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## Precautions for updating iLO firmware

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Thank you for purchasing our product. This document provides the precautions on the updating of iLO firmware. If you do not follow this document, a trouble, such as a start failure of the server, may occur. Read this instruction carefully, in order to prevent any error in the update operations. Furthermore, if the server malfunctions or the power is disconnected, due to blackout, thunder, disconnection, noise and other unexpected accidents during rewriting the data, in the worst case, damage occurs in the server and it does not work properly. In these cases, you might be responsible for paying for the repairs.

- Do not refresh the web browser screen by using the browser's reload button or pressing F5 key during updating the iLO FW. If you refresh the screen and the updating is unable to finish, reset the iLO.
- A TPM or TM is installed in this server. Before updating a system ROM or iLO firmware, suspend or back up any software that stores data on the TPM or TM. For example, if you use drive encryption software, suspend it before updating a firmware. Failure to follow these instructions might result in losing access to your data. Suspend software that uses TPM or TM before you update System ROM (BIOS) or iLO firmware.
- Reconfigure the SNMPv3 alert settings by using iLO web interface when updating from iLO firmware 1.10/1.15. Reconfigure the settings after updating when the server enables the SNMPv3 alert function.
- The SMTP Secure Connection (SSL/TLS) of AlertMail settings in iLO web interface is set to the enable when you update to this iLO firmware by this procedure. If you have enabled iLO AlertMail in previous iLO version, reconfigure AlertMail settings in accordance with your environment.
- You can restore the iLO settings backed up by iLO FW 1.20 but you cannot restore the other different version's backed up data. After operating this step, you need to configure the alert mail settings again because SMTP

Secure and SMTP auth settings are newly added in iLO FW 1.30. Backup and restore operations between different versions are not supported.

- To recover from losing iLO license key and iLO settings due to a hardware failure, we recommend that you back up the iLO settings by using the backup and restore function after updating iLO firmware.
- In addition to updating this iLO firmware, update the following firmware and software.
- System ROM (BIOS): Applying from Standard Program Package on Starter Pack
- Agentless Management Service: Applying from Standard Program Package on Starter Pack
- NEC ESMPRO ServerAgentService: Applying from **Applications** on Starter Pack
- Product Info Collection Utility: Applying from **Applications** on Starter Pack
- RESTful Interface Tool: Applying from **Applications** on Starter Pack
- NEC ESMPRO Manager: See *"Supplement to ESMPRO updating"*.
- Express Report Service (MG) Receiving Information: See *"Supplement to ESMPRO updating"*.
- When viewing the System Information tree in iLO 5 web interface, the Smart Array firmware displays a different version than the version in the Storage Information tab.
- About IPMI 2.0 RCMP+ Authentication Remote Password Hash Vulnerability (RAKP).

Perform any of the following:

- If you do not need to use IPMI, disable it. You can disable IPMI on iLO by using the Disable IPMI over LAN command. IPMI over LAN is disabled by default on iLO 5.
- Maintain the latest iLO firmware that contains the most recent security patches.
- Employ best practices in the management of the protocols and passwords on your systems and networks. Use strong passwords wherever possible.

- If the IPMI must be used, use a separate management LAN or VLAN, Access Control Lists (ACLs), or VPN to limit and restrict access to your iLO management interfaces.
- If you try to update iLO firmware before OS installation, refer to OS installation guide and set [Date and Time]-[Time Format] of RBSU.

And set the timezone so that [iLO Dedicated/ Shared Network Port]-[SNTP]-[Time Zone] corresponds to [Date and Time]-[Time Format] of EBSU after iLO firmware update.

If [Time Format] is [Coordinated Universal Time (UTC)]:

->Set same timezone as [Time Zone] of RBSU(UTC equal to GMT).


e.g.) If [Time Zone] is set to "UTC+09:00, Osaka, Sapporo, Tokyo, Soul, Yakutsk", select [Asia/Tokyo(GMT+09:00:00:00)].

