

### Overview

Building on the legendary HP Integrated Lights-Out (iLO), today we introduce new standard features included in every HP ProLiant Gen8 server to simplify server setup, engage health monitoring, power and thermal control, and promote remote administration without sacrificing the fast performance you have gotten accustomed to. The next generation of the HP iLO - HP iLO 4 management processor is the core foundation and the intelligence driving features like HP Agentless Management, and HP Active Health System, under the HP iLO Management Engine portfolio.

**HP Agentless Management (iLO4):** the base hardware monitoring and alerting capability is built into the system (running on the HP 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
- Monitor and Alerting on key internal server components: fans, hard drives (including cache modules), power supplies failures
- HP Systems Insight Manager (HP SIM) can see the system and will give customers preview of the System Health Summary and Sub-System Details

**HP Active Health System (iLO4):** HP Active Health System is an essential component of the HP iLO Management Engine. 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.

**HP iLO Mobile App (iLO4):** HP iLO brings additional efficiency and effective remote management at the touch of your fingertips. HP iLO Mobile App. Allows you immediate secured access to your server from the touch of your Smartphone or Tablet devices. Today we support Apple's iOS (iTouch, iPhone4, iPad) and Adroid devices (Android Phone and Android Tablet). This feature is supported on HP iLO 3 and HP iLO 4

**HP iLO multi-language support (iLO4):** Today we provide our customers with the ability to read the HP iLO GUI in the following languages: English and Japanese; with the introduction of HP iLO 4 we bring yet another language: simplified Chinese.

**HP Sea of Sensors 3D (iLO4):** Today we increase the functionality of the popular HP's Sea of Sensors. Introducing HP Sea of Sensors 3D; adding approximately 28 additional thermal sensors on HP branded networking and storage PCI cards, backplanes, and mezzanine cards for a 3D view of system cooling that automatically tracks thermal activity - heat - across the server. When temperatures get too high, sensors can kick on fans and make other adjustments to reduce energy usage.

Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. These HP iLO Advanced licenses can be purchased stand-alone or as part of Insight Control, Insight Control for BladeSystem, or Insight Control for Linux. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime.

**NOTE:** This document is a consolidation of previous QuickSpecs and covers HP iLO 4, HP iLO 3 and HP iLO 2 for HP ProLiant servers. Please visit: <http://www.hp.com/go/iLO>

Overview

Models

HP Integrated Lights-Out (iLO) Licenses for ProLiant and Blade Servers

HP iLO licenses can be purchased regardless of the version of iLO you are using. Check our compatibility chart to understand the features that are supported under the version of iLO that you have enabled. See our web page for more details: <a href="http://www.hp.com/go/compareilo">www.hp.com/go/compareilo</a>	
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	TA850AAE
HP iLO Advanced - Electronic Single Server License with 3 Yea 24x7 r HP Technical Support and Updates	BD506AAE
<b>NOTE:</b> Electronic single server licenses can be purchased as a single HP iLO Advanced Licenses for ProLiant Servers -Electronic Licenses or as multiple licenses (no minimum) with a single activation key.	
<b>iLO Advanced Licenses for ProLiant Servers -Single Server Licenses</b>	
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
HP iLO Advanced -Single Server License with 3 Year 24x7 HP Technical Support and Updates	BD505A
<b>iLO Advanced Licenses for ProLiant Servers -Flexible Quantity Licenses</b>	
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Flexible Quantity License	512486-B21
HP iLO Advanced - Flexible Quantity License with 3 Year 24x7 HP Technical Support and Updates	BD506A
<b>HP iLO Advanced Licenses for ProLiant Servers -Updates Tracking Licenses</b>	
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Tracking License	512487-B21
HP iLO Advanced Updates Technical Licenses with 3 Year 24 x7 HP Technical Support and Updates	BD507A
<b>iLO Advanced Licenses for Blade Servers - Electronic Single Server Licenses</b>	
HP iLO Advanced for Blade Server including 1yr 24x7 Support Electronic License	TA851AAE
HP iLO Advanced - Electronic Single Server License (for Blades) with 3 Year24x7 HP Technical Support and Updates	BD503AAE
<b>NOTE:</b> Electronic single server licenses can be purchased as a single license or as multiple licenses (no minimum) with a single activation key.	
<b>iLO Advanced Licenses for Blade Servers -Single Server Licenses</b>	
HP iLO Advanced for BladeSystem including 1yr 24x7 Support Single Server License	512488-B21
HP iLO Advanced -Single Server License (for Blades) with 3 Year24 x7 HP Technical Support and Updates	BD502A
<b>iLO Advanced Licenses for Blade Servers -Flexible Quantity Licenses</b>	
HP iLO Advanced for Blade including 1yr 24x7 Support Flexible Quantity License	512490-B21
HP iLO Advanced - Flexible Quantity License (Blades) with 3 Year24 x7 HP Technical Support and Updates	BD503A
<b>HP iLO Advanced Licenses for Blade Servers -Support Tracking Licenses</b>	
HP iLO Advanced for Blade including 1yr 24x7 Support Eight Server License	512489-B21
HP iLO Advanced for Blade including 1yr 24x7 Support Tracking License	512491-B21
HP iLO Advanced Support Tracking Licenses (Blades) with 3 Year HP Technical Support and Updates	BD504A
<b>NOTE:</b> For more information, visit: <a href="http://www.hp.com/go/ilo">http://www.hp.com/go/ilo</a>	

