Have feedback on QuickSpecs? We're listening

HPE Integrated Lights-Out (iLO) QuickSpecs

HPE Integrated Lights-Out (iLO) is an embedded technology that ships in HPE Servers. It is the core foundation for the intelligence of the HPE Servers. This technology is a combination of the iLO ASIC that is part of the server-board and the firmware that powers the ASIC.

Different generations of ProLiant Servers carry different versions of the iLO ASIC. iLO is key to making the server operational and boot. It helps simplify server setup, enable health monitoring, as well as power and thermal control. These capabilities are included with the Server at no extra cost (iLO Standard). No installation needed, and a minimal setup is required.

HPE Integrated Lights-Out (iLO)

S. No.	ProLiant Generation	iLO ASIC version
1.	Gen13	iLO 8
2.	Gen12	iLO 7
3	Gen11 and Gen12*	iLO 6
4.	Gen10 and Gen10 Plus	iLO 5
5.	Gen9 and Gen8	iLO 4

Industry-leading features that enhance server administrator productivity are available through optional licenses. The iLO Advanced license will include all licensed features. This allows customers to have either standard, included features, or upgrade to licensed features that are all available with iLO Advanced.

iLO Initial Set up

Currently, when a customer orders a server, the server is shipped with the default iLO password being a randomized string. The randomized string, which is the initial password for the iLO is printed on the iLO Default Network Settings Tag. The default password is used for the initial login and is restored when iLO is Reset to Defaults.
Using a randomized password is the best practice for security. However, some customers that onboard large numbers of servers view this as an impediment to automation.

Customers who prefer to get their servers with a well-defined or common default iLO password, may now order SKU P08040-B21 along with their servers. Ordering this SKU with the server will instruct the factory NOT to randomize the password and set a HPE defined common password. All customers using this SKU will receive their systems with the same password. Server orders that do not include the SKU P08040-B21 will continue to receive their servers with randomized passwords. This common password will be printed on the iLO Default Network Settings Tag and will be the default password if iLO is Reset to Defaults.

HPE highly recommends changing this password immediately after the initial onboarding process.

Customers who want to choose their own custom default password should use the HPE Factory Express Integration Services.
Notes: *(DL320 Gen12-SP, DL340 Gen12-SP, DL380a Gen12, DL384 ProLiant Compute Gen12 platforms only).

HPE iLO 8

HPE iLO 8 is the next generation of HPE's embedded server management and security platform for HPE ProLiant Compute Gen13 servers. iLO 8 provides secure, intelligent, and automated remote server management, helping organizations deploy, operate, and protect their infrastructure with minimal manual effort. By combining advanced security, enhanced observability, predictive operations, and automated management capabilities, iLO 8 enabled customers to improve resiliency, accelerate troubleshooting, and prepare for emerging security threats while reducing operation complexity.

Key Benefits

- Deploy and provision servers faster
- Manage infrastructure securely from anywhere
- Reduce operational risk through proactive monitoring
- Improve security with secure-by-default capabilities
- Gain deeper operational visibility and insights

HPE iLO 7

For over two decades, HPE iLO has been at the forefront of remote server management, setting industry standards with cutting-edge innovation. From our hardware-based graphical remote console and virtual media capabilities to industry-leading security, HPE iLO powers the most advanced remote management solutions available today.
With each generation, HPE has pushed the boundaries of what is possible – continuously enhancing our embedded ASIC technology to deliver superior performance, reliability, and security. Now, with the launch of iLO 7, HPE is advancing our innovation while staying true to the trusted capabilities that our customers rely on, ensuring a seamless transition to the next generation of secure and intelligent management.

What's New in HPE iLO 7

Hardware Enhancements

- OCP DC-MHS (Data Center Modular Hardware System) and Monolith Boards
- Next Generation iLO ASIC
- Liquid Cooling Leakage Detection
- Enabling 4KB RSA Key support
- Enabling P-384 key support available in secure standard mode
- Configuring Storage on Web UI (volume creation/deletion)
- SPDM Authentication for MCRPS
- BIOS Settings Configurable on Web GUI
- MTU size is now configurable for iLO Dedicated Network Port
- Enabling "Acoustics mode cooling" fan profile
- Direct-attached NVMe SED drive configuration support via Redfish

Next Level Security

- Secure Enclave (patented technology, US20230134324A1 patent).
  - Physically Tamper-Resistant independent security system embedded in iLO ASIC, designed to meet FIPS 140-3 Level 3* hardware protection requirements.
  - Minimizes attack vectors for system secrets by restricting access to minimal custom APIs private to iLO firmware.
- Secure by default
  - Secure Standard Mode (default security mode).
  - Secure In-band access through iLO Virtual NIC.
- CNSA 2.0-aligned NIST-approved LMS algorithm ensuring PQC-ready firmware updates (iLO, BIOS, and CPLD).
- Virtual UEFI ROM (Chip-Clip Protection).
- Advanced SED Local Key Management enabled by Secure enclave.

Enhanced Customer Experience

- New GUI with workflow-based informational architecture and simplified dashboards with real-time actionable data.
- Flexible navigation, faster user interface and improved usability through new search functionality.
- Service Port: Simplified at-the-server management, no more crash carts (Supported in Windows 10, 11, macOS, and Linux).
- Service account with Session Token for in-band management applications.

Notes: * The certification is not obtained yet but we are intending to.