If [Time Format] is [Local Time]:

->Set the timezone to correspond to [Local Time].

e.g.) If locale is Japan, select [Asia/Tokyo(GMT+09:00:00:00)].

- iLO 5 .NET Integrated Remote Console (IRC) does not launch from the Microsoft Edge 42 web browser. Perform any of the following:
  - Install a trusted certificate, and then enable the Integrated Remote Console Trust Setting located on the Remote Console & Media -> Security tab. This will prevent the redirection to HTTP and allow the .NET application to be trusted.
  - Click the "See all content" button from the blocked content menu to authorize untrusted content for the current session. The Microsoft Edge 42 web browser will then reload the window and allow the .NET integrated remote console to launch as in prior versions of the web browser.
  - Use Internet Explorer 11 to launch the .NET integrated remote console.
  - Use the standalone .NET console application.
- When the untrusted certificate warning pop-up window is displayed on iLO 5 web interface with the Microsoft Edge 42 web browser, perform either of the following:

- Click the "Details" link on the popup window, and then click "Go on to the webpage" link to proceed. This will be required each time a help topic is opened in a pop-up window.
- Use a different web browser that does not prompt to trust the sites untrusted certificate each time.
- Update to .NET Framework version 4.5.1 or later when you use iLO 5 .NET Integrated Remote Console (IRC) after installing this firmware.
- The remote console thumbnail in the iLO5 web interface may not be displayed on some systems with the Microsoft Edge 42 web browser. To view the remote console thumbnail, use the Internet Explorer 11 or another web browser (Firefox, Chrome mobile/Desktop) besides the Microsoft Edge 42 web browser.
- Peak server power in iLO5 web interface may exceed power supply capacity for short periods of time.
- Do not reset the iLO while POST is running. Invalid UUID or UUID (Logical) may be shown in overview page of iLO5 web interface.
- When you update iLO firmware to this version,  Risk will be always displayed on the security dashboard page and the right upper part of iLO5 web interface. Address the risk according to your secure policy. Refer to *iLO5 user's guide* for more detailed information.

The iLO security icon on the right upper portion of Web interface may be transparent even if "Overall Security Status" of [Security Dashboard] is "Risk". "Overall Security Status" of [Security Dashboard] indicates the current security status.

- When you update iLO firmware to this version and iLO advanced license is installed, do not set "Downgrade Policy" to "Permanently disallow downgrades" in [Access Settings]-[Update Service]. Configuring this setting makes a permanent change to iLO. After you configure iLO to permanently disallow downgrades, you cannot reconfigure this setting through any iLO interface or utility. Setting iLO to the factory default settings will not reset this value.
- If you configured "Enabled" at [Access Settings]-[iLO]-[Require Host Authentication], the following symptoms will occur.

- Many "iLO detected more than 3 unauthorized login attempts." or "iLO RBSU login failure." events are logged.
- An error will occur when you install Standard Program Package (SPP).

The following service and functionality do not work.

- RAID Report Service
- Reference to device and configuration information which are managed by iLO
- If you update to iLO5 firmware 2.10 or later, "Virtual NIC" device may be shown with warning on Windows device manager. If you do not use iLO virtual NIC functionality, change "Virtual NIC" of "Security > Access Settings > iLO" to "Disabled".

# Revision History

## Feb 11 2020 iLO Firmware 2.14

### **ENHANCEMENTS:**

The following enhancements are part of iLO 5 2.14:

- Support new Accelerators:
  - Xilinx Alveo U250
  - Xilinx Alveo U50
- User can now define pre-caution threshold alert value for the inlet ambient sensor by RESTful API interface.

