Overview

HP ProLiant Onboard Administrator (OA), powered by the Integrated Lights-Out 2 management processor, virtualizes system controls to simplify server setup, health monitoring, power and thermal control, and remote administration of HP ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions out-of-the-box without additional software installation and functions regardless of the servers' state of operation. It can be accessed from any location via a web browser and works hand-in-hand with HP Systems Insight Manager, Insight Control, and Insight Dynamics, helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

Basic system board management functions, diagnostics, and essential Lights-Out functionality are provided standard, with all HP ProLiant 300/500/700 rack and tower servers, as well as HP ProLiant blade servers. Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be licensed with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. These 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.

In the version 1.77 release of ProLiant OA/iLO 2 firmware is Dynamic Power Capping support for newly announced HP ProLiant G6 servers, support for power supply High Efficiency Mode in HP ProLiant G6 servers and support for the current version of VMware ESX.

NOTE: This QuickSpecs document is based on ProLiant OA/iLO 2 firmware version 1.77. For more information on Integrated Lights-Out 2, please visit: http://www.hp.com/go/iLO.

What's New

- Support for next generation of HP ProLiant servers

Models

Remote Management

HP iLO Advanced Pack

HP ProLiant Essentials Integrated Lights-Out Advanced Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	512485-B21
HP ProLiant Essentials Integrated Lights-Out Advanced Pack, No Media, Flexible-Quantity License, including 1 year of 24x7 Technical Support and Updates	512486-B21
HP ProLiant Essentials Integrated Lights-Out Advanced Pack, Electronic, including 1 year of 24x7 Technical Support and Updates	TA850AAE

NOTE: This part number can be purchased as a single license or as multiple licenses (no minimum) with a single activation key.
NOTE: Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate (xxxxxx- B21) instead.

HP ProLiant Essentials Integrated Lights-Out Advanced Pack, No Media, Tracking License, including 1 year of 24x7 Technical Support and Updates	512487-B21

NOTE: The tracking license above, (P/N 512487-B21), may only be purchased by customers that have implemented an activation key agreement (AKA) with HP implemented after December 15 2008.

HP ProLiant Essentials Integrated Lights-Out Advanced Pack, No Media, Tracking License	452143-B21

NOTE: The tracking license above, (P/N 452143-B21), may only be purchased by customers that have implemented an activation key agreement (AKA) with HP between July 9, 2007 and Dec 15, 2008.

HP ProLiant Essentials Integrated Lights-Out Advanced Pack Tracking License - Updates Included	302281-B21

NOTE: The tracking license above, (P/N 302281-B21), may only be purchased by customers that have implemented an activation key agreement (AKA) with HP prior to July 9, 2007.

HP iLO Advanced for BladeSystem

Overview

HP ProLiant Essentials Integrated Lights-Out Advanced for BladeSystem, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	512488-B21
HP ProLiant Essentials Integrated Lights-Out Advanced for BladeSystem , No Media, Flexible-Quantity License, including 1 year of 24x7 Technical Support and Updates	512490-B21
HP ProLiant Essentials Integrated Lights-Out Advanced for BladeSystem, No Media, 8-Blade License, including 1 year of 24x7 Technical Support and Updates	512489-B21
HP ProLiant Essentials Integrated Lights-Out Advanced for BladeSystem, Electronic, including 1 year of 24x7 Technical Support and Updates	TA851AAE

NOTE: Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate (xxxxxx-B21) instead.

HP ProLiant Essentials Integrated Lights-Out Advanced for BladeSystem Tracking License, including 1 year of 24x7 Technical Support and Updates	512491-B21

NOTE: The tracking license above (512491-B21) may only be purchased by customers that have implemented an activation key agreement (AKA) with HP implemented after December 15 2008.

HP ProLiant Essentials Integrated Lights-Out Advanced for BladeSystem, No Media, Tracking License	452160-B21

NOTE: The tracking license above (452160-B21) may only be purchased by customers that have implemented an activation key agreement (AKA) with HP between July 9, 2007 and Dec 15, 2008.