What's deprecated in iLO 7

- iLO Federation
- .NET IRC
- Standalone Remote Console (HPLOCONS)
- iLO Production Security State
- SSH on iLO
  - SM CLP (Server Management Command Line Protocol)
  - Text-based Remote Console
- RIBCL and the scripting tools including
  - HPQLOCFG
  - HPE Lights-Out XML PERL Scripting Sample for Linux (Includes LOCFG.PL)
  - HPE Lights-Out XML Scripting Sample for Windows
  - HPONCFG
  - HPLOMIG
- WINS configuration

What's new in iLO 6

- NVMe-MI Firmware Updates: directly attached NVMe SSD firmware can now be updated without host resets.
- Certificate management for SPDM devices via Redfish and GUI interfaces.
- Key management enabled within a domain using the NAE XML protocol.
- Ability to enable/disable the Fallback sensor.
- Improved VSP log buffer that can persist across power cycles.
- Password rotation enabled for NAE-XML server user account.
- GPU monitoring and reporting capabilities.
- Ability to change boot order during POST.
- SPDM support for increased security with storage and network cards.
- Telemetry streaming using Redfish Event subscription.
- Redfish APIs for iLO, System TPM measurement and SPDM capable option cards measurements.
- Added capability in iLO for Two Factor Authentication using OTP (One Time Password) for Microsoft AD users.
- PLDM Downstream Firmware Update.
- Certificate Management Enhancements.
- Automatic certificate Enrollments via SCEP.
- Certificate sideloading.
- Redfish consistent health roll-ups.
- Automatic clearing of Redfish alerts when condition does not exist anymore.
- Telemetry streaming using Redfish Event subscription.
- Redfish APIs for iLO, System TPM measurement and SPDM capable option cards measurements.
- Added capability in iLO for Two Factor Authentication using OTP (One Time Password) for Microsoft AD users.

What's deprecated in iLO 6

- Java IRC
- Internet Explorer
- eRS Direct Connect
- Jitter Smoothing

Refer to the **HPE iLO User Guide (iLO 6** iLO 5 iLO 4**)** and **release notes (iLO 6** iLO 5 iLO 4**)** for a complete list of fixes/enhancements and also additional information on new features/enhancements/fixes.

Refer to HPE iLO Quick Documentation Links: HPE iLO Documentation Quick Links

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Flexible Interfaces for HPE ProLiant

Using any of the HPE iLO for ProLiant interfaces, customers can configure, update and control all HPE iLO for ProLiant Standard functions regardless of the host server or operating system:

- **Browser** – HPE iLO for ProLiant is fully accessible by means of Google Chrome™, Microsoft® Edge®, and Mozilla Firefox® (Linux® and Windows® only).
- **Redfish API** – HPE iLO for ProLiant conforms to industry-standard specification and schema for data center infrastructure management sponsored and controlled by the Distributed Management Task Force, Inc. (DMTF), Redfish establishes a new management standard for system control that is scalable, easy to use, and secure with the effort to modernize heterogeneous data centers. In addition, HPE ProLiant servers expose iLO RESTful API extensions, allowing customers to experience the full range of value-added features available from a programmable interface.
- **Command line** – HPE iLO for ProLiant supports the new industry standard command line, DMTF System Management Architecture for Server Hardware, Server Management Command Line Protocol (SM CLP) specification.
- **Scripting** – HPE iLO for ProLiant supports a scalable scripting interface based on Redfish and JSON (iLOREST and PowerShell cmdlet). For legacy backward compatibility, XML or PERL scripting (RIBCL) is also available but HPE recommends Redfish based scripting utilities. This enables scalable, simultaneous configuration, update and operation large groups of HPE iLO for ProLiant servers
- **Intelligent Platform Management Interface** (IPMI) is a standardized computer system interface used by system administrators for out-of-band management of computer systems and monitoring of their operation. System administrators can use IPMI messaging to monitor platform status (e.g., system temperatures, voltages, fans, power supplies and chassis intrusion); to query inventory information; to review hardware logs of out-of-range conditions; or to perform recovery procedures such as issuing requests from a remote console through the same connections e.g., system power-down and rebooting or configuring watchdog timers. While iLO offers IPMI for legacy backward compatibility, HPE recommends customers to use Redfish which is a modern and secure management interface. The standard also defines an alerting mechanism for the system to send a simple network management protocol (SNMP) platform event trap (PET).

iLO FEATURES

PROVISIONING

- **Always On Intelligent Provisioning**
  Intelligent Provisioning is now Always On. Intelligent Provisioning is accessible from the iLO browser user interface anytime without having to reboot your server. Clicking Always On to access Intelligent Provisioning has the same capabilities as accessing Intelligent Provisioning by pressing F10 from the POST screen.

- **Auto-Configuration of IP Address using DNS/DHCP for HPE ProLiant**
  HPE Integrated Lights-Out (iLO) for ProLiant provides automatic network configuration. A default name and Dynamic Host Configuration Protocol (DHCP) client that leases an IP address from the DHCP server on the network are standard with HPE iLO for ProLiant. This allows the management processor to register its device name with Domain Name Services (DNS). For systems that do not use DNS/DHCP, static IP configuration is also supported.

– **Flexible Network Connectivity for HPE ProLiant**
HPE Integrated Lights-Out (iLO) for ProLiant provides a choice between two network connection methods to access all functionality:
  - **Dedicated connection** - Access HPE iLO for ProLiant via an embedded 10/100/1000-MB dedicated Ethernet NIC. This enables remote management over a dedicated, out-of-band management network. In-band SNMP notification of server problems on a real-time basis is also supported without separate telephone connections or modem sharing devices. The dedicated NIC can auto-negotiate speed and duplex options. The iLO Dedicated NIC provides the highest levels of reliability and security.
  - **Shared Network Port** - On selected ProLiant server models, HPE iLO for ProLiant supports network connectivity through a new high-speed shared connection via one of the embedded system NICs. The latest version of iLO also supports. Shared network port over the FlexibleLOM providing full accessibility to all HPE iLO for ProLiant functions including browser, Virtual Media and Virtual Keyboard Video and Mouse in graphics mode. The management processor maintains a unique IP address and MAC allowing the network controller to route HPE iLO for ProLiant and host data correctly. With the Shared Network Port, out-of-band management and production data can share the same wire eliminating the separate network connection for each server.

– **Flexible Setup Options for HPE ProLiant**
An onboard ROM-based configuration utility allows fast and easy setup without additional software. HPE iLO for ProLiant can also be setup via the browser or command line interface over the network. Integration with SmartStart Scripting Toolkit allows configuration of the card as part of the initial server deployment. For large deployments, the HPE Lights-Out Configuration Utility or the iLO REST tool can be used to configure groups of HPE iLO for ProLiant processors, saving time and resources.