## Oct 30 2019 iLO Firmware 2.10

### **ENHANCEMENTS:**

The following enhancements are part of iLO 5 2.10:

- Added a security log that lists security events recorded by the iLO firmware.
- Supports Firmware Verification functionality at [Administration]-[Firmware Verification].
- Extended Secure Start to verify CPLD on Gen10 Plus servers.
- Updated menu path and feature names for the Performance Management features. The features that were accessed through the Intelligent System Tuning menu can now be accessed through the Performance menu.
- New alert for recovery events.
- SUM/SUT support on servers using the High Security, FIPS, or CNSA security states.
- Support for staging firmware to update direct-attached hard drives through the UEFI System Utilities.
- Ability to import and export drive bay mapping information.
- Daily firmware flash limit, to protect iLO, ROM, and CPLD from repeated flashing attacks.
- Performance data logging in a new Active Health System record.
- Increased the certificate size limit from 4096 to 8096.
- When iLO is set to the factory default settings, Virtual NIC is enabled by default.
- The following System Diagnostics features are supported on Gen10 Plus servers:
  - Booting to safe mode—Allows you to boot the server with a safe minimum configuration.
  - Booting to intelligent diagnostics mode—Allows the system to automatically diagnose a boot failure during POST.

- Restoring the default manufacturing settings—Resets all BIOS configuration settings to their default manufacturing values. This process deletes all UEFI nonvolatile variables, such as boot configuration, Secure Boot security keys (if Secure Boot is enabled), and configured date and time settings.
- Restoring the default system settings—Resets all BIOS configuration settings to their default values and restarts the server. This option preserves some UEFI settings.
- Modified the text of the iLO time zone selections to match the system ROM time zone selections. For backward compatibility, you can use the previous time zone selection text or use the new text in APIs to set the time zone.

**FIXES:**

The following issues have been fixed in iLO 5 2.10:

- System GPUs might be listed without GPU version information.
- Incorrect power consumption information is displayed in RIBCL output and the Active Health System Log.
- If the domain name system is unavailable, an HPE ProLiant Gen10 Server might stop responding for up to three minutes during startup.

## Oct 14, 2019 iLO Firmware 1.47

**FIXES:**

- Fixed a problem which iLO time goes back, when iLO reset was executed in the condition that OS has been running over 49.5 days from the last OS reboot.

## Jun 27, 2019 iLO Firmware 1.45

**FIXES:**

- Fixed problem introduced in iLO 5 v1.43 which could cause an HTTP connection to be refused under high activity of REST calls.

## May 23, 2019 iLO Firmware 1.43

**FIXES:**

- Fix for potential firmware use of system memory after free, which could lead to an OS exception or memory corruption under Linux or ESX when using hpilo driver. It was not an issue for Windows.
- Fix so iLO 5 can connect to switch when both are set to 100 Full Duplex.

- Fixed REST call so that "ilorest -d serverlogs --selectlog=IML --clearlog rc 255" does not fail when it should succeed.
- Fixed problem with erroneously logging IML events like the following for "exceeding power capacity threshold" when it should not be logged.  
e.g.: Server power: %1W exceeded power capacity threshold %2W  
\*The IML logs in question will look like one of the following, where %1 is an average power reading and %2 is a threshold equal to 10% above the total or redundant power supply capacity.
- In only Express5800/R120h-2M, fixed a problem that Backup and Restore option in iLO 5 may fail to complete when a server is fully populated with eight PCI cards.

#### **ENHANCEMENTS:**

- Added VLAN tagging support on iLO Dedicated NIC.
- Enhanced SNMP functionality to generate the iLO SNMP EngineID automatically after iLO resets.Reduced the number of Redfish resource change events sent. Removed watching of fields that change frequently.
- BIOS Admin password will NOT cause iLO to act as if Require Host Authentication is Enabled.

## **Feb 05, 2019 iLO Firmware 1.40**

#### **Fixes:**

- User interface fixes and improvements.
- Fixed an issue where power supply status changes may be delayed.
- Device Inventory could display a parse error under Internet Explorer 11 when certain PCI Cards are installed.
- Improved shared network port out-of-band LOM resuscitation to reduce the scope and the frequency of system power-on/power-off during systems shutdown/reboot.
- iLO communication issues in certain configurations where a server is set to Auto-Power-On after an AC power cycle.
- Fixed issue where pressing UID button can occasionally cause server to power off
- Fix for "VGA Port Detect Override" to show video in all cases where monitors are installed.
- Fix for intermittent file upload failures.
- Fix for issues with Virtual Media in FIPS mode.
- Fix for issues with simultaneous use of virtual DVD and floppy in FIPS mode.
- Fix for USB floppy when used with ESXi 7 installation driver.
- Fix for erroneous reporting of disk drive overheating.
- Fix for potential RESTful API errors at boot with multiple NICs installed.



