
USB Type-C® Connector System Software Interface (UCSI)	Setting	When checked, allows UCSI to be exposed to the operating system (ACPI table)	Checked	Systems with USB Type-C® ports

Feature	Type	Description	Default	Notes
☐ HP Application Driver	Setting	Provides ACPI structure to enable HP common software application framework. The driver is provided in the latest HP support software which can be downloaded from the web.	Unchecked (2018 and older) Checked (2019+)	Device Manager shows alert if this is enabled without the HP application driver installed.
☐ Dynamic Noise Suppression	Setting	(also known as GNA Audio Offload) This feature provides applications with the capability to offload audio (Microphone) processing to a dedicated GNA accelerator, thereby reducing CPU loads and improving battery life.	Checked (for most systems)	Requires driver for function
☐ Energy Efficient Turbo	Setting	When checked, allows the system to consider graphics power when deciding on level of CPU turbo frequency.	Unchecked	Select products only
☐ AMD DASH	Setting	AMD Remote system management capability.	Unchecked	AMD Only
☐ Hardware enabled Spectre Variant 2 Mitigation	Setting	This setting enables Single Thread Indirect Branch Predictor (STIBP) functionality in AMD processors.	Unchecked	AMD Only
☐ Enable High Resolution mode when connected to a USB-C® DP alt mode dock	Setting	Allocate more bandwidth to a USB-C® dock to support the highest resolutions on a DisplayPort monitor attached to it,	Unchecked	Notebook Only
Top Cover Function	Setting	Uncheck to disable the top cover functionality for HP Elite Slice.	Checked	HP Elite Slice Only

5.7 Built-in Device Options Menu

This menu provides settings for built-in devices on the system.

Table 24 Built-in Device Options Menu features

Feature	Type	Description	Default	Notes
☐ Embedded LAN Controller	Setting	When checked, enables the integrated network controller.	Checked	Select products only
Wake on LAN	Setting	Allows the system to wake via Local Area Network (LAN). The following settings are possible: • Disabled • Boot to Network • Boot to Hard Drive	Boot to Hard Drive	
☐ Dust Filter	Setting	When checked, enables the dust filter reminder. This will prompt you after a period of days specified by the setting below.	Unchecked	Desktop Only
Dust Filter Reminder (Days)		Number of days for a reminder to replace the dust filter • 15 • 30 • 60 • 90 • 120 • 180	60	Desktop Only
☐ LAN Controller Option (1) (2)	Setting	When checked, enables the integrated network controller in the designated rear option slot.	Checked	Select products only
☐ Integrated Video	Setting	When unchecked, disables the integrated video device. When not using the integrated video, disabling the integrated video will free some system memory.	Checked	Desktop with discrete graphics card only
VGA Boot Device	Setting	The firmware can use only one graphics device when booting up; so when there are multiple graphics devices, this feature selects the graphics controller to use as the primary VGA device during boot-up. • Integrated graphics • Add-in graphics cards (select products only)	Add-in graphics is set as primary	Desktop with discrete graphics card only

Feature	Type	Description	Default	Notes
Video Memory Size	Setting	System memory reserved for video before loading the OS. Settings vary by platform and generation. Examples: Intel: • 64 MB • 128 MB • 256 MB • 512 MB AMD: • 256 MB • 512 MB • Auto	Intel: 64 MB AMD: Auto	
Graphics	Setting	Set the graphics adapter. The following settings are possible and depend on the model of notebook to determine which are present with the default setting: • Hybrid Graphics • UMA Graphic • Discrete Graphics • Auto (Let OS decide whether hybrid graphics is enabled or disabled).	Hybrid Graphics OR Auto (select products only)	Multiple Graphic Card Notebook Only
☐ Integrated (Front) (Rear) Camera	Setting	When checked, enables the integrated webcams.	Checked	
HP Camera Privacy Key	Setting	Camera Privacy Key stays in last known state Camera Privacy Key ON after boot or resume	Camera Privacy Key stays in last known state	Camera HW must be in configuration
☐ Internal SD Storage	Setting	When checked, enables integrated SD card controller.	Checked	Select products only
☐ Fingerprint Device	Setting	When checked, enables fingerprint reader.	Checked	Select products only
Touch Device	Setting	When checked, enables the touch screen.	Checked	Select products only
☐ Audio Device	Setting	This setting provides a single point of control for the integrated microphone, the internal speakers, and the headphone out. When checked, the operating system visibility of each audio device below is controlled independently. When unchecked, hides all audio devices from the operating systems. The individual audio device settings below are also disabled.	Checked	
☐ (Integrated) Microphone	Setting	When unchecked, disables the integrated microphone and microphone jack (if present).	Checked	Notebook Only