– **iLO IDevID**
iLO can be provisioned with server identity in the factory. This factory provisioned server identity is called iLO IDevID. HPE servers can be securely on boarded into a customer network using the IDevID for 802.1X authentication. iLO IDevID has life time validity and is immutable. To instruct the HPE factory to provision a server with an IDevID, include SKU P41905-B21 in your order. Storage space earmarked in the iLO which can be used as a repository for firmware, drivers and software components. The components can be organized in to install sets and can be used to rollback/patch faulty firmware.

– **iLO Service Port (Gen10 servers and above only)**
The iLO Service port is a USB port connected to the iLO and is located on the front panel of the server. Users can connect their laptops to this port via a USB-Ethernet adapter (HPE recommends using the following HPE part Q7Y55A) and get full access to the Integrate remote console. Users can also connect a USB drive to this port and download service logs to it. All servers may not have an iLO Service Port please refer server QuickSpecs to confirm.

– **ROM-based Setup Utility (RBSU) for HPE ProLiant**
Embedded configuration utility within the system ROM and accessible through the HPE Integrated Lights-Out (iLO) for ProLiant interface that facilitates pre-OS display of server resources, configuration of primary boot controller and boot order, and configuration of system devices and installed options.

Standard Features

– **Remote Serial Console (Virtual Serial Port) for HPE ProLiant**
Access to the host server's serial, text-based (Virtual Serial Port) during all server states over an Ethernet network is a standard feature on all HPE Integrated Lights-Out for ProLiant management processors. From the operating system-independent console you can monitor and control the BIOS and the server during Power-On System start-up testing (POST), as well as Microsoft Emergency Management Services® and serial tty sessions on systems running Linux operating systems. After OS is installed access can be set up to be redirected to the Virtual Serial Port. Also in the event of a crash you can configure the OS to send the core data dumps to the Virtual Serial port.

INVENTORY, HEALTH MANAGEMENT AND FIRMWARE UPDATE

- **HPE Agentless Management 2.0**
  The base hardware monitoring and alerting capability is built into the system (running on the HPE iLO chipset) and starts working the moment that a power cord and an Ethernet cable is connected to the server. This means that:
- All **core** management is out-of-band for increased security and stability: no OS software required, no open SNMP port on the OS and zero downtime updates.
- **Monitoring** and Alerting on key internal server components: CPUs, memory, temperatures, fans, SmartArray controllers, hard drives (including cache modules) and power supplies.
- iLO integrates with HPE Compute Ops Management.
- iLO integrates with HPE OneView.

Notes: On Gen10 and later generation servers, server monitoring is only via Agentless Management, HPE does not provide HPE Insight Management Agents or HPE WBEM providers for Gen10 servers.

- **Simple Network Management Protocol Version 3 (SNMPv3)**
  SNMP is the protocol developed to manage nodes (servers, workstations, routers, switches and hubs etc.) on an IP network. HPE iLO now has SNMP Version 3 (SNMPv3) which has added security and remote configuration capabilities over the previous versions. The SNMPv3 architecture introduces the User-based Security Model (USM) for message security and the View-based Access Control Model (VACM) for access control. The architecture supports the concurrent use of different security, access control, and message processing models. More specifically: Security, authentication and privacy, authorization and access control, Administrative Framework, naming of entities, people and policies, usernames and key management, notification destinations, proxy relationships, and remotely configurable via SNMP operations.

- **HPE Active Health System**
  HPE Active Health System is an essential component of HPE iLO Management. It provides customers with: Diagnostics tools/scanners wrapped into one; Always on, continuous monitoring for increased stability and shorter downtimes; Rich configuration history; Health and service alerts; Easy export and upload to Service and Support.

- **Alert Administration for HPE ProLiant**
  HPE Integrated Lights-Out (iLO) for ProLiant support delivery of SNMP server agent alerts as well as internally generated management processor alerts (e.g., unsuccessful login attempt), to a management console such as HPE Compute Ops Management and HPE OneView. Traps forwarded by the processor can be configured in Insight Manager for delivery to an administrator's pager or e-mail.

- **Automatic and On-Demand Video Record and Playback for HPE ProLiant**
  HPE ProLiant iLO Console Replay captures and stores for replay the console video during a server's last major fault or boot sequence. Server faults include an ASR, server boot sequence, Linux panic, or Windows® blue screen. Additionally, users are able to manually record and save any console video sequence to their client hard drive for replay from the HPE iLO Integrated Remote Console.

Standard Features

- **Embedded System Health for HPE ProLiant**
  On supported server models, the HPE iLO for ProLiant management processor monitors fans, temperature sensors, power supply sensors and VRMs without having the System Management Driver loaded. The status of these is accessible from all HPE iLO for ProLiant user interfaces (browser, SMASH command line Redfish API, XML scripts and IPMI) independent of the host operating system The intelligence of iLO manages the Sea of Sensors thermal control, directs the Dynamic Power Capping technology and monitors the health of server components.

- **HPE Embedded Remote Support**
  Hewlett Packard Enterprise offers embedded remote support that allows a customer to enable remote support from iLO, greatly reducing the time to activate remote monitoring. iLO remote support works seamlessly with Insight Remote Support and OneView Remote Support to enable customers to benefit from 24x7 remote monitoring, auto-generated service events, and support cases which can all be managed in the HPE Support Center portal.

- **Integrated Lights-Out (iLO) Event Log for HPE ProLiant**
  The HPE iLO for ProLiant Event Log stores detailed management processor events and data independent of the host operating system. Actions like server power on/off, reset, changes in user configuration, clear event log, successful and unsuccessful login attempts are logged along with the user's access machine name in the iLO Event Log enabling audits for security or troubleshooting purposes. The iLO Event Log is easily accessible through the browser, command line, script or Insight Manager.