- Fix to add iLO 5 NIC information into anonymous XML response.
- Fixed false errors showing link lost on NICs when link never seen in IPMI.
- Fixed an issue where PCIe cards such as RAID card status may be “Unknown” in Device Inventory or “Strage Information” may be not shown in Strage page after server reboot.

### Enhancements:

- Ability to edit Maintenance Windows in Firmware & OS Software section
- Added Password Complexity feature to Security > Access Settings
- Enable/disable for overlay video showing Server Health Summary
- Downgrade Policy - Specifies how iLO handles requests to downgrade any of the firmware types that you can update through iLO.
- Virtual NIC functionality (disabled by default)
- Enabled One-button Secure Erase via Express Builder
- LDAP/Directory settings configurable via Redfish
- Security Dashboard - displays the status of important security features, the Overall Security Status for the system, and the current configuration for the Security State and Server Configuration Lock features.
- Support for Gemalto SafeNet and SafeNet AT key managers
- Show NVMe wear level
- Ability to edit Maintenance Windows in Firmware & OS Software section
- Ability to backup and to restore a copy of the iLO configuration settings to/from iLO non-volatile memory via REST calls.
- Added Downgrade Policy setting to Security->Access Settings page.
- New features under the Intelligent System Tuning menu:
  - **Performance Monitoring**—View performance data collected from supported sensors on servers with Innovation Engine support. You can configure alerts based on the collected data.
  - **Workload Performance Advisor**—View selected server workload characteristics. You can view and configure recommended performance tuning settings based on the monitored data.
- Enhanced management for the embedded 4 GB non-volatile flash memory (also known as the NAND).

### Security Fixes:

- Local Bypass of Security Restrictions (CVE-2018-7113)
- Remote Cross-Site Scripting in iLO 5 web interface(CVE-2018-7117)
- Cross-Site Scripting (XSS)( CVE-2019-11982)
- Buffer overflow in CLI(CVE-2019-11983)

CVE-ID	V3		V2	
	Vector	Basic Score	Vector	Basic Score

CVE-2018-7113	AV:P/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:L	6.4 (Medium)	(AV:L/AC:L/Au:N/C:C/I:C/A:P)	6.8 (Medium)
CVE-2018-7117	AV:A/AC:L/PR:N/UI:R/S:U/C:L/I:H/A:H	7.6(High)	(AV:A/AC:L/Au:S/C:P/I:C/A:C)	7.4(High)
CVE-2019-11982	AV:N/AC:H/PR:N/UI:R/S:C/C:H/I:H/A:H	8.3(High)	(AV:N/AC:H/Au:N/C:C/I:C/A:C)	7.6(High)
CVE-2019-11983	AV:N/AC:H/PR:N/UI:N/S:U/C:L/I:L/A:H	7.0(High)	(AV:N/AC:M/Au:N/C:P/I:P/A:C)	8.3(High)

## Sep 11, 2018 iLO Firmware 1.38

- Fix the issue that the OS panic or OS stall may be happen in Linux or VMware.

## Aug 14, 2018 iLO Firmware 1.35

- Fix for improper Smart Array error reported: Cache module board backup power failed.
- Fixed where iLO5 may become unresponsive after ejecting virtual media.
- Changed the design of the icons that indicate privilege level of user or group in web interface.