### Standard Features

iLO Features and Support Matrix (iLO 2, 3 and 4)				
<b>NOTE:</b> Keep current on this information by visiting: <a href="http://www.hp.com/go/compareilo">www.hp.com/go/compareilo</a>				
iLO Standard (standard, shipped features) for HP ProLiant				
HP iLO Remote Administration for HP ProLiant	HP iLO 4 and iLO 3 Standard	HP iLO 2 Standard	HP iLO 4 and iLO 3 Standard for BladeSystem	HP iLO 2 Standard for BladeSystem
Virtual KVM	Full text and graphic modes (pre-OS)	Full text and graphic modes (pre-OS)	Full text and graphic modes (pre-OS & OS)	Full text and graphic modes (pre-OS & OS)
Global Team Collaboration (Virtual KVM)				
Console Record and Replay				
Virtual Power	•	•	•	•
Virtual Media		Browser Only		Browser Only
Virtual folders				
Terminal Services Pass-Through		•		•
Remote Serial Console (TextCons)	SSH Only	•	SSH Only	•
Virtual Unit Indicator Display	•	•	•	•
Simplified Server Setup for HP ProLiant	HP iLO 4 and iLO 3 Standard	HP iLO 2 Standard	HP iLO 4 and iLO 3 Standard for BladeSystem	HP iLO 2 Standard for BladeSystem
ROM-Based Setup Utility(RBSU)	•	•	•	•
Option ROM Configuration for Arrays (ORCA)	•	•	•	•
Blade Setup Wizard				•
Power Measurement & Control for HP ProLiant	HP iLO 4 and iLO 3 Standard	HP iLO 2 Standard	HP iLO 4 and iLO 3 Standard for BladeSystem	HP iLO 2 Standard for BladeSystem
Present power reading	•	•	•	•
Power usage reporting				
Ambient temperature reporting	•	•	•	•
Dynamic Power Capping				
Power supply high-efficiency mode	•	• (G6 server support with version 1.77 firmware)	•	• (G6 server support with version 1.77 firmware)
Sea of sensors	•	•	•	•
Embedded System Health for HP ProLiant	HP iLO 4 and iLO 3 Standard	HP iLO 2 Standard	HP iLO 4 and iLO 3 Standard for BladeSystem	HP iLO 2 Standard for BladeSystem
POST and failure sequence replay				

### Standard Features

iLO and server integrated management log	•	•	•	•
Advanced Server Management (ASM)	•	•	•	•
Alert Administrator (SNMP Pass-through)	•	•	•	•
System health & configuration display	•	•	•	•
<b>Access security for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Standard</b>	<b>HP iLO 2 Standard</b>	<b>HP iLO 4 and iLO 3 Standard for BladeSystem</b>	<b>HP iLO 2 Standard for BladeSystem</b>
Directory Services Authentication				
Two-Factor Authentication				
Locally Stored Accounts	•	•	•	•
<b>Interfaces for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Standard</b>	<b>HP iLO 2 Standard</b>	<b>HP iLO 4 and iLO 3 Standard for BladeSystem</b>	<b>HP iLO 2 Standard for BladeSystem</b>
Browser	•	•	•	•
Command Line	•	•	•	•
XML/PERL scripting	•	•	•	•
WS Management scripting		•		•
Java applet client for Windows and Linux clients	Improved for iLO 3 - Integrated Remote Console for Java	•	Improved for iLO 3 - Integrated Remote Console for Java	•
<b>Security Protocols for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Standard</b>	<b>HP iLO 2 Standard</b>	<b>HP iLO 4 and iLO 3 Standard for BladeSystem</b>	<b>HP iLO 2 Standard for BladeSystem</b>
Secure Socket Layer	•	•	•	
Secure Shell	•	•	•	•
AES	•	•	•	•
RC4 (Virtual KVM)	•	•	•	•
<b>Network connectivity for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Standard</b>	<b>HP iLO 2 Standard</b>	<b>HP iLO 4 and iLO 3 Standard for BladeSystem</b>	<b>HP iLO 2 Standard for BladeSystem</b>
Dedicated NIC	•	•	•	•
Shared Network Port	•	•	•	•

**NOTE:** Exact speeds and features may vary depending on management processor and supported server type (ML/DL/BL).

#### iLO Advanced Licensed Features (iLO 2, 3 and 4)

**NOTE:** To obtain an Advanced License, see our website: [www.hp.com/buy/ilo](http://www.hp.com/buy/ilo) OR try a 60 day free trial license [www.hp.com/go/tryinsightcontrol](http://www.hp.com/go/tryinsightcontrol)