HP ProLiant Essentials Integrated Lights-Out Select Pack, Tracking License	413121-B21

NOTE: The tracking license above (413121-B21) may only be purchased by customers that have implemented an activation key agreement (AKA) with HP prior to July 9, 2007.

Standard Features

HP ProLiant Onboard Administrator/Integrated Lights-Out 2 Standard Features

Advanced Server Management (ASM)	The HP ProLiant Onboard Administrator/Integrated Lights-Out 2 management ASIC includes all of the Health and Wellness features of the Advanced Server Management controller. The Health drivers interface with the HP ProLiant OA/ iLO 2 ASIC to provide system management support, including monitoring of server components, event logging, and support for the Management Agents.
Alert Administration	HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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.
Auto-Configuration of IP Address using DNS/DHCP	HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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 ProLiant OA/ iLO 2. 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.
Automated Group Administration & Actions	Integrated Lights-Out 2 group administration automates configuring and managing large deployments of Integrated Lights-Out 2 processors. Using iLO2'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, control all functions and activate the ProLiant Essentials iLO Advanced Pack license keys simultaneously on multiple HP ProLiant OA/ iLO 2 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 OA/ iLO 2.
Auxiliary Power	Because the HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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 HP ProLiant OA/iLO 2 will use redundant power and will continue operation in the event of a power supply failure.
Blade Setup Wizard	An HP BladeSystem setup wizard is embedded in the HP ProLiant OA/ iLO 2 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.
Diagnostic Port & POST LED Indicator	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 through the network, the p-class blade is equipped with an "iLO Diagnostic Port" that guarantees access to Integrated Lights-Out. The Integrated Lights-Out 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 blinks the Server Health LED during the boot process to enable the onsite administrator the results of the POST process.
Dial-up support	HP ProLiant Onboard Administrator/Integrated Lights-Out 2 supports dial-up access when using a modem router or external Remote Access Service (RAS) connection to log on to the network.

Standard Features

Embedded System Health On supported server models, the HP ProLiant OA/ iLO 2 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 ProLiant OA/iLO 2 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 2.0 specified interface.

Flexible Interfaces Using any of the HP ProLiant OA/iLO 2 interfaces, customers can configure, update and control all HP ProLiant OA/iLO 2 Standard functions regardless of the state of the host server or operating system

- Browser - Integrated Lights-Out 2 is fully accessible by means of Microsoft® Internet Explorer, and Mozilla Firefox (Linux and Windows only).
- Command line - HP ProLiant OA/iLO 2 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 ProLiant OA/iLO 2 supports a scalable scripting interface using either programmable XML or PERL scripting. This enables scalable, simultaneous configuration, update and operation large groups of HP ProLiant OA/iLO 2 as well as iLO and RILOE II management processors.
- WS Management - HP ProLiant OA/iLO 2 supports the new 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. Requires HP ProLiant OA/iLO 2 firmware version 1.30 or greater.

Flexible Network Connectivity HP ProLiant Onboard Administrator/Integrated Lights-Out 2 provides a choice between two network connection methods to access all functionality

- Dedicated connection - Access HP ProLiant OA/ iLO 2 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 ProLiant OA/ iLO 2 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 ProLiant OA/ iLO 2 functions including browser, Virtual Media and Virtual KVM in graphic mode. The management processor maintains a unique IP address and MAC allowing the network controller to route HP ProLiant OA/iLO 2 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 An onboard ROM-based configuration utility allows fast and easy setup without additional software. HP ProLiant OA/ iLO 2 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 ProLiant OA/ iLO 2 processors, saving time and resources.