Feature	Type	Description	Default	Notes
Microphone	Setting	Set the microphone port state. Possible settings are: • Enable • Disable • Disable and Lock Disable and lock prevents the other audio ports from being remapped to the microphone function in the OS.	Enable	Desktop Only
☐ Internal Speakers	Setting	When unchecked, disables the internal speakers. If errors occur during boot-up, the speaker still beeps. See **Boot Options** / **Audio Alerts During Boot** for more information.	Checked	
☐ Headphone Output	Setting	When checked, enables the headphone jack.	Checked	Notebook Only
☐ Wake on Voice (WOV)	Setting	When checked, enables the system to wake with voice command.	Checked	Select platforms only
☐ Intel Smart Sound	Setting	When checked enables Intel Smart Sound.	Checked	Intel Notebook Only
☐ Lock Wireless Button	Setting	Prevent changes to the state of physical wireless enable/disable button.	Unchecked	Notebook Only
☐ Wireless Network Device (WLAN)	Setting	When checked, enables integrated 802.11 device.	Checked	Notebook Only
☐ Bluetooth	Setting	When checked, enables integrated Bluetooth® device.	Checked	Notebook Only
☐ Mobile Network Device (WWAN)	Setting	When checked, enables integrated WWAN device.	Checked	Notebook Only
☐ GPS device	Setting	When checked, enables integrated GPS device.	Checked	Notebook Only
☐ Mobile Network Device (WWAN) and GPS Combo Device	Setting	When checked, enables integrated WWAN / GPS combo device.	Checked	Notebook Only
☐ WWAN Quick Connect	Setting	Maintains power to WWAN device to enable faster connections.	Checked	Select products only
☐ M.2 USB / Bluetooth	Setting	When checked, enables the USB connection to the M.2 WLAN slot (typically used by Bluetooth if present).	Checked	Desktop Only
HP LAN-Wireless Protection	Label			
☐ LAN/WLAN Auto Switching	Setting	When checked, enables automatic switching between embedded WLAN device and embedded LAN controller; disables WLAN when LAN connection is detected.	Unchecked	
☐ LAN/WWAN Auto Switching	Setting	When checked, enables automatic switching between embedded WWAN device and embedded LAN controller; disables WWAN when LAN connection is detected.	Unchecked	Notebook Only

Feature	Type	Description	Default	Notes
☐ Wake on WLAN	Setting	When checked, enables the system to wake via WLAN.	Unchecked	Select products only
☐ Wake on Bluetooth	Setting	When checked, enables the notebook to wake via BT input devices. Requires Wake on USB to be enabled.	Unchecked	Notebook Only
☐ Wake on WiGig	Setting	When checked, enables the notebook to wake via WiGig device.	Unchecked	Notebook Only
☐ Collaboration Buttons	Setting	When checked, enables the capacitive controls for volume and connect or disconnect to function.	Checked	Select products only
Button Sensitivity	Setting	Controls the touch sensitivity of collaboration buttons. Possible settings are: • Low • Medium • High	Unchecked	Select products only
☐ Hang-up Button Delay	Setting	When checked, hang-up button must be held at least 0.5 sec before activating.	Unchecked	Select products only
☐ NFC	Setting	When checked, enable Near Field Communication functionality.	Checked	Select products only
☐ Wake on LAN in Battery Mode	Setting	When checked and powered by battery, enables the notebook to wake via LAN.	Unchecked	Notebook Only
☐ Fan Always on while on AC Power	Setting	When checked, leaves the fan on while running on AC power.	Unchecked	Notebook Only
Increase Idle Fan Speed (%)	Setting	Controls the minimum fan speed during periods that the fan would normally be off under the control of the desktop thermal sensor. Choose a percentage of the maximum fan speed: 0 –100%.	0	Desktop Only
☐ Boost Converter	Setting	When checked, the notebook draws power from the battery when the system is on AC to give the CPU a momentary performance gain by increasing the overall power available to the CPU.	Checked	Notebook Only
Backlit Keyboard Timeout	Setting	Specifies the timeout period for the keyboard's backlight LEDs. The following settings are possible: • 5 secs • 15 secs • 30 secs • 1 min • 5 min • Never	15 seconds	Select products only
☐ Automatic Keyboard Backlit	Setting	When checked, keyboard backlight level is affected by ambient light level. The keyboard backlight will remain off while in bright environments to save power.	Checked	Select products only
RGB Keyboard – System Start-up Lighting Control	Setting	Controls initial state of keyboard lighting for the supported RGB keyboard configurations. Available settings are: Animated, Static, and Disabled	Animated	Select products only

Feature	Type	Description	Default	Notes
☐ Force enable HP Sure View	Setting	When checked, enables HP Sure View's privacy panel by changing the screen brightness	Unchecked	Select products only
☐ Magnetic Strip Reader	Setting	When checked, enables the integrated magnetic strip reader	Checked	Select products only
Disable Battery on next shut down	Action	When checked, the battery is put in storage mode when the system is next shut down. AC power is required to turn on the system afterwards.	Unchecked	Requires administrator password set
☐ RFID Reader	Setting	When checked, enables the RFID reader.	Checked	Select products only
☐ RFID Reader Audio Beep	Setting	When checked, audio confirmation is enabled	Checked	Select products only
☐ RFID Reader Keyboard Backlight	Setting	When checked, backlight for reader is enabled	Checked	Select products only
☐ TILE Deactivate	Setting	When TILE Deactivate is checked, LAN and WLAN location-based services are disabled. Note: TILE features are specific to Intel based Products.	Unchecked	Select products only
☐ TILE Airplane Mode	Setting	RF disabled when selected	Checked	Select products only
☐ HP Smart Experiences	Setting	Improves camera fidelity with software	Checked	Select products only
☐ Wireless Charge in S4/S5	Setting	Keep wireless charger enabled when system is off or hibernating	Unchecked	Select products only
☐ Active Pen Wireless Charging	Setting	Enable charging when pen is docked	Checked	Select products only

5.8 Port Options Menu

The following table describes various setting options for Ports.