**NOTE:** Keep current on this information by visiting: [www.hp.com/go/compareilo](http://www.hp.com/go/compareilo)

#### iLO Advanced (licensed features) for HP ProLiant



### Standard Features

iLO Remote Administration for HP ProLiant	HP iLO 4 and iLO 3 Advanced	HP iLO 2 Advanced	HP iLO 4 and iLO 3 Advanced for BladeSystem	HP iLO 2 Advanced for BladeSystem
Virtual KVM	Full text and graphic modes (pre-OS & OS)	Full text and graphic modes (pre-OS & OS)	Full text and graphic modes (pre-OS & OS)	Full text and graphic modes (pre-OS & OS)
Global Team Collaboration (Virtual KVM)	Up to 6 Server Administrators	Up to 4 Server Administrators	Up to 6 Server Administrators	Up to 4 Server Administrators
Console Record and Replay	•	•	•	•
Virtual Power	•	•	•	•
Virtual Media	•	•	•	•
Virtual folders		•		•
Terminal Services Pass-Through	•	•	•	•
Remote Serial Console (TextCons)	SSH Only	•	SSH Only	•
Virtual Unit Indicator Display	•	•	•	•
Simplified Server Setup for HP ProLiant	HP iLO 4 and iLO 3 Advanced	HP iLO 2 Advanced	HP iLO 4 and iLO 3 Advanced for BladeSystem	HP iLO 2 Advanced for BladeSystem
ROM-Based Setup Utility(RBSU)	•	•	•	•
Option ROM Configuration for Arrays (ORCA)	•	•	•	•
Blade Setup Wizard		•		•
Power Measurement & Control for HP ProLiant	HP iLO 4 and iLO 3 Advanced	HP iLO 2 Advanced	HP iLO 4 and iLO 3 Advanced for BladeSystem	HP iLO 2 Advanced for BladeSystem
Present power reading	•	•	•	•
Power usage reporting	•	•	•	•
Ambient temperature reporting	•	•	•	•
Dynamic Power Capping	•	• (G6 server support with version 1.77 firmware)	•	• (G6 server support with version 1.77 firmware)
Power supply high-efficiency mode	•	• (G6 server support with version 1.77 firmware)	•	• (G6 server support with version 1.77 firmware)
Sea of sensors	•	•	•	•
Embedded System Health for HP ProLiant	HP iLO 4 and iLO 3 Advanced	HP iLO 2 Advanced	HP iLO 4 and iLO 3 Advanced for BladeSystem	HP iLO 2 Advanced for BladeSystem
POST and failure sequence replay	•	•	•	•
iLO and server integrated management log	•	•	•	•
Advanced Server Management (ASM)	•	•	•	•

### Standard Features

Alert Administrator (SNMP Pass-through)	•	•	•	•
System health & configuration display	•	•	•	•
<b>Access security for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Advanced</b>	<b>HP iLO 2 Advanced</b>	<b>HP iLO 4 and iLO 3 Advanced for BladeSystem</b>	<b>HP iLO 2 Advanced for BladeSystem</b>
Directory Services Authentication	•	•	•	•
Two-Factor Authentication		•		•
Locally Stored Accounts	•	•	•	•
<b>Interfaces for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Advanced</b>	<b>HP iLO 2 Advanced</b>	<b>HP iLO 4 and iLO 3 Advanced for BladeSystem</b>	<b>HP iLO 2 Advanced for BladeSystem</b>
Browser	•	•	•	•
Command Line	•	•	•	•
XML/PERL scripting	•	•	•	•
WS Management scripting		•		•
Integrated Remote Console for Windows clients	Improved for iLO 3	•	Improved for iLO 3	•
Java applet client for Windows and Linux clients	Improved for iLO 3 - Integrated Remote Console for Java	•	Improved for iLO 3 - Integrated Remote Console for Java	•
<b>Security Protocols for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Advanced</b>	<b>HP iLO 2 Advanced</b>	<b>HP iLO 4 and iLO 3 Advanced for BladeSystem</b>	<b>HP iLO 2 Advanced for BladeSystem</b>
Secure Socket Layer	•	•	•	
Secure Shell	•	•	•	•
AES	•	•	•	•
RC4 (Virtual KVM)	•	•	•	•
<b>Network connectivity for HP ProLiant</b>	<b>HP iLO 4 and iLO 3 Advanced</b>	<b>HP iLO 2 Advanced</b>	<b>HP iLO 4 and iLO 3 Advanced for BladeSystem</b>	<b>HP iLO 2 Advanced for BladeSystem</b>
Dedicated NIC	•	•	•	•
Shared Network Port				
<b>NOTE:</b> Exact speeds and features may vary depending on management processor and supported server type (ML/DL/BL).				

Standard Features

iLO Supported Servers (iLO 2, 3 and 4)												
NOTE: Keep current on this information by visiting: <a href="http://www.hp.com/go/compareilo">www.hp.com/go/compareilo</a>												
Supported Servers												
	HP iLO 4				HP iLO 3				HP iLO 2			
Server Type	Advanced	Standard	Advanced for Blade System	Standard for Blade System	Advanced	Standard	Advanced for Blade System	Standard for Blade System	Advanced	Standard	Advanced for Blade System	Standard for Blade System
HP ProLiant BL Series (BladeSystem Line)												
BL Gen8 Series			•	•								
BL G7 Series							•	•				
BL G6 Series											•	
HP ProLiant DL Series (Density Line)												
DL300 Gen8 Series	•	•										
DL300 G7 Series					•	•						
DL300 G6 Series									•	•		
DL500 G7 Series					•	•						
DL700 G6 Series									•	•		
HP ProLiant ML Series (Modular Line)												
ML300 Gen8 Series	•	•										
ML300 G7 Series					•	•						
ML300 G6 Series									•	•		
HP ProLiant SL Series (Scalable System)												
SL200 Gen8 Series	•	•										
SL300 G7 Series					•	•						
NOTE: Exact speeds and features may vary depending on management processor and supported server type (ML/DL/BL).												