QuickSpecs

Standard Features

HP BladeSystem p-Class Infrastructure Communication

HP ProLiant Onboard Administrator/ iLO 2 enables easy configuration and management of the entire infrastructure of the p-class system. The HP ProLiant OA/ iLO 2 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 ProLiant OA/ iLO 2 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 ProLiant Onboard Administrator/Integrated Lights-Out 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 2 Event Log

The HP ProLiant OA/ iLO 2 Event Log stores detailed management processor events and data independent of the host operating system. User 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 2 Standard Blade Edition Features

HP ProLiant OA/ iLO 2 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 ProLiant Onboard Administrator/ iLO 2 supported p-Class blade servers:

- Virtual KVM remote graphic console
- Terminal Services Pass-Through
- 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 ProLiant Onboard Administrator/ iLO 2 supported p-Class blade servers.

Integrated Management Log

HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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

HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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 ProLiant OA/ iLO 2 devices and associates them with their host servers for fast access to during fault management activities. HP ProLiant Essentials Rapid Deployment Pack (RDP) also discovers HP ProLiant OA/ iLO 2 for fast access to remote consoles during server deployment. HP ProLiant OA/ iLO 2 controls such as virtual power and virtual media are also integrated into RDP scripts to automate server deployment. Intelligent discovery and launch of HP ProLiant OA/ iLO 2 browser is also supported in HP Openview Operations for Windows and Network Node Manager, Microsoft Operations Manager and CA Unicenter.

Standard Features

Integrated Remote Console	ProLiant OA/ iLO 2 introduces the new Java-free Integrated Remote Console for environments with Microsoft Windows host and client operating systems. With ProLiant OA/ iLO 2 Standard and ProLiant OA/iLO 2 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 2 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.
Local User Accounts And Logon Records	HP ProLiant Onboard Administrator/Integrated Lights-Out 2 Standard supports up to 12 local user accounts with customizable access rights, individual logins and passwords. HP ProLiant OA/ iLO 2 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	The Microsoft Emergency Management Service console provides a text-based screen to access the host server. HP ProLiant Onboard Administrator/Integrated Lights-Out 2 provides the option to access the EMS console from the Integrated Lights-Out 2 browser interface. The Emergency Management Service console option is available on all HP ProLiant servers using Windows Server 2003 or later.
Power Consumption Reporting	On supported server models, the HP ProLiant OA/ iLO 2 management processor displays the present power consumption in Watts. The present power is a five minute average that is calculated and displayed via all HP ProLiant OA/iLO 2 interfaces (browser, CLI, script).
Power Regulator for HP ProLiant	Power Regulator for ProLiant can be enabled on supported server models from HP ProLiant OA/ iLO 2 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. NOTE: For additional information about Power Regulator visit: http://h18004.www1.hp.com/products/servers/management/ilo/power-regulator.html
Power Supply High-Efficiency Mode	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 ProLiant OA / iLO 2 user interface.
Rack View	HP ProLiant OA/ iLO 2 browser displays an enclosure and rack view of discovered p-Class blades. The rack and enclosure can also be named and configured from the iLO user interface.
Remote Firmware Update	This feature ensures that HP ProLiant Onboard Administrator/Integrated Lights-Out 2 is always up-to-date with the latest firmware available from HP. Updates to the ROM code on HP ProLiant OA/ iLO 2 are accomplished through the browser interface, command line, XML script, or using online flash components for Windows and Linux.

Standard Features

Remote Serial Console Access to the host server's serial, text-based console during all server states over an Ethernet network is a standard feature on all ProLiant Onboard Administrator/Integrated Lights-Out 2 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.

ROM-base Setup Utility (RBSU) Embedded configuration utility within the system ROM and accessible through the HP ProLiant Onboard Administrator/iLO 2 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 HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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 ProLiant Onboard Administrator/Integrated Lights-Out 2 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 ProLiant OA/ iLO 2 over a Secure Shell connection.

In addition, HP ProLiant OA/ iLO 2 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. (Requires firmware version 1.30 or greater)

Single Sign-on When using local user accounts on HP ProLiant Onboard Administrator/ iLO 2 and BladeSystem Onboard Administrator, single-sign on is supported. This allows users to access automatically login to HP ProLiant OA/iLO 2 from the BladeSystem OA user interface.