Table 25 Port Options Menu features

Feature	Type	Description	Default	Notes
☐ (Left) (Right) (Front) (Rear) (Top) (Bottom) USB Ports	Setting	Enable or disable all USB ports on one side of the system (legacy and Type-C).	Checked	
☐ (Left) (Right) (Front) (Rear) USB Port (1) (2) (3)	Setting	Enable or disable a specific USB port. **NOTE**: When looking at the ports (and in horizontal orientation for desktops), count ports from bottom to top, then left to right.	Checked	Desktop Only
☐ Docking USB Ports	Setting	When unchecked, disables USB ports connected through the docking connector.	Checked	Notebook Only
☐ USB Legacy Port Charging	Setting	When checked, enables the USB Type-A charging port to charge devices during hibernation or shutdown.	Checked	
Disable Charging Port in sleep/off if battery below (%)	Setting	Prevent charging port from providing power to external devices if the system itself is below a certain battery threshold. Possible settings are: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100.	10	Notebook Only
☐ (Front) (Rear) USB Type-C® Downstream Charging	Setting	When unchecked, the system will not power Type-C devices in the off states.	Checked	Desktop Only
☐ Thunderbolt™ Type-C Ports	Setting	When checked, enables integrated Thunderbolt™ ports. **NOTE:** Older systems included additional Thunderbolt™ settings in this menu. Starting in 2019 these options have moved to a separate Thunderbolt™ Options menu.	Checked	Select products only
☐ Accessory USB Port	Setting	When checked, enables the accessory USB port.	Checked	Desktop Workstations Only
☐ (Rear) Option Port (1) (2)	Setting	When checked, enables the identified option port without regard to which option type is installed.	Checked	Select products only
☐ Option Port (1) (2) – HDMI 1.4 Mode	Setting	When checked, enables additional bandwidth for DisplayPort® over Type-C to support higher graphics resolutions.	Unchecked	Select products only
☐ Media Card Reader	Setting	When checked, enables the integrated media card reader.	Checked	Notebook & AiO Only
☐ Media Card Reader/SD_RDR USB	Setting	When checked, enables the media card reader connector (labeled SD_RDR typically) on a desktop.	Checked	Desktop Only
SATA (0) (1) (2) (3) (4) (5)	Setting	When checked, allows the system to access a device attached to the SATA port.	Checked	Desktop Only

Feature	Type	Description	Default	Notes
☐ Serial Port (A, B, C, D, C/D, E/F)	Setting	When checked, enables the specified serial ports.	Checked	Desktop Only
Serial Port Voltage (A) (B) (C) (D) (E) (F)	Setting	Powered Serial port voltage selection on RPOS units that include this feature. Possible settings are: • 0 Volts • 5 Volts • 12 Volts	0 Volts	Retail Point of Sale Systems Only
☐ Smart Card	Setting	When checked, enables integrated Smart Card slot.	Checked	Notebook Only
☐ Smart Card Power Savings	Setting	When checked, enables the power-saving feature of the Smart Card reader, thus not maintaining a session when the card is removed.	Checked	Notebook Only
Cash Drawer Port	Setting	On select Retail Point of Sale systems, this controls whether the cash drawer port can be activated or not.	Enable	Retail Point of Sale Systems Only
Restrict USB Devices	Setting	When some devices are restricted, the system disables the ports at boot-up where a restricted device is installed. That port is disabled until the next boot. Port configuration is *not* changed on insertion. The following settings are possible: • Allow all USB Devices • Allow only keyboard and mouse • Allow all but storage devices and hubs	Allow all USB Devices	

5.9 Network Settings

The following table describes various options for Network Settings.

Table 26 Network Settings Options Menu features

Feature	Type	Description	Default	Notes
☐ Extended DHCP Timeout	Setting	When Enabled, allows DHCP waits to establish connection quicker.	Checked	Select products only

5.10 Power Management Options Menu

The following table describes various setting options for Power Management Options.

Table 27 Power Management Options Menu features

Feature	Type	Description	Default	Notes
☐ Runtime Power Management	Setting	When checked, enables the processor to run at lower frequencies (P-states) when higher performance is not needed. When unchecked, the processor always runs at maximum frequency.	Checked	Select products only
☐ Extended Idle Power States	Setting	When checked, enables the processor to rest in lower power states (C-states) when idle.	Checked	Select products only

Feature	Type	Description	Default	Notes
☐ S5 Maximum Power Savings	Setting	When checked, minimizes system power consumption while in the S5 (off) state. NOTE: Windows 10 with Fast Startup enabled powers off to the S4 (suspend to disk) state.	Unchecked	Desktop Only
☐ SATA Power Management	Setting	When checked, enables the SATA bus to enter low power states when idle.	Checked	Desktop Only
☐ Deep Sleep	Setting	When checked, reduces power consumption while in S3/S4/S5 to extend battery life. NOTE: Enabling deep sleep disables some wake events such as wake on USB without AC power.	Checked	Notebook Only
☐ PCI Express Power Management	Setting	When checked, enables PCI Express bus to enter low power states when idle.	Checked	Desktop Only
☐ PCIe Speed Power Policy (PSPP)	Setting	When checked, allows the system to lower PCIe link speeds when not on AC to save battery power.	Checked	AMD Notebook Only
☐ Power On from Keyboard Ports	Setting	When checked, allows the desktop to turn on by pressing a key on the keyboard, when the keyboard is plugged in to a port marked with the keyboard symbol.	Unchecked	Desktop Only
☐ Unique Sleep State Blink Rates	Setting	When checked, while the desktop is in the S4 power state, the power LED periodically blinks four times with a pause. Unchecked, the desktop does not blink at all in S4 (the same as S5, power off) This also affects S3 blink behavior. When checked, the desktop power LED periodically blinks three times with a pause, unchecked it blinks once per period.	Unchecked	Desktop Only
☐ Wake when Lid is Opened	Setting	When checked, opening the lid wakes the notebook from sleep mode	Unchecked	Notebook Only
☐ Wake when AC is Detected	Setting	When checked, allows the system to resume from sleep when AC power is detected		Notebook Only
☐ Wake on USB	Setting	When checked, allows the system to resume from sleep when a USB input device is triggered (such as mouse movement or keyboard keypress).	Checked	Notebook Only
☐ Power Control	Setting	When checked, enables the notebook to support power management applications such as IPM+ that help enterprises reduce power costs by intelligently managing the battery usage of the notebook.	Unchecked	Notebook Only
☐ Configure Battery Charge	Setting	When checked, enables support for HPPM 2.0	Unchecked	Select products only
Battery Health Manager	Setting	Sets charging policy based on optimizing for battery life or for battery duration. The possible settings are: • Maximize my battery health • Let HP manage my battery charging	Let HP manage my battery charging	Notebook Only
☐ Modern Standby	Setting	Low power standby mode. This mode replaces the traditional ACPI S3 sleep and S4 hibernation states.	Enable	Select products only

5.11 Remote Management Options Menu (Intel Only)

The following table describes various setting options for Remote Management Options.