- **Integrated Management Log for HPE ProLiant**
  HPE Integrated Lights-Out (iLO) for ProLiant captures and stores the server's Integrated Management Log (IML) for access via browser or command line even when the server is not operational. This capability can be helpful when troubleshooting remote host server problems. The IML contains a history of events that impact server health and management.

- **Integration with HPE Compute Ops Management and HPE OneView**
  HPE Integrated Lights-Out (iLO) for ProLiant is integrated with Hewlett Packard Enterprise and other leading management applications to allow seamless use in lifecycle tasks and processes from deployment to fault management and administration. HPE Compute Ops Management and HPE OneView intelligently discovers HPE iLO for ProLiant devices and associates them with their host servers for fast access during fault management activities.
- **Integrated Remote Console for HPE ProLiant**
  The HPE iLO .NET Integrated Remote Console is launched from the iLO web browser interface, utilizes Microsoft .NET Framework® 3.5 (on the client PC) and takes advantage of Microsoft DirectX® based hardware acceleration to provide high performance and outstanding user graphics. HPE iLO has an enriched viewing experience with maximum resolution of 1600 x 1200 and maximum color depth of 32k colors. With HPE iLO, remote screen fits within one window and the screen can be scaled to any size, avoiding the use of scroll bars.
  HPE iLO for ProLiant has a Java-free Integrated Remote Console for environments with Microsoft Windows® host and client operating systems. With HPE iLO Standard and HPE iLO Standard Blade Edition, Integrated Remote Console provides access to Virtual Keyboard Video and Mouse in pre-OS text mode and Virtual power from a single screen. ProLiant OA/iLO Standard Blade Edition also allows virtual media to be controlled from the IRC. Starting with iLO 5 v1.20 onwards a HTML5 remote console is supported.

- **Local User Accounts and Logon Records for HPE ProLiant**
  HPE Integrated Lights-Out (iLO) for ProLiant Standard supports local user accounts with customizable access rights, individual logins and passwords. HPE iLO for ProLiant also provides logging of user actions in the event log, progressive delays for failed login attempts, and login legal warning.

- **Microsoft Emergency Management Service Console Integration for HPE ProLiant**
  The Microsoft Emergency Management Service® console provides a text-based screen to access the host server. HPE Integrated Lights-Out (iLO) for ProLiant provides the option to access the EMS console from the Integrated Lights-Out (iLO) browser interface. The Emergency Management Service console option is available on all HPE ProLiant servers using Windows Server 2003® or later.

- **Multi-Language Support**
  We provide our customers with the ability to read the HPE iLO GUI in the following languages: English, Japanese and simplified Chinese. Multi-Language support is only available on servers which carry a version of iLO with NAND.

- **Remote Firmware Update for HPE ProLiant**
  This feature ensures that HPE Integrated Lights-Out (iLO) for ProLiant is always up-to-date with the latest firmware available from Hewlett Packard Enterprise. Updates to the ROM code on HPE iLO for ProLiant are accomplished through the browser interface, command line, REST API, XML script, or using online flash components for Windows® Linux® and VMware®.

- **System Diagnostics for HPE ProLiant**
  HPE Integrated Lights-Out (iLO) for ProLiant may be used to diagnose systems. The Remote Console, Integrated Remote Console and Remote Serial Console may be used to monitor the system for POST error messages. The Integrated Management Log and HPE iLO for ProLiant Event Log record events useful for diagnostics. HPE Integrated Lights-Out (iLO) for ProLiant Virtual Media (if activated by an iLO Advanced key) may be used to boot and run System Diagnostics.

- **Virtual Indicators for HPE ProLiant**
  HPE Integrated Lights-Out (iLO) for ProLiant provides the ability to control server Unit ID LEDs from the HPE iLO browser, REST API command line (SM CLP), XML scripting. The server Unit ID LED is the blue LED on the ProLiant server that is used for identifying systems in a rack full of servers.

- **Virtual Key Video Mouse remote text console for HPE ProLiant**
  Embedded hardware remote console capabilities in a text mode screen prior to loading of the operating system; is provided as a standard feature on all ProLiant Integrated Lights-Out (iLO) management processors. This provides access to system BIOS and during Power-On System start-up testing using Virtual KVM technology. Remote text in "pre-OS" mode is accessible from the Integrated Remote Console and HTML5 Remote Console.

- **Virtual Power Button for HPE ProLiant**
  Using a supported browser, command line or script interface, HPE Integrated Lights-Out (iLO) for ProLiant can be used to remotely operate the power button of a host. For example, if the host server is off, you can turn it on from the HPE ProLiant iLO browser, REST API, command line (SM CLP), XML. You can also power off and on the server in one step. A "press and hold" option is available for the Virtual Power Button in the event a momentary press is insufficient to power off a server experiencing an operating system failure.

- **Virtual Private Network (VPN) support for HPE ProLiant**
  HPE iLO for ProLiant functionality is available securely over the Internet around the world when used in conjunction with VPN technology. VPN is supported on both HPE iLO for ProLiant network connection methods, dedicated and shared network ports.

- **IPv6 on Dedicated NIC**
  The HPE iLO dedicated NIC supports IPv6 addressing. DHCPv6, SLAAC/router assigned addresses and static IPv6 addresses are supported.

- **Video Player for HPE ProLiant**
  HPE iLO allows you to view automatically captured server video footage or on-demand captured footage within an iLO session or separately through the new iLO Video Player.

- **Virtual Keyboard Video and Mouse graphic console for HPE ProLiant**
  HPE iLO graphical consoles provide Virtual KVM capabilities with KVM over IP performance. This gives system administrators a single console that is responsive and agile for routine administration and emergency situations. iLO Virtual KVM works with a standard browser and no additional software is required on the remote server or client system for iLO 2. HPE iLO 3 and iLO 4 require the .NET Framework 3.5, which is already provided with Windows® 7.