This version adds support for the following features and enhancements:

- VGA Port Detect Override--Controls how devices connected to the system video port are detected. Dynamic detection protects the system from abnormal port voltages. This setting is enabled by default, and can be used for troubleshooting cases when there is no video output to displays, KVM concentrators, or active dongles.
- DHCP Client ID override via iLO5 RESTful API.
- Modified the following security vulnerability.
  - Remote execution of arbitrary code, Local Disclosure of Sensitive Information(CVE-2018-7105)

CVE-ID	V3		V2	
	Vector	Basic Score	Vector	Basic Score
CVE-2018-7105	AV:N/AC:L/PR:H/UI:N/S:U/C:H/I:H/A:H	7.2(High)	(AV:N/AC:L/Au:S/C:C/I:C/A:C)	9.0(Critical)

## May 31, 2018 iLO Firmware 1.30

- When you use iLO Virtual Media to install an operating system, installation might fail when iLO is configured to use the Shared Network Port.
- In rare cases, a server runs out of available SSH sessions because the sessions are not reclaimed when a client disconnects.
- iLO 5 unexpectedly restored itself to the factory default settings when a user did not initiate the process.

- When Auto Power-On is set to Always Power On or Restore Last Power State, the server might not power on after a cold reset.
- NVMe drive model numbers are incorrect or inconsistent.
- Added support for RSA-PSS certificate signatures.
- If "Web Server Non-SSL Port" is set to value except for the default port number, EXPRESSBUILDER is not launched.
- If "Web Server Non-SSL Port" is set to value except for the default port number, JAVA IRC is not launched.
- When the same time zone is set between BIOS and iLO, the system time will be incorrect time.
- iLO cannot display Express5800/R120h-1M and R120h-2M standard network adapter(Ethernet 1Gb 4-port 331i) MAC address.
- The significant improvements to the write algorithm for the embedded 4 GB non-volatile flash memory (also known as the NAND). These improvements increase the NAND lifespan.
- Improved HTML5 IRC performance, including:
  - Added virtual keys to improve the ability to send keyboard actions to the server.
  - Added the ability to configure the keyboard layout in the HTML5 IRC
  - Added Virtual Media support for local ISO and IMG files.
- Firmware and software update enhancements:
  - iLO users can now view, create, and delete maintenance windows.
  - A new check box allows users to clear the installation queue when initiating an install set.
  - Updated the iLO RESTful API and iLO web interface to report when a reboot is required after an installation task completes.
- Each time iLO starts, it backs up the iLO configuration to the nonvolatile flash memory (NAND). If the SRAM is erased, the configuration is automatically restored.
- AlertMail now supports SSL (TLS) for secure email.
- AlertMail now supports external SMTP mail servers.
- Added an SNMP trap for when all host NICs are down.
- Updated to OpenSSL-1.0.2u-fips-2.0.16.
- Added the list of open source licenses to the login page.
- Added Intelligent System Tuning features to the iLO web interface. From the iLO web interface, you can view the configured settings, configure Jitter Smoothing, and launch Intelligent Provisioning to configure Workload Matching and Core Boosting.
- Improved Active Health System logging efficiency to prolong the NAND lifespan.

- Added iLO health status to the Overview page. If the status is Degraded, this value is also displayed on the Login page.
- Re-signed the Java IRC to extend the certificate expiration date.
- Re-signed the .NET IRC to extend the certificate expiration date.  
With this enhancement, the .NET IRC requires version 4.5.1 or later of the .NET Framework.
- Added the ability to remove an SSL certificate and regenerate the iLO self-signed certificate.
- Modified the following security vulnerability.
  - Remote or Local Code Execution(CVE-2018-7078)
  - Remote: Denial of Service (DoS)(CVE-2018-7101)

CVE-ID	V3		V2	
	Vector	Basic Score	Vector	Basic Score
CVE-2018-7078	AV:N/AC:L/PR:H/UI:N/S:U/C:H/I:H/A:H	7.2(High)	(AV:N/AC:L/Au:S/C:C/I:C/A:C)	9.0(Critical)
CVE-2018-7101	AV:N/AC:L/PR:N/UI:N/S:U/C:N/I:N/A:H	7.5(High)	(AV:N/AC:M/Au:N/C:N/I:N/A:C)	7.1(High)