Table 28 Remote Management Options Menu features

Feature	Type	Description	Default	Notes
☐ Active Management Technology (AMT)	Setting	This setting controls the Intel Active Management Technology (AMT) remote manageability features. When unchecked, the network based remote management functionality is disabled.	Checked	Intel Only
☐ USB Key Provisioning Support	Setting	When checked, enables AMT provisioning using a USB storage device.	Unchecked	Intel Only
☐ USB Redirection Support	Setting	When checked, enables support for storage redirection through USB NOTE: Intel AMT must be correctly provisioned	Checked	Intel Only
Unconfigure AMT on Next Boot	One time action	When applied, reset AMT configuration options on next boot. The following actions are possible: • Do Not Apply • Apply	Do Not Apply	Intel Only
SOL Terminal Emulation Mode	Setting	Specifies the Serial Over Lan (SOL) terminal emulation mode. The following settings are possible: • ANSI • VT100	ANSI	Intel Only
☐ Show Unconfigure ME Confirmation Prompt	Setting	When checked, requires user confirmation when unconfiguring Intel Management Engine.	Checked	Intel Only
☐ Verbose Boot Messages	Setting	When checked, report additional information when a boot message is displayed. NOTE: Unavailable when AMT is disabled.	Unchecked	Intel Only
☐ Watchdog Timer	Setting	When checked, enables Watchdog Timers.	Checked	Intel Only
OS Watchdog Timer (min.)	Setting	Sets OS Watchdog Timer (minutes). Possible values are from 5 to 25.	5	Intel Only
BIOS Watchdog Timer (min.)	Setting	Sets BIOS Watchdog Timer (minutes). Possible values are from 5 to 25.	5	Intel Only
CIRA Timeout (min.)	Setting	Client Initiated Remote Access timeout. Possible values are from 1 to 4 minutes or never.	1	Intel Only

5.12 MAC Address Pass Through (Notebook Only)

The following table describes various settings for the Host-Based MAC Address menu.

Feature	Type	Description	Default	Notes
Host Based MAC Address	Setting	Can be set to Disabled, System, or Custom. Setting to System allows all HBMA settings to be modified except the custom MAC address. Setting to Custom allows all settings including the custom MAC address to be modified.	System Address (2017+)	Notebook Only (2016+)
MAC ADDRESS	Setting	Configure a custom MAC address. Shows the current factory and system MAC addresses as well.	Factory MAC Address	Notebook Only
Reuse Embedded LAN Address	Setting	When checked, enables the ability to reuse the embedded LAN address	Disable	Notebook Only
☐ Pre-boot HBMA Support	Setting	Set Host Based MAC Address (HBMA) support in the preboot environment such as PXE.	Checked but disabled until Host Based MAC Address is enabled	Notebook Only
☐ Windows HBMA Support	Setting	Set host-based MAC address (HBMA) support in the Windows OS environment.	Checked but greyed out until Host Based MAC Address is enabled	Notebook Only
☐ Single NIC Operation (Disable All Other NICs when HBMA is active on one NIC)	Setting	When within Windows OS, only one NIC will operate using Host Based MAC Address (HBMA). This feature does not apply to PXE environments.	Unchecked but greyed out until Host Based MAC Address is enabled	Notebook Only
HBMA Priority List	Setting	Change the priority of USB and embedded Network Interface Cards (NICs) for the system.		Notebook Only

5.13 Thunderbolt™ Options

The following table describes various settings for configuring Thunderbolt™ ports, previously located in the Port Options menu. This menu organization is new in 2019 for platforms supporting Thunderbolt™ technology. There still remains a setting in Port Options to turn the Thunderbolt™ port on or off.

Feature	Type	Description	Default	Notes
☐ Thunderbolt™ Mode	Setting	When checked, enables Thunderbolt™ connections on the Type-C port. When unchecked: • Disables Thunderbolt™ connections on the Type-C port • Disables PCIe Tunneling on USB4 connections	Checked	
☐ Require BIOS PW to change Thunderbolt™ Security Level	Setting	When checked, Thunderbolt™ Security Level cannot be changed unless a BIOS administrator password has been created. This setting cannot be disabled if DMA Protection (System Options) is enabled.	Checked	2020 platforms only

Feature	Type	Description	Default	Notes
Thunderbolt™ Security Level	Setting	The following settings are possible: • PCIe and DisplayPort – No Security Any Thunderbolt™ device detected that requests a PCI-express connection will be connected to the system's PCi-express bus without requiring any approval by the local user. • PCIe and DisplayPort – User Authorization Each Thunderbolt™ peripheral includes a unique identifier which is used to determine if the device has been previously connected. In the event the user has previously chosen Always Connect for that particular device, it will automatically be connected to the PCI-express bus when subsequently attached. • PCIe and DisplayPort – Secure Connect This option offers enhanced protection for authenticating a previously connected Thunderbolt™ device beyond relying on its identifier. The device is provisioned with a key when initially connected and on subsequent connections, a challenge-response is implemented to verify the device has the secret before it is automatically connected to the PCI-express bus. • DisplayPort only Only USB and Display Port functionality will be available via the Type-C Thunderbolt™ port. PCI-express will not be connected from the Thunderbolt™ device to the internal PCI-express interface, thus any Thunderbolt™ device that requires PCi-express will not function correctly.	PCIe and DisplayPort – User Authorization	2020 platforms only
☐ Native PCIe Hot Plug	Setting	When checked, enables hot plug support to the system's PCI-express bus.	Disabled	