- **Virtual Media for HPE ProLiant**
  The USB-based Virtual Media feature allows an IT administrator to boot the remote server using a standard 1.44-MB diskette, CD ROM, DVD+R or USB flash drive on a client PC or from a floppy diskette, CD or DVD image stored on a virtual media server on the network. Virtual Media saves time and increases efficiency by eliminating the need to visit servers in datacenters and remote sites just to insert a diskette, CD-ROM, DVD-ROM or USB key.

- **iLO Serial Port Record\ Playback for HPE ProLiant**
  HPE iLO takes the output data from the Remote Virtual Serial Console (VSP) and saves it to iLO memory so data can be later accessed. Very similar to "video console replay", but is text-based data only from the serial port. This would be used to store logs of data and\or history of activity to be retrieved later to see exactly what activity was done - or actions occurred (Play back) but all text based.

- **Intelligent System Tuning (Core Boosting) (iLO 5 and above only)**
  When enabling Intel Turbo Boost mode, Core Boosting will maintain higher frequencies across more active cores on select servers and Intel processors; This is accomplished while maintaining Intel specs, warranty, and reliability. To enable this capability iLO Advanced license is needed.

- **Remote Kernel Debugger for Windows® for HPE ProLiant**
  On a remote PC to the iLO Virtual Serial Port (VSP) to diagnose and repair operating system kernel errors.

- **Remote System logs**
  HPE iLO keeps a log of everything being done, so it can later be used for troubleshooting or simply has a record. Syslog can be configured to receive logging from a remote client, or to send logging to a remote syslog server. Remote logging is sending a duplicate record of those events not only to the local machine but to a remote machine as well.

- **Workload Performance Advisor** Provides server tuning recommendations to improve server performance on Intel Xeon based server models.

- **iLO Restful Application Program Interface (API)**
  The iLO RESTful API management interface functionality is available for iLO 4, iLO 5, iLO 6 and Moonshot iLO Chassis Management Module-based. Hewlett Packard Enterprise servers uses the basic HTTP operations (GET, PUT, POST, DELETE, and PATCH) to either submit or return a JSON formatted "resource" to or from a URI. The API enables users to manage one or multiple servers to:
  - Get full inventory
  - Control Power and reset
  - Configure BIOS, iLO 4, iLO 5, iLO 6 and Smart Array (supported only on iLO 5/Gen10 controllers and above) settings
  - Status of server health
  - Fetch event logs and SSH Serial Console
  - And more

  iLO RESTful API Redfish conformant. To learn more, see the iLOrest user guide overview (hpe.com)

SECURITY

HPE Integrated Lights-Out (iLO) for ProLiant provides strong security for remote management in distributed IT environments by using industry-standard Secure Sockets Layer (SSL) and Transport Layer Security (TLS) encryption of HTTP data transmitted across the network. SSL or TLS encryption (up to 256-bit) ensures that the HTTP information is secure as it travels across the network.

HPE Integrated Lights-Out (iLO) for ProLiant also uses Secure Shell version 2 to provide strong authentication and encryption of commands executed on iLO management processors over a network. PuTTY and OpenSSH clients may be used to access HPE iLO for ProLiant over a Secure Shell connection.

In addition, HPE iLO for ProLiant provides a configurable option to enable strong encryption Advanced Encryption Standard (AES) on browser, REST API, CLP and XML scripting interfaces.

- **ILO Silicon Root of Trust (iLO 5 and later only)**
  Signatures for validation of integrity of iLO and UEFI/BIOS are built into the iLO ASIC. This prevents any possibility of tampering of security signatures throughout the supply-chain.

- **Security Protocol and Data Model**
  iLO uses the Security Protocol and Data Model (SPDM) to verify the integrity of components and authenticate the Option Cards. All the components do not support SPDM. If SPDM is enabled, an unsupported or non-authentic component will change the iLO security status to Risk.

- **Automatic certificate enrollment**
  iLO now supports obtaining and renewing SSL certificate automatically using the Simple Certificate Enrollment Protocol (SCEP). Currently, iLO supports these features on the Microsoft Network Device Enrollment Service (NDES).

- **3rd Party Key Manager Support**
  Facilitates key exchange for disk connect to a smart array controller, encrypted by Utimaco and Thales key managers – providing easy integration of ProLiant servers in environments where the encryption key management is done by Utimaco ESKM, Thales TCT KeySecure for Government G350v, Thales KeySecure k150v or Thales CipherTrust Manager 2.2.0 virtual (k170v) and physical (k570) appliances.

- **Automatic Firmware Recovery (iLO 5 and above only)**
  Recover iLO, UEFI/BIOS and other essential firmware automatically to a known good version (either factory default or a well-known firmware recipe resident in the iLO Repository) on detection of a compromised iLO, UEFI/BIOS and other essential firmware.

Standard Features

- **Directory Services Integration for HPE ProLiant** HPE Integrated Lights-Out (iLO) for ProLiant integrates with enterprise-class directory services to provide secure, scalable, and cost-effective user management. Directory services, such as Microsoft® Active Directory Novell eDirectory and OpenLDAP (iLO 4 v2.53), can be used to authorize directory users with assigned user roles to Integrated Lights-Out processors. With Active Directory, customers have the flexibility to integrate with or without a schema extension. An easy and reliable installation program is available to install a management console snap-in and extend customer's existing directory schema to enable directory support for the HPE lights-out management products. A directory migration tool is available to automate setup for both methods of integration. In addition, current versions of HPE iLO firmware will support directory nested groups.

- **Commercial National Security Algorithms mode (CNSA) support (iLO 5 and above only) Directory Services Integration for HPE ProLiant**
  Support for CNSA compliant cryptography preventing the use of insecure algorithms.

- **One-Button Secure Erase**
  Easily erase all user data on the server, secondary storage and NVRAM, per NIST Standards 800-88r1 with the click of a button in the UI/one call via RESTful API. Allowing easy repurpose and redeployment of servers with confidence that servers have been reset back to factory settings.