Static IP Bay Configuration 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 HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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 ProLiant OA/ iLO 2 Event Log record events useful for diagnostics. HP ProLiant Onboard Administrator/ iLO 2 Virtual Media (if activated by an iLO 2 Advanced key) may be used to boot and run System Diagnostics.

Virtual Indicators HP ProLiant Onboard Administrator/Integrated Lights-Out 2 provides the ability to control server Unit ID LEDs from the HP ProLiant OA/iLO 2 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	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 Onboard Administrator/Integrated Lights-Out 2 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.
Virtual Power Button	Using a supported browser, command line or script interface, HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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 OA/iLO 2 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.
Virtual Private Network (VPN) support	HP ProLiant Onboard Administrator/Integrated Lights-Out 2 functionality is available securely over the Internet around the world when used in conjunction with VPN technology. VPN is supported on both HP ProLiant OA/ iLO 2 network connection methods, dedicated and shared network ports.

Licensed Features

HP iLO Advanced & iLOiLO Advanced Advanced for BladeSystem Features on iLO 2 Management Processors		iLO Advanced licenses provide an easy key-activated upgrade to full Lights-Out functionality on HP ProLiant ML and DL servers. Using HP iLO Advanced features, IT managers can perform most server management and administration tasks without physically visiting HP ProLiant ML and DL servers. Although feature activation varies somewhat, iLO Advanced Packs support iLO 2 and first generation iLO management processors.
	iLO Advanced for BladeSystem	iLO Advanced for BladeSystem licenses provide a cost-effective upgrade to full Lights-Out functionality on HP ProLiant Server Blades with iLO 2 technology. Although feature activation varies somewhat, iLO Advanced for BladeSystem supports iLO 2 and first generation iLO management processors.

Automatic and On-Demand Video Footage

HP ProLiant OA/iLO 2 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 ProLiant OA/iLO 2 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

Directory Services Integration

HP ProLiant Onboard Administrator/Integrated Lights-Out 2 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. (Firmware version 1.10 or greater required for schema-free integration) 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, iLO 2 firmware version 1.30 supports the Microsoft Active Directory nested groups feature.

Global Team Collaboration

Up to four HP ProLiant Onboard Administrator/iLO 2 users with remote console privileges in different locations can collaborate using the shared remote console to troubleshoot, maintain and administer remote servers. The session leader can allow either view only or full console control by individual participants. Shared remote console mode is supported from the Integrated Remote Console on clients using Microsoft Internet Explorer browsers.

This feature is activated as follows:

- iLO Advanced - enables console sharing during pre-OS and OS runtime operation on HP ProLiant ML/DL 300+ series servers
- iLO Advanced for BladeSystem - enables console sharing during pre-OS and OS runtime operation on HP ProLiant BL servers

Licensed Features

iLO Text Console	HP ProLiant Onboard Administrator/Integrated Lights-Out 2 text consoles provide server access via a text console, similar to graphical remote console.
iLO Video Player	HP ProLiant OA/iLO 2 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.
Multi-factor authentication	HP ProLiant Onboard Administrator/Integrated Lights-Out 2 provides strong user authentication with two-factor authentication using digital certificates embedded on smartcards or USB flash drives. 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.
Power Regulator Reporting	Both iLO Advanced and iLO Advanced for BladeSystem enable access to power related data from any of the three iLO 2 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.
Remote Kernel Debugger for Windows	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.
Single Sign-On	HP ProLiant OA/iLO 2 users can automatically login to iLO 2 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 2 Active Directory integration, the role based authentication in HP SIM and Onboard Administrator can be used to simplify user access and user account administration.
Terminal Services Integration	HP ProLiant Onboard Administrator/Integrated Lights Out 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.
Virtual KVM graphic console	HP ProLiant OA/iLO 2 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. ProLiant OA/iLO 2 Virtual KVM works with a standard browser and no additional software is required on the remote server or client system.
Virtual Media	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. After the remote server has booted a USB-capable operating system (e.g., Windows® 2000, Windows 2003, or Red Hat Linux 7.2), the virtual device or ISO 9660 image is available as if it were a local USB device. 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 2 firmware version 1.22 or greater is required to support up to 4.7GB DVD-ROMs.