5.14 Remote HP PC Hardware Diagnostics Settings

Table 29 Remote HP PC Hardware Diagnostics Features

Feature	Type	Description	Default	Notes
Diagnostic Download URL	Setting	HP / Custom URL.	HP	
Custom Download Address	Setting	Location of Remote Diagnostics, if not obtained from the HP server.		
Custom Upload Address	Setting	Custom location to upload Diagnostic logs.		
Username	Setting	(Optional) Username to access custom Diagnostic location.		
Password	Setting	(Optional) Password to access custom Diagnostic location.		
Scheduled Execution	Setting	Allow Remote HP PC Diagnostics to run on a set schedule: • Enable • Disable	Disabled	
Frequency	Setting	Select the frequency for scheduled execution of Remote HP PC Hardware Diagnostics: • Daily • Weekly • Monthly	Weekly	
Execute On Next Boot	Setting	Enable or disable the execution on next boot. The Flag will be disabled after the diagnostics have run: • Enable • Disable	Disabled	
Last execution Result	Action	Displays the result of the last Remote HP PC Diagnostics execution		

6 UEFI Drivers

Main	Security	Advanced	**UEFI Drivers**

HP Computer Setup

This feature restarts the system into the 3rd Party Option ROM Management application. You can get to this application directly by pressing F3 during startup

⇨ **3rd Party Option ROM Management**

7 Features Not in F10 Menu

These features are BIOS controlled but do not have an option or setting in the F10 menu.

Feature	Description	Default	Notes
Privacy Panel	For notebooks equipped with Privacy Panel, press fn+f2 to enable or disable the privacy panel feature. Use fn+f5 and fn+f6 to decrease or increase the privacy panel brightness.	Disabled	For select privacy panel notebooks only.

8 Computer Notifications

8.1 Introduction

Platforms that support HP PC Commercial BIOS have various mechanisms to indicate errors that occur during Power-On-Self-Test (POST). The notifications can take several forms, such as:

- Blinks and Beeps
- On screen notifications that include the following:
  - Preboot messages (BIOS)
  - Pop-up messages within the OS

8.2 Blink and Beep Codes

Some system errors prevent the use of the video screen; instead, the system provides error information through blink codes using LED lights. The LED light used depends on the system type (notebook or desktop). The codes are presented in a sequence. For desktop, this means red blinks followed by white blinks. Audible long and short beeps accompany red or white blinks, respectively. Additional details may be found in the system's Maintenance and Service Guide.

The following table describes the meaning of critical blink codes.

Table 30 Computer notifications

Notebook		**Desktop**		**Description**
CAP / NUM	**Battery LED**	**Red with long beeps**	**White with short beeps**	
2		2	2	The main area of BIOS has become corrupted, and there is no recovery binary image available.
8		2	3	The HP Endpoint Security Controller policy requires the user to enter a key sequence (Sure Start 2.0).
	White and Amber blinking	2	4	The HP Endpoint Security Controller is recovering the BIOS firmware. Because it takes some time to load the firmware image and enable video, this blink code is necessary. (Sure Start).
3		3	2	The HP Endpoint Security Controller has timed out waiting for BIOS to return from memory initialization (memory failure).
4		3	3	The HP Endpoint Security Controller has timed out waiting for BIOS to return from graphics initialization.
5		3	4	The system board displays a power failure (crowbar).
		3	5	The CPU is not detected or is unsupported.
		3	6	The CPU does not support an enabled feature (typically this applies only to TXT).
7	1	5	2	The HP Endpoint Security Controller cannot find valid firmware.

8.3 Pop-up Messages

Onscreen notification can involve pop-up (toaster) messages. These describe several events involving USB Type-C® ports. Note that these messages within the OS require native support in the operating system or that HP notifications software be installed.

Table 31 Pop-up messages

Event	Code	Message	Detail
Power Adapter Accepted: Matches capabilities to charge while in S3, S4 or S5 power states.	1	Title: USB Type-C® Connector Text: "For full performance, connect a higher capacity power adapter."	A user plugs in a power adapter that is too small to operate the system while the device is turned on. The adapter could be used to charge in sleep mode or when the computer is turned off.
Power adapter rejected: Upstream power flow is not supported	2	Title: USB Type-C® Connector Text: "Charging system via adapter plugged into the USB port is not supported."	A user plugs in an adapter that requests power in which is not supported. (Cypress controller)
Connected device requests more power than can be supplied	3	Title: USB Type-C® Connector Text: "USB device requesting more power than system can provide." *Display system charging capability*	A user plugs in a device that requires more power than can be provided by the system.
Balance downstream power for charging from multiple USB ports	4, 5	Title: USB Type-C® Connector Text: "Charging from multiple USB ports may have limited support."	A user has plugged in an adapter to both a USB Type-A port and a USB Type-C® port (or into two USB Type-C® ports), and the system is not capable of charging both at full capacity while system is running.
The attached dock cable is inadequate to handle the needed power load	6	Title: USB Connector Text: "For full performance, connect higher capacity USB cable to dock." *Display capabilities of the cable*	A user plugs a cable connecting the dock to the system that is inadequate to power the system and charge the battery simultaneously.
Power adapter rejected: Provider and consumer mismatch	7	Title: USB Connector Text: "The power adapter is not compatible with this system."	The user has inserted an adapter that is not compatible with the HP system (from a 3rd party vendor that is not supported.)

9 Appendix A: UEFI

9.1 What is UEFI?

Unified Extensible Firmware Interface (UEFI) defines the interface between the operating system and platform firmware during the boot, or start-up process. Compared to BIOS, UEFI supports advanced preboot user interfaces.

The UEFI network stack enables implementation on a richer network-based OS deployment environment while still supporting traditional PXE deployments. UEFI supports both IPv4 and IPv6 networks. In addition, features such as Secure Boot enable platform vendors to implement an OS-agnostic approach to securing systems in the preboot environment.