- **Runtime Firmware Validation (iLO 5 and above only) Server Configuration Lock**
  - Validation of iLO and UEFI/BIOS firmware at runtime. Notification and automated recovery on detection of compromised firmware.
  - Ensures secure transit and locks server hardware configuration using a password.

- **Single Sign-On for HPE ProLiant**
  ProLiant users can automatically login to iLO from HPE OneView. In addition, to direct access and authentication using iLO Active Directory integration, the role-based authentication in HPE OneView can be used to simplify user access and user account administration.

- **Two-factor authentication via Kerberos for HPE ProLiant**
  HPE ProLiant Integrated Lights-Out (iLO) provides strong user authentication with two-factor authentication via Kerberos or smart cards such as Common Access Card (CAC) and Personal Identity Verification (PIV) cards using digital certificates embedded on smartcards or USB -security tokens. Using this form of strong authentication, iLO access can be restricted only to IT individuals possessing a certificate bearing smartcard or USB security token and a PIN.

Service and Support

For the most up-to-date information on HPE Services, please refer to the HPE Services – Supplemental QuickSpecs, which provides a comprehensive and regularly updated overview of available services.

Licensing and SKUs

In order to assist with your buying decisions on iLO Licensing, Hewlett Packard Enterprise provides the following reference material.

- HPE iLO Standard – FREE – no license required
- HPE Factory Installed Licenses – No extra cost
- Selecting the right iLO license
- HPE iLO 6 Licensing Guide

Notes:

- HPE iLO licenses can be purchased regardless of the version of iLO you are using, however some of the licensed features may require a specific iLO ASIC version to function.
- HPE iLO Scale-Out, Essentials, Advanced for BladeSystem, and Advanced Premium Security Edition licenses have been discontinued with the release of iLO 5 v1.40.
- For more information on license tiers, please visit our HPE iLO Licensing Guide.

HPE Integrated Lights-Out (iLO) Advanced for ProLiant Servers (supported on ALL Servers)

HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features	E6U59ABE
HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features	E6U64ABE
HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features	512485-B21
HPE iLO Advanced AKA Tracking License with 1yr Support on iLO Licensed Features	512487-B21
HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features	BD505A
HPE iLO Advanced AKA Tracking License with 3yr Support on iLO Licensed Features	BD507A
HPE iLO Common Password FIO Setting	P08040-B21

Notes:

- Supported on ALL Servers.
- HPE highly recommends changing of this password immediately after the initial onboarding process.
- Tracking and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.
- Tracking licenses may only be purchased by customers that have implemented an activation key agreement (AKA) with Hewlett Packard Enterprise. You can request an AKA at http://www.hpe.com/info/aka
- When purchasing an iLO electronic license, regardless of the number of licenses purchased, customers will obtain only ONE (1) License Entitlement Certificate. This ONE (1) License Entitlement Certificate will be used for all licenses purchased.
- An iLO Advanced license is automatically included with Synergy compute modules. Use the licensing page to view the license. You cannot add or remove a license on Synergy compute modules.

HPE recommended USB to Ethernet Adapter to connect iLO Service Port to laptops

Queen Promotions USB 2.0 to Etrnt Dongle	Q7Y55A

Notes: For more information, visit: http://www.hpe.com/info/ilo/licensing

Discontinued iLO Licenses and Replacement Part Numbers

HPE is simplifying iLO licensing. All features would either be standard or enable via iLO Advanced license. All other iLO licenses are being discontinued.

Please see our HPE iLO Licensing Guide documentation for more details surrounding this transition.

Table 1: Discontinued iLO Essentials Licenses and Replacement Part Numbers:

Description	SKU	Replacement SKU Description	Replacement SKU
HPE iLO Essentials License with 1yr Support on iLO Licensed Features	BD775A	HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features	512485-B21
HPE iLO Essentials License with 3yr Support on iLO Licensed Features	BD774A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features	BD505A
HPE iLO Essentials Electronic License with 1yr Support on iLO Licensed Features	E6U62ABE	HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features	E6U59ABE
HPE iLO Essentials Electronic License with 3yr Support on iLO Licensed Features	E6U61ABE	HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features	E6U64ABE

Table 2: Discontinued iLO Advanced for BladeSystem Licenses and Replacement Part Numbers:

Description	SKU	Replacement SKU Description	Replacement SKU
HPE iLO Advanced for BladeSystem 8-server License with 1yr Support on iLO Licensed Features	512489-B21	None	None
HPE iLO Advanced for BladeSystem 1-server License with 1yr Support on iLO Licensed Features	512488-B21	HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features	512485-B21
HPE iLO Advanced for BladeSystem 1-server License with 3yr Support on iLO Licensed Features	BD502A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features	BD505A
HPE iLO Advanced for BladeSystem Electronic License with 1yr Support on iLO Licensed Features	E6U60ABE	HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features	E6U59ABE
HPE iLO Advanced for BladeSystem Electronic License with 3yr Support on iLO Licensed Features	E6U63ABE	HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features	E6U64ABE

Description	SKU	Replacement SKU Description	Replacement SKU
HPE iLO Advanced for BladeSystem AKA Tracking License with 1yr Support on iLO Licensed Features	512491-B21	HPE iLO Advanced AKA Tracking License with 1yr Support on iLO Licensed Features	512487-B21
HPE iLO Advanced for BladeSystem AKA Tracking License with 3yr Support on iLO Licensed Features	BD504A	HPE iLO Advanced AKA Tracking License with 3yr Support on iLO Licensed Features	BD507A
HPE iLO Advanced Blade Electronic License with 3yr 24x7 Tech Support and Updates	BD503AAE	HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features	E6U64ABE

Table 3: Discontinued iLO Advanced Premium Security Edition Licenses and Replacement Part Numbers:

Description	SKU	Replacement SKU Description	Replacement SKU
HPE iLO Advanced Premium Security Upgrade Electronic License with 3yr Support on Licensed Features	Q7E12AAE	None	None
HPE iLO Advanced Premium Security Edition License with 1yr Support on Licensed Features	Q7E31A	HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features	512485-B21
HPE iLO Advanced Premium Security Edition License with 3yr Support on Licensed Features	Q7E33A	HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features	BD505A
HPE iLO Advanced Premium Security Edition Electronic License with 1yr Support on Licensed Features	Q7E32AAE	HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features	E6U59ABE
HPE iLO Advanced Premium Security Edition Electronic License with 3yr Support on Licensed Features	Q7E34AAE	HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features	E6U64ABE
HPE iLO Advanced Premium Security AKA Tracking License with 1yr Support on Licensed Features	Q7E35A	HPE iLO Advanced AKA Tracking License with 1yr Support on iLO Licensed Features	512487-B21
HPE iLO Advanced Premium Security AKA Tracking License with 3yr Support on Licensed Features	Q7E36A	HPE iLO Advanced AKA Tracking License with 3yr Support on iLO Licensed Features	BD507A

Factory Integration Rules:

Factory integration of iLO electronic licenses (E-LTU) has been discontinued. If you need factory integration of iLO licenses, please order the physical license along with the #0D1 option. This will ensure factory integration of the iLO license at no extra cost.

Table 4: Discontinued HPE Factory installed Licenses and Replacement Part Numbers:

Retired Product Number	New Product Number	Description
E6U59ABE 0D1	512485-B21 #0D1	HPE factory Installed/pre-installed HPE iLO Advanced 1-server license with 1yr support on iLO licensed features
E6U64ABE 0D1	BD505A #0D1	HPE factory installed/pre-installed HPE iLO Advanced 1-server license with 3yr support on iLO licensed features

Notes:

- When a user purchases an iLO license they get the right to use the licensed features perpetually, the time duration in the license refers to the duration for which they are entitled to support and updates. An iLO license is tied to the life of the server that it has been applied on, it cannot be transferred from that server to any other server.
- When purchasing an iLO electronic license, regardless of the number of licenses purchased, customers will obtain only ONE (1) License Entitlement Certificate. This ONE (1) License Entitlement Certificate will be used for all licenses purchased.

Customers are HIGHLY encouraged to register the product on the licensing portal.
Registration is important because, if you lose your license key, you can obtain it through the My License Portal https://myenterpriselicense.hpe.com.
You receive your support contract that is included in the price of your iLO license.
For e-delivery products, the entitlement order number (EON) used to register the product on the licensing portal will be the same as the Hewlett Packard Enterprise sales order number.

Licensing – FAQs

Q. Can the iLO Advanced license key of the new electronic SKUs be installed via normal HPE factory CTO process?
A: No, this has been discontinued, in case you need factory integration of iLO licenses please order the physical SKU with the #0D1 option.

Q: Can one still get iLO Advanced electronic licenses (E-LTU SKU)?
A: YES, electronic licenses are still available and can be ordered. Only the #0D1 option i.e. factory integration has been discontinued.

Q: Can the **FLEX or TRACKING license SKUs** be HPE Factory Integrated?
A: NO, the FLEX and TRACKING license SKUs cannot be installed in the Hewlett Packard Enterprise Factory. However, these licenses can be installed in the factory as part of the Factory Express service which is chargeable.

Q: What is the difference between one (1) and three (3) year support?
A: You are entitled to a one (1) or a three (3) year support contract on licensed features. After your one (1) or three (3) year support contract expires, your iLO licensed features still work, and are enabled. However, you will not have HPE support for those licensed features; standard iLO non licensed features are still supported. Your licenses do not expire. They are valid for the life of the server on which they are applied.

Q: How are iLO standard features (included with every ProLiant server at no additional cost) supported?
A: iLO standard features and firmware updates are supported under the Server Hardware Warranty Contract.
iLO firmware updates are available at

- http://www.hpe.com/support/iLO5 - for iLO 5
- http://www.hpe.com/support/iLO6 - for iLO 6

For more information on HPE iLO licensing, please refer the HPE iLO 6 Licensing Guide

Licensing Redemption

HPE has a new licensing portal, visit us at https://myenterpriselicense.hpe.com/cwp-ui/auth/login

Q: What does the customer receive when the electronic version is ordered?
A: The customer will still receive an email that contains a link to the licensing portal and the license key will be printed on the electronic email.

Customers are HIGHLY encouraged to register the product on the licensing portal

Registration is important because, if you lose your license key, you can obtain it through the My License Portal https://myenterpriselicense.hpe.com
You receive your support contract that is included in the price of your iLO license.
For e-delivery products, the entitlement order number (EON) used to register the product on the licensing portal will be the same as the Hewlett Packard Enterprise sales order number.

Notes: This document is a consolidation of previous QuickSpecs and covers HPE iLO 6, HPE iLO 5, HPE iLO 4, HPE iLO 3 and HPE iLO 2 for HPE ProLiant servers. Please visit: http://www.hpe.com/info/iLO

HPE iLO On System Management	
Architecture	PCI Express based health and remote management ASIC
Processor	**iLO 5 and iLO 6** Embedded ARM processor core operating at 800MHz **iLO 4** Embedded ARM processor core operating at 400MHz
Upgradeability	Firmware upgradeable via Flash ROM
Video Support	**iLO 5 and iLO 6** 1920 x 1200 (32 bpp) **iLO 4** 1920 x 1200 (16 bpp)
Interfaces	HPE iLO Dedicated* Network connection (10/100/1000 Mb/s) on rack, tower and SL systems **Notes:** *Optional Module on some servers. HPE iLO Shared Network connection (10/100/1000 Mb/s) on rack, tower and SL systems HPE iLO network connection on blades (100 Mb/s) to Onboard Administrator (with 10/100/1000 Mb/s uplink) on blade systems HPE iLO network connection on Synergy compute modules (1000 Mb/s) to the Enclosure Manager
Operating System Support	For information on the Hewlett Packard Enterprise Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from Hewlett Packard Enterprise, please visit our OS Support Site at: http://www.hpe.com/info/ossupport.
Client System Support	For information on Client System Support, please visit the HPE iLO Release notes
Client Browser Support	Microsoft Edge Firefox Extended Support Release (ESR) Google Chrome **Notes:** Please refer to the iLO GUI login help page for latest list of supported browser versions.
Command Line Support	Secure Shell and serial port access Secure Shell version 2 CLP and XML scripting interface RESTful Interface tool
Security	FIPS 140-2 validation (iLO 5 renewal is listed as IUT listing) FIPS 140-3 validation (iLO 5 and iLO 6 are listed as IUT listing) Common Criteria certification (awarded to iLO 5 v1.11) Secure Socket Layer Transport Layer Security Configurable for PCI DSS compliance Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser Immutable silicon root of trust Runtime firmware validation CNSA support Common Access Card support Security Modes