Standard Features

OS, Client, Browser & Memory Support												
NOTE: Keep current on this information by visiting: <a href="http://www.hp.com/go/compareilo">www.hp.com/go/compareilo</a>												
Supported Servers												
	HP iLO 4				HP iLO 3				HP iLO 2			
Server Type	Advanced	Standard	Advanced for Blade System	Standard for Blade System	Advanced	Standard	Advanced for Blade System	Standard for Blade System	Advanced	Standard	Advanced for Blade System	Standard for Blade System
HP ProLiant BL Series (BladeSystem Line)												
BL Gen8 Series			•	•								
BL G7 Series							•	•				
BL G6 Series											•	
HP ProLiant DL Series (Density Line)												
DL300 Gen8 Series	•	•										
DL300 G7 Series					•	•						
DL300 G6 Series									•	•		
DL500 G7 Series					•	•						
DL700 G6 Series									•	•		
HP ProLiant ML Series (Modular Line)												
ML300 Gen8 Series	•	•										
ML300 G7 Series					•	•						
ML300 G6 Series									•	•		
HP ProLiant SL Series (Scalable System)												
SL200 Gen8 Series	•	•										
SL300 G7 Series					•	•						
NOTE: Exact speeds and features may vary depending on management processor and supported server type (ML/DL/BL).												



### Standard Features

<b>Advanced Server Management (ASM) for HP ProLiant</b>	The HP Integrated Lights-Out (iLO) for ProLiant management ASIC includes all of the Health and Wellness features of the Advanced Server Management controller. The Health drivers interface with the HP iLO ASIC to provide system management support, including monitoring of server components, event logging, and support for the Management Agents.
<b>Alert Administration for HP ProLiant</b>	HP 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 HP Systems Insight Manager. Traps forwarded by the processor can be configured in Insight Manager for delivery to an administrator's pager or e-mail.
<b>Auto-Configuration of IP Address using DNS/DHCP for HP ProLiant</b>	HP 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 HP iLO for ProLiant. This allows the management processor to register its device name with Domain Name Services (DNS) and Windows® Internet Naming Service (WINS). For systems that do not use DNS/DHCP, IP configuration is also supported.
<b>Automated Group Administration &amp; Actions for HP ProLiant</b>	HP Integrated Lights-Out (iLO) for ProLiant group administration automates configuring and managing large deployments of Integrated Lights-Out processors. Using iLO's extensive scripting language with HP Lights-Out Configuration Utility or the HP Lights-Out Online Configuration Utility, an administrator can easily configure all settings for mass deployments, control all functions and activate the HP Integrated Lights-Out (iLO) for ProLiant Advanced license keys simultaneously on multiple HP ProLiant iLO processors. With a batch process or HP System Insight Manager's powerful device query mechanism, these utilities enable scalable use and management of HP ProLiant iLO's. Sample scripts are available at: <a href="http://www.hp.com/go/iLO">www.hp.com/go/iLO</a> .
<b>Auxiliary Power for HP ProLiant</b>	Because the HP Integrated Lights-Out (iLO) for ProLiant management processor obtains its power from the auxiliary power plane of the server, it is always on when the server is plugged into a power source. If the server provides Redundant Power Supplies (RPS) then the HP iLO for ProLiant will use redundant power and will continue operation in the event of a power supply failure.
<b>Blade Setup Wizard for HP ProLiant</b>	An HP BladeSystem setup wizard (iLO 2 only) is embedded in the HP iLO for ProLiant browser. This provides a simple four step process to setup your blades: verify the server RAID setting, connect to virtual media with a SmartStart or OS install CD/DVD image and reboot the server while opening remote console to observe the deployment. This dramatically simplifies initial server setup using a client connected to the blade via an enclosure I/O cable or over the network. For Generation 7 (G7) BL platforms with iLO3, the BladeSystem Onboard Administrator version 3.0 and greater now provides setup assistance.
<b>Diagnostic Port &amp; POST LED Indicator for HP ProLiant</b>	For convenient walk-up access or in the event that some portion of the network is down and the administrator cannot reach the Integrated lights-Out (iLO) through the network, the p-class blade is equipped with an "iLO Diagnostic Port" that guarantees access to Integrated Lights-Out (iLO). The Integrated Lights-Out (iLO) has been designed to provide feedback during the POST process as a blade system does not include a directly attached monitor. The Integrated Lights-Out (iLO) blinks the Server Health LED during the boot process to enable the onsite administrator the results of the POST process.