The HP ROM-Based Setup Utility (RBSU) functionality is available from the UEFI interface with additional configuration options.

9.2 Introduction

The HP UEFI System Utilities are embedded in the system ROM. The UEFI System Utilities enable a wide range of configuration activities, including:

- Configuring system devices and installed options
- Enabling and disabling system features
- Displaying system information
- Selecting the primary boot controller or partition
- Configuring memory options
- Launching other pre-boot environments, such as the Embedded UEFI Shell and Intelligent Provisioning

9.3 Benefits of UEFI

- Abstracts platform from OS and decouples development
- Utilizes a modular driver model and CPU-independent option ROMs
- Remains modular and extensible and provides OS-neutral value-add
- Includes an OS loader that can keep the same as underlying hardware change
- Supports larger drives over 2 TB with GPT partition

9.4 Overview of UEFI Boot Process

The purpose of the UEFI interfaces is to define a common boot environment abstraction for use by loaded UEFI images, which include UEFI drivers, UEFI applications, and UEFI OS loaders. UEFI allows the extension of platform firmware by loading UEFI driver and UEFI application images. When UEFI drivers and UEFI applications are loaded they have access to all UEFI-defined runtime and boot services.

There are two sets of services in UEFI:

- Boot Services - UEFI applications (including OS loaders) must use boot services functions to access devices and allocate memory. These services are not available when the OS is running.
- Runtime Services - The primary purpose of runtime services is to abstract minor parts of the hardware implementation of the platform from the OS.

These services are present when OS is running.

9.5 The UEFI Forum

For more information, contact the Unified Extensible Firmware Interface (UEFI) Forum. It is a world-class nonprofit industry standards body that works in partnership to enable the evolution of platform technologies.

The UEFI Forum champions firmware innovation through industry collaboration and the advocacy of a standardized interface that simplifies and secures platform initialization and firmware bootstrap operations. Both developed and supported by representatives from more than 200 industry-leading technology companies, UEFI specifications promote business and technological efficiency, improve performance and security, facilitate interoperability between devices, platforms and systems, and comply with next-generation technologies.

10 Appendix B: Firmware Update

10.1 Updating System Firmware with the HP Firmware Update and Recovery Application (Windows Operating Systems only)

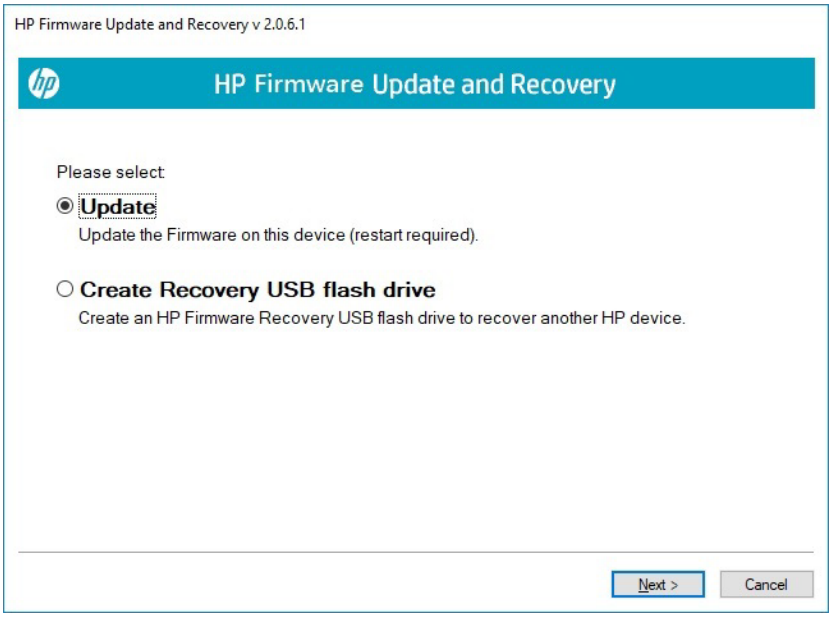
Current firmware updates for HP commercial platforms (2018 and later) include the HP Firmware Update and Recovery tool (HpFirmwareUpdRec.exe). This utility starts the firmware update process when run with the correct firmware source files for the target platform. Firmware types supported by this utility include the BIOS, the ME firmware (*Intel only*), and USB Type-C® PD (power delivery) controller firmware. When the utility is run in Windows, it identifies the compatible firmware files in local storage and then invokes a series of flash updates after triggering a system reboot.

Before 2018, the firmware update tool was HP BIOS Update and Recovery (HpBiosUpdRec.exe), which uses the specific BIOS binary included in the Softpaq as an input (for example, P70_010102.bin). This tool operates in a similar fashion to the newer HP Firmware Update and Recovery tool.

For 2018 and later systems, the firmware source files required for updating within BIOS Setup (F10) menus must be extracted from the .bin and .inf files included in the release Softpaq. The Firmware Update and Recovery application must be used to extract the various firmware binary files to use the Update System and Supported Device Firmware Using Local Media action in BIOS Setup. For earlier platforms, only the appropriate BIOS binary file from the Softpaq is required.