## Feb 2, 2018 iLO Firmware 1.20

- Support for HTML5 Integrated Remote Console (IRC) in English keyboard environment.
- Support for a mouse wheel in Integrated Remote Console (IRC).
- Support for IPv6 on Shared Network Port.
- Support for iLO Federation on Shared Network Port.
- Support for importing SSL certificates of the RSA-PSS algorithm.
- Support for SNMPv3 Inform notification.
- Enhanced SNMP alert function, which enables to select any of SNMPv1 Trap, SNMPv3 Trap, and SNMPv3 Inform, for each alert destination.
- Enhanced SNMP alert function, which enables to configure the engine ID for each SNMPv3 user.
- The maximum number of the registerable alert destinations increased to 8.
- The maximum number of the registerable SNMPv3 users increased to 8.
- Support for periodic HAS Trap function.
- Support for new "Add to Queue" pane on enhanced firmware and software update page.
- Support for "Remove All" option on enhanced firmware and software update page.
- Support for "Update Recovery Set" option on enhanced firmware and software update page.
- Support for the function to display the names of software installed in OS and/or running software in Japanese on Web interface. (Agentless Management Service needs to be updated.)

- Support for properties of NVMe drive on RESTful API.
- Support for device inventory on RESTful API.
- Support for Service Account option to distinguish iLO user accounts used in management software and the like.
- Change the IML event recorded when the status of system LAN is changed.
- Improved the problem that the System ROM (BIOS) version is missing in AlertMail messages.
- Improved the problem that Virtual Media devices are inaccessible when two virtual devices are mounted simultaneously.
- Improved the problem that a floppy image connected through a script virtual media is always mounted read-only.
- Improved the problem that the alert is not always issued in case FQDN is specified in the address of the remote Syslog server.
- Improved the problem that the alert is not always issued in case FQDN is specified in the SMTP server and the IPv6 address is returned when the name is resolved.

## Aug 17, 2017 iLO Firmware 1.15

- Support for the functions to backup and restore the iLO configuration.
- Support for diffie-hellman-group-exchange-sha256 as SSH Key Exchange authentication method.
- Support for multiple destination AlertMail email addresses. Enter the addresses separated by a semicolon.
- Support for Power Cycle on RESTful API.
- Support for properties of High Efficiency Mode on RESTful API.
- Support for properties of Cache Module Serial Number on RESTful API.
- Support for properties of Login Security Banner on RESTful API.
- Support for properties of Current Power On Time on RESTful API. (Provides the time since the system was last powered on.)
- Support for properties of Persistent Mouse/Keyboard Enabled on RESTful API.
- Support for properties of current Cipher Suite on RESTful API.
- Support for propagate NTP Time to Host function to transfer the time which iLO obtained from SNTP server to the host, at the first POST after turning AC to ON.
- Improved the problem that the iLO web interface intermittently displays incorrect memory status after a system reset.
- Improved the problem that the server power page stalls when loading the server power information.

- Improved the problem that Virtual Media status is not displayed in the Java IRC.
- Improved the problem that the local client keyboard might get disabled when the Java IRC is in use.
- Improved the problem that the maximum available power is displayed incorrectly.
- Improved the problem that the first attempt to clear IML fails if the IML contains a maintenance note.
- Improved the problem that secure boot cannot be configured through the RESTful API, even if the pending configuration is in UEFI mode.
- Improved the problem that Onetimeboot and Continuousboot do not take effect in RESTful API.
- Improved the problem that an iLO web interface error occurs after an installed SSL certificate was deleted by using the RESTful API.
- Improved the problem that an iLO Federation authentication error might occur when group names with unsupported characters are used in URLs without correct encoding.
- Improved the problem that a false positive “Insecure Cache Management Policy” issue is reported by some security scanners.
- Improved the problem that iLO federation group cannot be created by the one or two-byte group key.

## Jun 7, 2017 iLO Firmware 1.10

- Initial release.