### Standard Features

**Embedded System Health for HP ProLiant** On supported server models, the HP 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 HP iLO for ProLiant user interfaces (browser, SMASH CLP command line and script) independent of the host operating system. The management processor also reports sensor status to the operating system through an IPMI specified interface. The intelligence of iLO manages the Sea of Sensors thermal control, directs the Dynamic Power Capping technology and monitors the health of server components.

**Flexible Interfaces for HP ProLiant** Using any of the HP iLO for ProLiant interfaces, customers can configure, update and control all HP iLO for ProLiant Standard functions regardless of the state of the host server or operating system

- **Browser** - HP iLO for ProLiant is fully accessible by means of Microsoft® Internet Explorer®, and Mozilla Firefox® (Linux® and Windows® only).
- **Command line** - HP 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. These commands can be used on other SM CLP compliant HP products, such as the first generation iLO, Lights-Out 100 Management Processors, HP Integrity iLO, and other non-HP products.
- **Scripting** - HP iLO for ProLiant supports a scalable scripting interface using either programmable XML or PERL scripting. This enables scalable, simultaneous configuration, update and operation large groups of HP iLO for ProLiant servers as well as iLO and RILOE II management processors.
- **WS Management** - HP iLO 2 only for ProLiant supports the DMTF WS Management standard interface allowing users to control virtual power and virtual UID from HP Systems Insight Manager and other management clients that conforms to the standard. This includes WINRM, WECUTIL and Wiseman. . Feature will be available for iLO 3 in future firmware release.

### Flexible Network Connectivity for HP ProLiant

HP Integrated Lights-Out (iLO) for ProLiant provides a choice between two network connection methods to access all functionality:

- **Dedicated connection** - Access HP iLO for ProLiant via an embedded 10/100-MB dedicated Ethernet NIC dedicated to. 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-select speeds between 10 Mbps and 100 Mbps.
- **Shared Network Port** - On selected ProLiant server models, HP iLO for ProLiant supports network connectivity through a new high-speed shared connection via one of the embedded system NICs. Shared network port provides full accessibility to all HP iLO for ProLiant functions including browser, Virtual Media and Virtual KVM in graphics mode. The management processor maintains a unique IP address and MAC allowing the network controller to route HP iLO for ProLiant and host data correctly. With the new 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 HP ProLiant** An onboard ROM-based configuration utility allows fast and easy setup without additional software. HP 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 HP Lights-Out Configuration Utility can be used to configure groups of HP iLO for ProLiant processors, saving time and resources.



### Standard Features

**HP BladeSystem p-Class Infrastructure Communication for HP ProLiant** HP Integrated Lights-Out (iLO) for ProLiant enables easy configuration and management of the entire infrastructure of the p-class system. The HP iLO for ProLiant browser includes a separate tab in the web interface that appears on HP ProLiant BL p-class systems from which specific information and configuration abilities are available. The HP iLO for ProLiant web interface provides user-level diagnostics of the rack infrastructure. This includes information on temperatures, fans, Unit ID LED, the presence of power supplies, firmware revisions and serial numbers of the blade and enclosure management modules. HP Integrated Lights-Out (iLO) for ProLiant provides the communication mechanism to propagate alerts throughout the infrastructure. It can also forward SNMP alerts to HP Systems Insight Manager or other SNMP-based management consoles. These iLO SNMP alerts include server events, such as a host server reset, thermal and power alerts generated by the Enclosure Manager and Power Supply Manager and iLO events such as unauthorized login attempt.

**Integrated Lights-Out (iLO) Event Log for HP ProLiant** The HP 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 Event Log enabling audits for security or troubleshooting purposes. The Event Log is easily accessible through the browser, command line, script or Insight Manager

**Integrated Lights-Out (iLO) Standard Blade Edition Features for HP ProLiant** HP iLO for ProLiant Standard Blade Edition is enhanced to include several features that are essential for blade operation. The following additional features are supported as standard features on HP ProLiant BL c-Class and HP Integrated Lights-Out (iLO) supported p-Class blade servers:

- Virtual KVM remote graphic console
- Terminal Services Pass-Through supported in iLO2. Improvements in the iLO 3 Integrated Remote Console displaces the need for this feature. Virtual Media (browser access only to floppy disk, CD-ROM, DVD-ROM and USB-Drive based virtual media)

Although they are standard on certain server blades, these features are described in the licensed feature section below. In addition, the blade specific features are standard on HP ProLiant BL c-Class and HP Integrated Lights-Out (iLO) supported p-Class blade servers.

**Integrated Management Log for HP ProLiant** HP Integrated Lights-Out (iLO) for ProLiant captures and stores the server's Integrated Management Log 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.

**Integration with HP Systems Insight Manager and other management applications for HP ProLiant** HP Integrated Lights-Out (iLO) for ProLiant is integrated with HP and other leading management applications to allow seamless use in lifecycle tasks and processes from deployment to fault management and administration. HP Systems Insight Manager (SIM) intelligently discovers HP iLO for ProLiant devices and associates them with their host servers for fast access to during fault management activities. HP ProLiant Rapid Deployment (RDP) also discovers HP iLO for ProLiant for fast access to remote consoles during server deployment. HP iLO for ProLiant controls such as virtual power and virtual media are also integrated into RDP scripts to automate server deployment. Intelligent discovery and launch of HP iLO for ProLiant browser is also supported in HP Openview Operations for Windows® and Network Node Manager®, Microsoft Operations Manager® and CA Unicenter®.