10.2 Using HP Firmware Update and Recovery

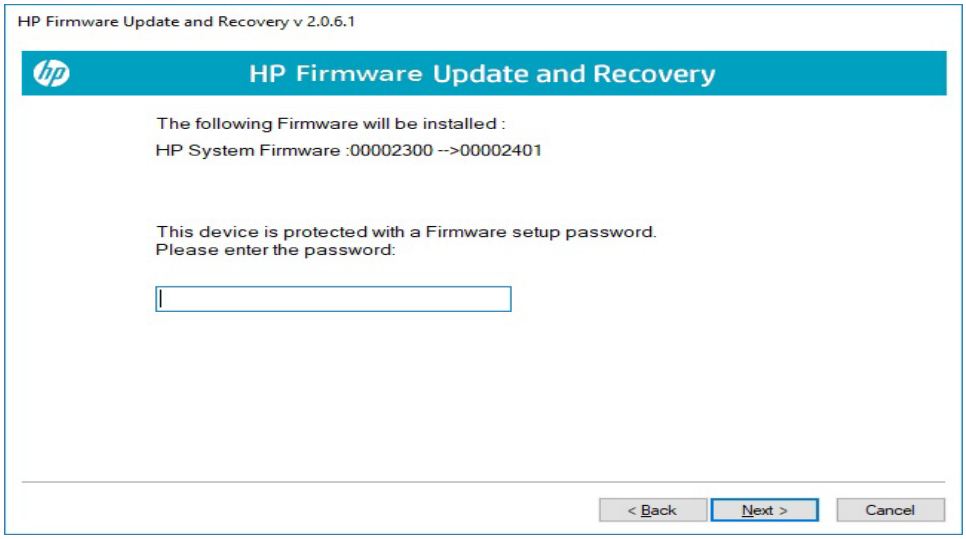
- Run the **HpFirmwareUpdRec** application. The HP Firmware Update and Recovery dialog is shown with the following options: 'Update' and 'Create Recovery USB flash drive'.



- Select **Update** and then select **Next**.
- If Windows BitLocker Drive Encryption (BDE) is enabled on the system using TPM security, HpFirmwareUpdRec prompts the user and offers to suspend it. BDE automatically resumes when the update is finished and Windows is restarted. This is to prevent possible loss of the encryption key. Click **OK** to proceed, otherwise click **Cancel** to suspend BDE manually and rerun the program later.

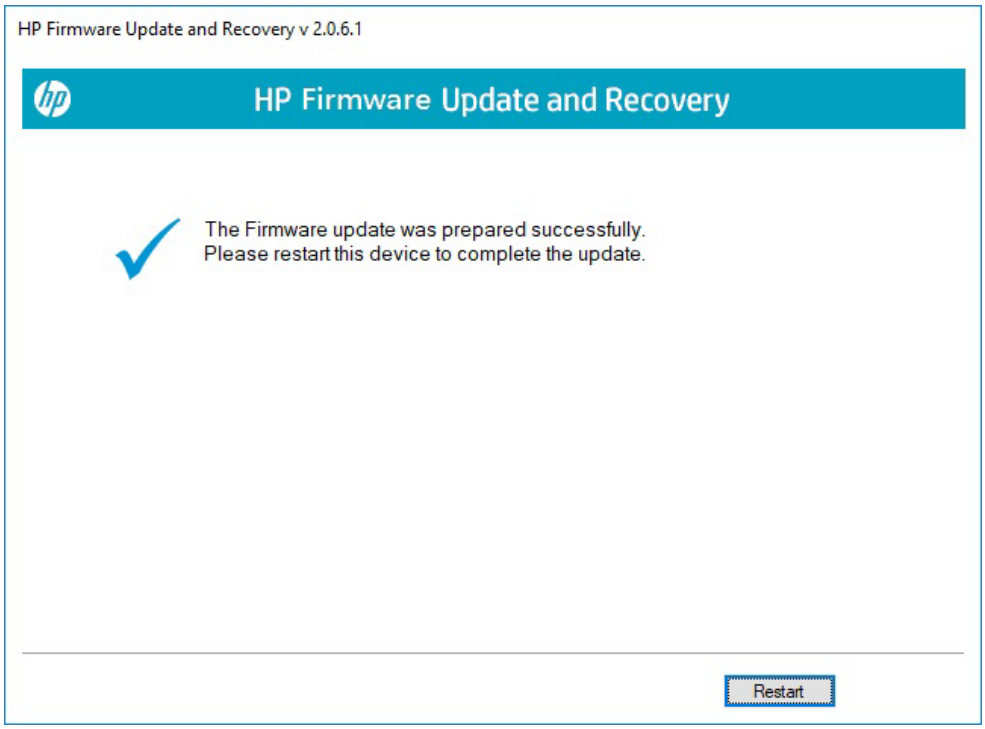
IMPORTANT: Updating BIOS without suspending BitLocker may cause the loss of access to the encrypted data. BitLocker protection automatically resumes the next time you restart your system.

- NOTE: Suspending BitLocker can be done manually in the Control Panel or can be automated by executing HPBIOSUPDREC command line "**HPBIOSUPDREC –b**".
  - The firmware image version on the current system and the firmware image version in the update file are



both displayed. The user is notified that the firmware will be overwritten. Enter the firmware setup password into the password field if BIOS has set an administrator password, then select **Next**.

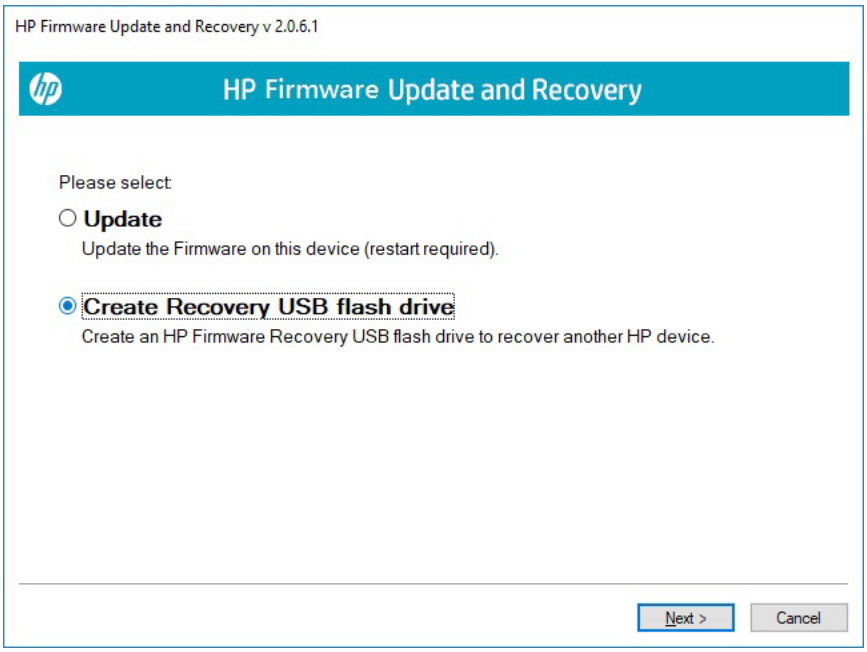
- Upon completion, the application will display a message that the Firmware update preparation was successful. Select **Restart**.