Licensed Features

	HP ProLiant Onboard Administrator (powered by Integrated Lights-Ou			
	HP iLO Advanced Pack	HP iLO Advanced for BladeSystem	HP ProLiant OA/ HP iLO 2 Standard	HP ProLiant OA/ HP iLO 2 Standard Blade Edition
Supported servers	All HP ProLiant ML/DL 300/500/700 Series equipped with iLO 2	All HP ProLiant BL Series equipped with iLO 2	HP ProLiant ML/DL 300/500/700 Series equipped with iLO 2	HP ProLiant BL Series equipped with iLO 2
iLO Remote Administrat				
Virtual KVM	Full text and graphic modes (pre-OS & OS)	Full text and graphic modes (pre-OS & OS)	Text Pre-OS mode	Full text and graphic modes (pre-OS & OS)
Global Team Collaboration (Virtual KVM)	•	•		
Console Record and Replay	•	•		
Virtual Power	•	•	•	•
Virtual Media	•	•		Browser only
Virtual folders	•	•		
Terminal Services Pass-Through	•	•		•
Remote Serial Console	•	•	•	•
Virtual Unit Indicator Display	•	•	•	•
Simplified Server Setup				
ROM-Based Setup Utility(RBSU)	•	•	•	•
Option ROM Configuration for Arrays (ORCA)	•	•	•	•
Blade Setup Wizard		•		•
Power Measurement & Control				
Present power reading	•	•	•	•
Power usage reporting				
Ambient temperature reporting				
Dynamic Power Capping (G6 server support with version 1.77 firmware)	•	•		
Power supply high-efficiency mode (new G6 servers and version 1.77 firmware)	•	•	•	•
Sea of sensors	•	•	•	•
Embedded System Hea				

Licensed Features

POST and failure sequence replay	•	•		
iLO and server integrated management log	•	•	•	•
Advanced Server Management (ASM)	•	•	•	•
Alert Administrator (SNMP Passthrough)				
System health & configuration display	•	•	•	•
Access security				
Directory Services Authentication	•	•		
Two-Factor Authentication	•	•		
Locally Stored Accounts	•	•	•	•
Interfaces				
Browser	•	•	•	•
Command Line	•	•	•	•
XML/PERL scripting	•	•	•	•
WS Management scripting	•	•	•	•
ActiveX Control client (Integrated Remote Console)	•	•	•	•
Java applet client	•	•	•	•
Security Protocols				
Secure Socket Layer	•	•	•	•
Secure Shell	•	•	•	•
AES	•	•	•	•
RC4 (Virtual KVM)	•	•	•	•
Network connectivity				
Dedicated NIC	•	•	•	•
Shared Network Port	•	•	•	•

Compatibility   Servers HP ProLiant Family
                      Please see the following URL for the latest list of supported servers:
                      http://h18013.www1.hp.com/products/servers/management/riloe2/supported-servers.html

Licensed Features

HP iLO Advanced Pack   HP iLO Advanced Pack provides customers with an easy upgrade to full Lights-Out functionality on their HP ProLiant Onboard Administrator/iLO 2-enabled HP ProLiant ML/DL 300+ series servers. iLO Advanced Pack 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 ProLiant Onboard Administrator/iLO 2 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.

HP iLO Advanced for BladeSystem   Similar to HP iLO Advanced Pack (for HP ProLiant ML/DL 300+ series servers), iLO Advanced for BladeSystem provides customers with an easy upgrade to full Lights-Out functionality on their HP ProLiant Onboard Administrator/iLO 2 enabled HP ProLiant BladeSystem servers. iLO Advanced for BladeSystem enables 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 at the enclosure level, Microsoft Terminal Services integration, Virtual Folders, Virtual Media (floppy, CD, USB flash drive and image), remote kernel debug, and directory services integration on Integrated Lights-Out 2 supported servers. Using iLO Advanced for BladeSystem, IT managers can perform all the "in-front-of-the-server" hardware management and system administration without physically visiting HP ProLiant BladeSystem servers.