### Standard Features

<b>Integrated Remote Console for HP ProLiant</b>	<p>HP iLO 3 runs on Microsoft .NET Framework® 3.5 and takes advantage of Microsoft DirectX® based hardware acceleration to provide high performance and outstanding user graphics. HP iLO has an enriched viewing experience with maximum resolution of 1600 x 1200 and maximum color depth of 32k colors. With iLO 3, remote screen fits within one window and the screen can be scaled to any size, avoiding the use of scroll bars.</p> <p>HP iLO for ProLiant has a Java-free Integrated Remote Console for environments with Microsoft Windows® host and client operating systems. With HP iLO Standard and HP iLO Standard Blade Edition, Integrated Remote Console provides access to Virtual KVM 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. The IRC runs on an ActiveX Control® that is a one-time, automatic download to clients running Windows Internet Explorer® allowing users to operate without installing any Java clients.</p>
<b>Local User Accounts And Logon Records for HP ProLiant</b>	<p>HP Integrated Lights-Out (iLO) for ProLiant Standard supports up to 12 local user accounts with customizable access rights, individual logins and passwords. HP iLO for ProLiant also provides logging of user actions in the event log, progressive delays for failed login attempts, and login legal warning.</p>
<b>Microsoft Emergency Management Service Console Integration for HP ProLiant</b>	<p>The Microsoft Emergency Management Service® console provides a text-based screen to access the host server. HP 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 HP ProLiant servers using Windows Server 2003® or later.</p>
<b>Power Consumption Reporting for HP ProLiant</b>	<p>On supported server models, the HP iLO for ProLiant management processor displays the present power consumption in Watts and BTU. The present power is a five minute average that is calculated and displayed via all HP iLO interfaces (browser, CLI, script).</p>
<b>Power Regulator for HP ProLiant for HP ProLiant</b>	<p>Power Regulator for ProLiant can be enabled on supported server models from HP iLO for ProLiant Standard browser, CLP and script interfaces. Power Regulator Static Low Power and Dynamic Power Savings Modes as well as Operating System based modes (AMD PowerNow or Intel Demand Based Switching) can be enabled to save on server power and cooling costs. On supported ProLiant servers, Power Regulator allows CPU's to operate at lower frequency and voltage during periods of reduced application activity.</p> <p><b>NOTE:</b> For additional information about Power Regulator visit:  <a href="http://h18004.www1.hp.com/products/servers/management/ilo/power-regulator.html">http://h18004.www1.hp.com/products/servers/management/ilo/power-regulator.html</a></p>
<b>Power Supply High-Efficiency Mode for HP ProLiant</b>	<p>New with ProLiant G6 servers, power supply high efficiency mode enables servers to run at maximum power efficiency even at low loads. When operating in this mode, the ProLiant OA will channel load through a single primary supply, as opposed to balancing power load equally across both supplies. In the event of a power supply outage, the secondary supply will immediately assume the load for the server. Power supply high-efficiency mode is not enabled automatically and must be configured through the iLO user interface.</p>
<b>Remote Firmware Update for HP ProLiant</b>	<p>This feature ensures that HP Integrated Lights-Out (iLO) for ProLiant is always up-to-date with the latest firmware available from HP. Updates to the ROM code on HP iLO for ProLiant are accomplished through the browser interface, command line, XML script, or using online flash components for Windows® and Linux®.</p>



### Standard Features

**Remote Serial Console for HP ProLiant** Access to the host server's serial, text-based console during all server states over an Ethernet network is a standard feature on all HP Integrated Lights-Out 2 (iLO 2 only) for ProLiant management processors. From the operating system-independent console you can monitor and control BIOS and POST screens during startup, as well as Microsoft Emergency Management Services® on systems running Windows Server 2003® and serial tty sessions on systems running Linux operating systems. This feature is improved upon in HP iLO 3 and is now accomplished using up to five Secure Shell (SSH) sessions.

**ROM-base Setup Utility (RBSU) for HP ProLiant** Embedded configuration utility within the system ROM and accessible through the HP 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.

**Security for HP ProLiant** HP Integrated Lights-Out (iLO) for ProLiant provides strong security for remote management in distributed IT environments by using industry-standard Secure Sockets Layer (SSL) encryption of HTTP data transmitted across the network. SSL encryption (128-bit) ensures that the HTTP information is secure as it travels across the network.

HP 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 HP iLO for ProLiant over a Secure Shell connection.

In addition, HP iLO for ProLiant provides a configurable option to enable strong encryption Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interfaces. AES/3DES is the US government encryption standard to protect sensitive information.

**Single Sign-on for HP ProLiant** When using local user accounts on HP Integrated Lights-Out and BladeSystem Onboard Administrator, single-sign on is supported. This allows users to access automatically, login to HP ProLiant iLO from the BladeSystem OA user interface.

**Static IP Bay Configuration for HP ProLiant** The Static IP Bay Configuration feature simplifies deployment by automatically assigning IP addresses to individual blades from a reserved static pool as they power on even if DHCP is present.