	Granular Control over iLO services and access options Encrypted virtual media
	AES encryption of video
	iLO 6 Security Protocol and Data Model (DMTF SPDM)
Directory Support Services	Active Directory, OpenLDAP, Novell eDirectory
Driver Support	HPE ProLiant iLO Management Controller Driver Package
Management protocols supported	SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HPE RIBCL XML, and iLO RESTful API (Redfish Spec conformance)

Environmentally friendly Products and Approach End-of life Management and Recycling

Hewlett Packard Enterprise offers end-of-life product return, trade-in, and recycling programs, in many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The European Union Waste Electrical and Electronic Equipment Directive [EU WEEE] (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise website. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
19-Oct-2026	Version 42	Added	Added iLO 8/Gen13 information.
21-Sep-2026	Version 41	Changed	QuickSpecs maintenance updates.
15-Dec-2025	Version 40	Changed	Standard Features section was updated.
18-Aug-2025	Version 39	Changed	Standard Features section was updated.
12-Feb-2025	Version 38	Changed	Overview section was updated.
01-Apr-2024	Version 37	Changed	Overview, Standard Features, Service and Support, Configuration Information, and Technical Specifications sections were updated.
24-Jul-2023	Version 36	Changed	Technical Specifications section was updated
03-Apr-2023	Version 35	Changed	Standard Features section was updated
07-Nov-2022	Version 34	Changed	Added for iLO 6/Gen11 information.
17-Jan-2022	Version 33	Changed	Service and Support section was updated.
04-Oct-2021	Version 32	Changed	Service and Support section was updated.
02-Aug-2021	Version 31	Changed	Service and Support section was updated.
07-Jun-2021	Version 30	Changed	Added information on changes in 2.xx. Overview and Standard Features sections were updated.
02-Dec-2019	Version 29	Changed	Overview, Configuration Information, and Service and Support sections were updated.
02-Apr-2019	Version 28	Changed	Overview section updated. Added new features in Standard Features section.
04-Jun-2018	Version 27	Changed	Overview section was updated.
05-Mar-2018	Version 26	Changed	SKU Descriptions were updated.
05-Feb-2018	Version 25	Changed	Overview – What's New section was updated.
04-Dec-2017	Version 24	Changed	Overview and Standard Features sections were updated.
23-Oct-2017	Version 23	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
25-Sep-2017	Version 22	Added	Added Information for iLO 5 v1.15 and iLO 4 v.2.54 and v2.55.
17-Jul-2017	Version 21	Changed	The SKU Q7E36A changed from 1yr support to 3yr support.
11-Jul-2017	Version 20	Added	Added iLO 5/Gen10 information.
05-Jun-2017	Version 19	Changed	Added information on version 2.53. Added information on changes to #0D1 option for Electronic SKUs and the fact that it would be discontinued. Added a pointer to iLO licensing guide for detailed information on licensing. Added RESTful API information under scripting. RESTful API branding changes. Removed information on feature of 2.40 related to critical temperature cutoff as it applied to a small subset of servers.
18-Nov-2016	Version 18	Added	Added a note on licensing for Synergy compute modules and note on 2.50.
26-Sep-2016	Version 17	Changed	Overview section was revised.
06-Jun-2016	Version 16	Changed	Overview section was updated.
18-Mar-2016	Version 15	Changed	Removed Care Pack SKU numbers and replaced with link to site with Care Pack information, this will ensure customers get the latest SKU information.

Summary of Changes

Date	Version History	Action	Description of Change
19-Feb-2016	Version 14	Changed	Added new HPE Services operational and licenses information. Overview and Standard Features were revised.
28-Sep-2015	Version 13	Changed	HPE RESTful Application Program Interface (API) section was added to Standard Features. Redfish 1.0 Spec conformance was added to the management protocols supported in Technical Specifications. HPE RESTful API was revised in the Overview section.
03-Mar-2015	Version 12	Changed	Overview section was revised.
10-Oct-2014	Version 11	Changed	Overview section was revised.
09-Sep-2014	Version 10	Changed	Changes made throughout the QuickSpecs.
18-Feb-2014	Version 9	Changed	Changes made in Step 2.
14-Feb-2014	Version 8	Changed	Changes made throughout the QuickSpecs.
08-Nov-2013	Version 7	Changed	Models and HPE Services operational services were revised.
10-Sep-2013	Version 6	Changed	Models and HPE Services operational services were revised.
19-Aug-2013	Version 5	Changed	Overview: change was made in HPE Embedded Remote Support (iLO 4) section only.
29-Mar-2013	Version 4	Changed	Overview: Updated Product description at the beginning of the section and updated hyperlink Models section. Standard Features: Completely updated Remote Serial Console (Virtual Serial Port) for HPE ProLiant section. Additional Features: Completely updated Text Console via SSH for HPE ProLiant section.
19-Feb-2013	Version 3	Changed	Overview and Models sections completely revised. The HPE Services operational descriptions were updated in the Related Options section. Added iLO Serial Port Record\ Playback for HPE ProLiant, and Remote System logs to the Additional Options section. HPE iLO 4 On System Management was added to the Technical Specifications section.
31-Aug-2012	Version 2	Changed	Changes made throughout the QuickSpecs.
06-Mar-2012	Version 1	New	Initial version.

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