Licensing and Packaging   iLO Advanced and iLO Advanced for BladeSystem are licensed to provide customers with choices that meet a variety of needs. Licenses for both products may be purchased on an individual basis or as part of an Insight Control software suite.

With iLO 2 firmware version 1.70, HP will provide Technical Support and Update Services for iLO Advanced and iLO Advanced for BladeSystem as purchase options for eligibility for new features. See the Software Support section below for more details and purchase specifics.

In all cases, one iLO Advanced or iLO Advanced for BladeSystem license is required for every server on which the product is installed and used. Licenses are non-transferable. Full details are contained in the End User License Agreements.

HP will continue to provide fixes and iLO Standard and iLO Standard Blade Edition feature enhancements at no extra charge.

iLO Advanced Pack / Advanced for BladeSystem Evaluation License   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: http://www.hp.com/go/TryInsightControl

Single-Server License   Contains one license, a printed license entitlement certificate, end user license agreement, and license key installation card delivered via physical shipment. For use with a single server. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s).

Licensed Features

Electronic License   Can be purchased as a single license or as multiple licenses with a single activation key. Contains license(s) for a customer defined quantity of servers, a license entitlement certificate, end user license agreement, and license key installation information delivered via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Only available directly from HP and select resellers and in the Americas region.

Flexible-Quantity License Used to purchase multiple licenses with a single activation key. Contains license(s) for a customer-defined quantity of servers, a license entitlement certificate for the quantity of licenses purchased, end user license agreement, and license key installation card delivered via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s).

Activation Key Agreement The activation key program is provided for customers who plan to purchase iLO Advanced Packs periodically over a 1 to 3 year timeframe. The program is a way for HP to customers under contract to pay for each license of the value pack software as it is used. Customers are provided a single key to deploy throughout their network.
NOTE: No physical components or license keys are delivered in conjunction with the purchase of this part number. For more information on Activation Key Agreements please visit: http://h18004.www1.hp.com/products/servers/proliantessentials/license/akalic.html
NOTE: To order the ProLiant Essentials Integrated Lights-Out Advanced Pack contact your HP Account Manager or HP Authorized Reseller, or go online at: http://www.hp.com/go/ilo
NOTE: For more information regarding ProLiant Essentials Software and the ProLiant Essentials Integrated Lights-Out Advanced Pack visit: http://www.hp.com/go/insightcontrol

Warranty   HP will replace defective delivery media replacement for a period of 90 days following the date of purchase

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 Packs 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 Packs 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 Pack 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.

Licensed Features

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

HP Insight Control suite (ICE)	Remote Management	
	NOTE: Electronic licensing options are available for Insight Control suites and select ProLiant Essentials software products. Please see the appropriate Insight Control and ProLiant Essentials QuickSpecs for additional information.	
	Featuring: Software suites providing a complete management stack for HP ProLiant and BladeSystem platforms. Insight Control Environment contains one iLO Advanced license.	
	NOTE: iLO Advanced Pack and iLO Advanced for BladeSystem Packs may be obtained by purchasing new software suites available under the Insight Control family of management suites for HP ProLiant servers	
	HP Insight Control suite for HP ProLiant ML/DL Servers	
	HP Insight Control suite License including 1 year of 24x7 Technical Support and Updates, Electronic NOTE: This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate (xxxxxx-B21) instead.	T9074AAE
	HP Insight Control suite, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates NOTE: Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	452148-B22
	HP Insight Control suite, No Media, Flexible Quantity License, including 1 year of 24x7 Technical Support and Updates. NOTE: This part number can be used to purchase multiple licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	452149-B22
	HP Insight Control suite, No Media, 10 Licenses, including 1 year of 24x7 Technical Support and Updates NOTE: Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	452676-B22
	HP Insight Control suite, No Media, Tracking License, including 1 year of 24x7 Technical Support and Updates NOTE: For use with signed and implemented Activation Key Agreements (AKA) only. Purchase of this part number entitles the customer to deploy additional licenses of the product under the terms of the existing Activation Key Agreement. Includes one year of 24 x 7 HP Software Technical Support and Update Service. No physical components or license keys are delivered in conjunction with the purchase of this part number. For more information on Activation Key Agreements please visit: http://h18004.www1.hp.com/products/servers/proliantessentials/license/akalic.html	452150-B21
	HP Insight Control suite, Tracking License, without 1 year of 24x7 Technical Support	436278-B21