**System Diagnostics for HP ProLiant** HP 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 HP iLO for ProLiant Event Log record events useful for diagnostics. HP 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 HP ProLiant** HP Integrated Lights-Out (iLO) for ProLiant provides the ability to control server Unit ID LEDs from the HP iLO browser, command line (SM CLP), XML scripting or WS Management interfaces. 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.

### Standard Features

**Virtual KVM remote text console for HP 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 POST during system start-up using Virtual KVM technology. Remote text in "pre-OS" mode is accessible from the Integrated Remote Console and the Java applet Remote Console. The Java applet supports both Microsoft® and Sun Java® software.

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**Virtual Power Button for HP ProLiant**

Using a supported browser, command line or script interface, HP 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 HP ProLiant iLO browser, command line (SM CLP), XML scripting or WS Management interfaces. 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.

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**Virtual Private Network (VPN) support for HP ProLiant**

HP Integrated Lights-Out (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 HP iLO for ProLiant network connection methods, dedicated and shared network ports.



### Additional Features

#### **Automatic and On-Demand Video Footage for HP ProLiant**

HP 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 HP iLO Integrated Remote Console.

This feature is activated as follows:

- iLO Advanced - enables recording and replaying the remote console during pre-OS and OS runtime operation
- iLO Advanced for BladeSystem - enables recording and replaying the remote console during pre-OS and OS runtime operation on HP ProLiant BL servers

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#### **Directory Services Integration for HP ProLiant**

HP 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 and Novell eDirectory, 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 HP lights-out management products. A directory migration tool is available to automate setup for both methods of integration. In addition, current versions of HP iLO firmware will support directory nested groups.

For more information, visit our iLO documentation web page: <http://www.hp.com/go/ilo/docs>

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#### **Global Team Collaboration for HP ProLiant**

Up to six (via iLO 3 and iLO4) and four (via iLO 2) HP ProLiant iLO users with remote console privileges in different locations can collaborate using the shared remote console to troubleshoot, maintain and administer remote servers. In iLO2, the session leader can allow either view only or full console control by individual participants. In iLO3 and iLO4 the session leader can allow full console control by individual participants. Shared remote console mode is supported from the Integrated Remote Console on clients using Microsoft® Internet Explorer browsers as well as Firefox via iLO 3.

This feature is activated as follows:

- iLO Advanced - enables console sharing during pre-OS and OS runtime operation on select HP ProLiant ML/DL series servers
- iLO Advanced for BladeSystem - enables console sharing during pre-OS and OS runtime operation on HP ProLiant BL servers

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#### **iLO Text Console for HP ProLiant**

HP Integrated Lights-Out (iLO) text consoles provide server access via a text console, similar to graphical remote console.

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#### **iLO Video Player for HP ProLiant**

HP 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.

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#### **Multi-factor authentication for HP ProLiant**

HP ProLiant Integrated Lights-Out (iLO) provides strong user authentication with two-factor authentication using digital certificates embedded on smartcards or USB Active keys. Using this form of strong authentication, iLO access can be restricted only to IT individuals possessing a certificate bearing smartcard or flash drive and a PIN (iLO 2 Only).

### Additional Features

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**Power Regulator Reporting for HP ProLiant**

Both iLO Advanced and iLO Advanced for BladeSystem enable access to power related data from any of the three iLO interfaces (browser, script or command line) on supported server models. Available information includes time spent in Power Regulator Dynamic Savings mode and average, peak and minimum power consumption over 24 hour intervals. Check the server QuickSpecs to verify specific system support for Power Regulator and power monitoring.

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**Remote Kernel Debugger for Windows® for HP ProLiant**

Integrated Lights-Out allows you to connect a Microsoft® Windows® debugger running on a remote PC to the iLO Virtual Serial Port (VSP) to diagnose and repair operating system kernel errors.

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**Single Sign-On for HP ProLiant**

ProLiant users can automatically login to iLO from HP System Insight Manager (version 5.1 or greater) and the HP BladeSystem Onboard Administrator. In addition, to direct access and authentication using iLO Active Directory integration, the role based authentication in HP SIM and Onboard Administrator can be used to simplify user access and user account administration.

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**Terminal Services Integration for HP ProLiant**

HP Integrated Lights-Out for ProLiant integrates with Microsoft® Terminal Services to provide a high performance graphical remote console by automatically or manually switching to Microsoft® Terminal Services when the operating system is fully loaded and available on the host system. When the operating system is not operational, the management processor continues to provide its secure, hardware-based Lights-Out console for end-to-end remote access to the host server. In addition, the Microsoft® Terminal Services session is routed through the iLO network interface to improve production network security. Improvements in the iLO 3 Integrated Remote Console displaces the need for this feature.

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**Virtual KVM graphic console for HP ProLiant**

HP 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. HP iLO 3 and iLO 4 requires the .NET Framework 3.5, which is already provided with Windows® 7.

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**Virtual Media for HP 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.