10.3 USB Recovery Key Creation

If the system BIOS has been corrupted and the device will not boot, another device can be used to create an HP Firmware Recovery USB Key that can be used to recover it. The device used to create the recovery key does not have to be compatible with the BIOS image.

- Run the **HpFirmwareUpdRec** or **HpBiosUpdRec** application. The main options menu is shown with the following options: 'Update' and 'Create Recovery USB flash drive'.

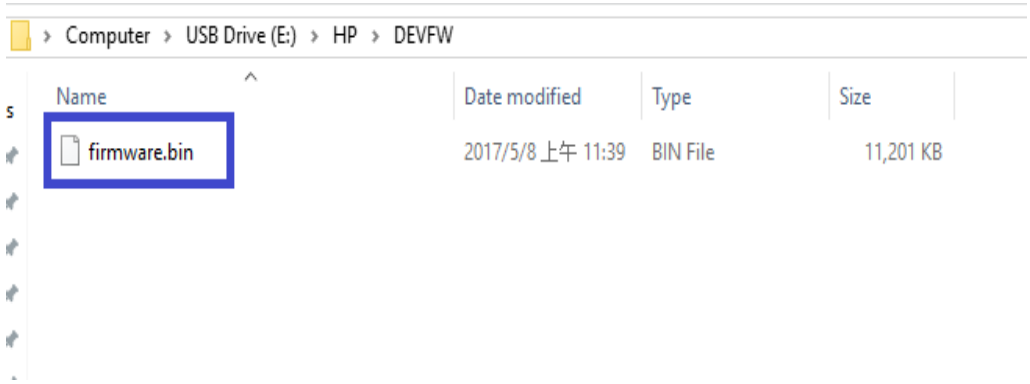


- Select **Create Recovery USB flash drive** and then select **Next**.
- The application will prompt to insert a USB flash drive if the system does not see a USB flash drive.
- 

Select a USB flash drive and click **Next**.
- 
Upon completion, the application with display a message that the recovery flash drive was created successfully. Click **Finish** to close the wizard.

The files can also be manually copied to the EFI partition of the hard drive to support emergency recovery. For 2018 and later the HpFirmwareUpdRec utility extracts the correct binaries from the .bin and .inf files and saves the individual components on the USB key in the HP\DEVFW folder, which can be copied into \EFI on the hard drive. For earlier platforms, only the BIOS binary file is used and it is saved in the HP\BIOS\Current folder.

NOTE: To recover a device with the flash drive, connect AC power and follow the previous on-screen instructions.



10.4 HpFirmwareUpdRec Log File

By default, a log file is created in the same folder with the executable file.

- If the –l command line option is used, the log file will be written to the supplied file path. If it is a relative path, it will be placed under that path.
- If the log file cannot be created in the executable folder, it will be created in the first available system temporary folder location, usually “C:\Users\(username)\AppData\Local\Temp” in Windows.

10.5 Custom Logo Support

NOTE: Operates in Silent Mode only, will not update firmware.

Installation:

- Command Line: HpFirmwareUpdRec.exe -e<logo filename>
- Custom Logo file will be written to BIOS. Check the log file for success or error.
  - **NOTE**: File must be JPEG format, maximum size 32k (32,768) bytes.
- If BIOS password is set, you must provide the password file.

Command-line option only, silent mode, not shown in usage display. Other options ignored. System will not be restarted.

Removal:

- Command Line: HpFirmwareUpdRec.exe -x
- Logo image will be removed from BIOS.
- If BIOS password is set, you must provide the password file.

Command line option only, silent mode, not shown in usage. Other options ignored. System will not be restarted.

Table 32 Custom logo support

Return Code	Name	Description
0	SUCCESS	No error

1	LOAD_ERROR	Error reading image file
2	INVALID_PARAMETER	File name missing
3	UNSUPPORTED	Not supported by BIOS
4	INVALID_FILE	File not found or invalid
26	SECURITY_VIOLATION	BIOS password not provided or incorrect
99	UNKNOWN	Unknown error occurred, see log file

10.5.1 Command-line Usage

Table 33 Custom logo support: command-line usage

Option	Comments
-f "folder path"	Specifies the folder containing firmware update files.
-p "password-file"	Specifies encrypted password file created with the HpqPswd utility. Valid with all other options.
-s	Silent mode. Runs without any user interaction or output.
-a	Eliminates version comparison when **-s** is present. It is ignored otherwise. There is no log entry or usage dialog if it appears without the silent option.
-h	Create HP_TOOLS partition if not present. On a GPT formatted system with native UEFI boot, this option is ignored. On MBR, the partition is not created if it already exists. If unable to create partition, exits with error code.
-b	If BitLocker with TPM is in use, automatically suspend it.
-r	Do not reboot automatically under silent mode (-s). The result code is SUCCESS_REBOOT (0xBC2) when this option is used.
-?	Show the same usage dialog that appears if an invalid command line is detected. This option overrides all other options, including **-s**.