Related Options

	and Updates. NOTE: Tracking licenses may only be purchased by customers that have implemented an activation key agreement (AKA) with HP. Only customers that have implemented an AKA agreement prior to July 9, 2007 should purchase tracking licenses without 24 x 7 support.	
	HP Insight Control Management Software Media Kit NOTE: Insight Control Management DVD media without licenses. Contains Insight Manager and Essentials software products and components licensed by Insight Control Management suites. Uses an integrated installer to perform quick and accurate software installation and updates.	436222-B21
HP Services Technical Support & Updates Transitional Care Packs	HP iLO Advanced Technical Support and Upgrades Transitional Care Pack NOTE: 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 NOTE: Provides customers who purchased iLO Select between July 9 2008 and Dec 15 2008with 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 3year 24x7 iLO Advanced Pack Technical Support and Upgrades Care Pack NOTE: 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 4year 24x7 iLO Advanced Pack Technical Support and Upgrades Care Pack, single server	UM039E
	HP 5year 24x7 iLO Advanced Pack Technical Support and Upgrades Care Pack, single server	UM040E
	HP 3year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack NOTE: 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 4year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, single server	UM041E
	HP 5year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, single server	UM042E
	HP 3year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, 8-server NOTE: 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 4year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, 8-server	UM043E
	HP 5year 24x7 iLO Advanced for BladeSystem Technical Support and Upgrades Care Pack, 8-server	UM044E

Technical Specifications

Architecture	32-bit PCI-based health and remote management ASIC
Processor	32-bit RISC processor core running at 66MHz
Upgradeability	Option firmware upgradeable via Flash ROM.
Operating System Support	Microsoft Windows Server 2008 Standard Edition (32bit and 64bit)
	Microsoft Windows Server 2008 Enterprise Edition (32bit and 64bit)
	Microsoft Windows Server 2003 and Windows Server 2003 R2, and Windows Server 2003 for Extended Systems Standard Edition, Enterprise Edition
	Microsoft Windows 2000 Server and Advanced Server
	Red Hat Enterprise Linux 5.0
	Red Hat Enterprise Linux 4.0
	SUSE LINUX Enterprise Server 11
	SUSE LINUX Enterprise Server 10
	Novell NetWare 6.5
	VMware ESX 3.5 update 3 and update 4
Client System Support	Microsoft Windows XP Professional Edition
	Microsoft Windows Vista Business and Ultimate Editions
	Red Hat Enterprise Desktop 4.00
	Novell Desktop 9
Client Browser Support	Microsoft Internet Explorer 7
	Mozilla Firefox 2.0 or later (on supported Windows and Linux client systems)
	Mozilla Firefox 1.75 or later (for supported Linux client systems)
Command Line Support	Telnet, Secure Shell and serial port access
Security	Secure Socket Layer
	Secure Shell version 2 (Password and certificate)
	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
	RC4 encryption of video
Directory Support Services	Active Directory v1.0 (Windows 2000, 2003)
Driver Support	Health Driver (HP ProLiant iLO 2 Management Controller Driver)
	iLO Management Channel Interface Driver
Management protocols supported	SNMP 2, IPMI 2.0 (KCS interface), DMTF Server Management Command Line Protocol Specification (SM CLP), DMTF Web Services Management Specification (WS Management)

Technical Specifications

Environment-friendly Products and Approach | End-of-life Management and Recycling | 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 http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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: http://www.hp.com/go/green. 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.