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**Compatibility Support for HP ProLiant servers****The HP ProLiant Family of Supported Servers**

Please see the following URL for the most up-to-date list of HP iLO supported ProLiant servers: [www.hp.com/go/compareilo](http://www.hp.com/go/compareilo)

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Additional Features

<b>Upgrade to HP iLO Advanced or HP iLO Advance for Blade Servers</b>	HP iLO Advanced for ProLiant provides customers with an easy upgrade to full Lights-Out functionality on their HP iLO enabled HP ProLiant Servers. HP iLO Advanced enables the Virtual KVM / Graphical Remote Console, as well as a text based console, automatic video footage of last server boot and last server fault and on-demand video (viewable in an iLO session or with the iLO Video Player), intelligent global team collaboration, dynamic power capping, Microsoft® Terminal Services integration, Virtual Folders, Virtual Media (floppy, CD, USB flash drive and image), remote kernel debug, and directory services integration on HP iLO supported servers. Using iLO Advanced, IT managers can perform all the "in-front-of-the-server" hardware management and system administration without physically visiting the server. For more information visit <a href="http://www.hp.com/buy/ilo">www.hp.com/buy/ilo</a>
<b>iLO Advanced / Advanced for BladeSystem Evaluation License</b>	A FREE license key is available to temporarily activate iLO Advanced and iLO Advanced for BladeSystem features for evaluation purposes. The evaluation key unlocks all of the industry leading remote management on supported HP ProLiant servers up to 60 days. Evaluation keys are available at: <a href="http://www.hp.com/go/TryInsightControl">http://www.hp.com/go/TryInsightControl</a>
<b>Warranty</b>	HP will replace defective delivery media replacement for a period of 90 days following the date of purchase.

### Service and Support

**HP Software Support** HP offers a number of software support services, many of which are provided to customers at no additional charge.

#### **Software Technical Support and Update Service**

HP iLO Advanced and HP iLO Advanced for BladeSystem include one year of 24 x 7 HP Software Technical Support and Update Service. 24x7 HP Software Technical Support and Update Service Care can also be purchased specifically for iLO Advanced and iLO Advanced for BladeSystem on a standalone basis. This service provides access to HP technical resources for help in resolving software implementation or operations problems. The service also provides access to software updates and reference manuals either in electronic form or on physical media as they are made available from HP. (Customers who purchase an electronic license to use are eligible for electronic updates only.)

With the Software Technical Support and Update Services, HP iLO Advanced and HP iLO Advanced for BladeSystem customers will benefit from expedited problem resolution and proactive notification and delivery of iLO Advanced and iLO Advanced for BladeSystem software updates. For more information about this service, see: <http://www.hp.com/services/insight>.

If you received a license entitlement certificate, registration for this service will automatically take place upon redemption of the license certificate/key online and a service contract will be created for you.

If the license information you received for your product instructs you to register for Software Technical Support and Update Service, please follow the instructions or you will not be eligible for telephone support or product updates.

Once registered for this service, you will receive a letter in the mail containing the Customer Service Phone number for your reference and your Service Agreement Identifier (SAID). After you have received your SAID, you can go to the Software Update Manager (SUM) web page to view your contract online and elect electronic delivery for your updates.

### Related Options

<b>HP Care Pack Services</b>	HP iLO Advanced Technical Support and Upgrades Transitional Care Pack <b>NOTE:</b> Provides customers who purchased iLO Advanced between July 9 2008 and Dec 15 2008 with 1 year of 24x7 Technical Support and Updates. Licenses prior to July 9 2007 are already eligible for all new features, and licenses purchased after Dec 15 2008 include one year of technical support and updates.	UJ100E
	HP iLO Select Technical Support and Upgrades Transitional Care Pack <b>NOTE:</b> Provides customers who purchased iLO Select between July 9 2008 and Dec 15 2008 with 1 year of 24x7 Technical Support and Updates. Licenses prior to July 9 2007 are already eligible for all new features, and licenses purchased after Dec 15 2008 include one year of technical support and updates.	UJ098E
	HP 3-year 24x7 iLO Advanced Pack Technical Support and Upgrades Care Pack <b>NOTE:</b> Provides iLO Advanced Pack customers with three years of 24x7 technical support, as well as three years of eligibility for all iLO Advanced Pack licensable features for a single server.	UJ101E
	HP 4-year 24x7 iLO Advanced Pack Technical Support and Upgrades Care Pack, single server	UM039E
	HP 5-year 24x7 iLO Advanced Pack Technical Support and Upgrades Care Pack, single server	UM040E
	HP 3-year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack <b>NOTE:</b> Provides iLO Advanced for BladeSystem customers with three years of 24x7 technical support, as well as three years of eligibility for all iLO Advanced for BladeSystem licensable features for a single server.	UJ099E
	HP 4-year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, single server	UM041E
	HP 5-year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, single server	UM042E
	HP 3-year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, 8-server <b>NOTE:</b> Provides iLO Advanced for BladeSystem and iLO Select Pack customers with three years of 24x7 technical support, as well as three years of eligibility for all iLO Advanced for BladeSystem licensable features for 8 servers.	UJ103E
	HP 4-year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, 8-server	UM043E
	HP 5-year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, 8-server	UM044E

Technical Specifications

<b>Environment-friendly Products and Approach</b>	<b>End-of-life Management and Recycling</b>	<p>Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (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 web site at: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
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