Overview

HP Integrity Integrated Lights-Out (iLO) management processors for HP Integrity servers provide remote server control and monitoring that is independent of the server's operating system. This document describes Integrity iLO (first generation), Integrity iLO 2, and Integrity iLO 3. All Integrity iLO products offer a set of core remote management features similar to ProLiant iLO, with additional features specific to Integrity Servers. Basic system management functions, diagnostics and essential Lights-Out functionality are provided as standard server features known as iLO Standard. iLO Advanced functionality, such as virtual media, power management, and graphics remote console, is enabled with additional licensing. iLO Advanced licenses are included in the base models of some Integrity servers. Several different Integrity iLO management processors are offered for HP9000 and Integrity servers. Refer to this Quick Spec to learn which Integrity iLO management processor product you have and which iLO Advanced features are supported.

With the release of Integrity iLO 3, Integrity servers introduce a new concept in remote management solutions which automatically scale with the size of your system. Integrity iLO 3 is an integral part of the management architecture inside new Integrity multi-bladed conjoined servers. Integrity iLO 3 management is included in all newer Integrity systems and ships with a full iLO Advanced license factory installed in every server.

For more information on Integrity Integrated Lights-Out, please visit: http://www.hp.com/go/integrityilo
For more information on ProLiant Integrated Lights-Out, please visit http://www.hp.com/go/ilo

Integrity Superdome 2 systems use the Superdome 2 Onboard Administrator as the central point of remote management. Integrity iLO is built into every Superdome 2 blade and every iLO communicates directly with the SD2 OA. Traditional iLO remote management features, both standard and advanced, are raised up to the SD2 OA management interface - administrators never "drill down" into an individual iLO and never perform tasks directly on iLO in Superdome 2. For more information on Superdome 2 Onboard Administrator, please visit "HP Superdome 2: the Ultimate Mission-critical Platform" at http://h18006.www1.hp.com/storage/pdfs/4AA1-7762ENW.pdf

What's New

Integrity iLO 3 (version 1.6) adds these new features:

- Support for the Integrity rx2800 i4, BL860c i4, BL870c i4, and BL980c i4 servers
- Hard Partitioning (nPar) configuration and management support for BL870c i4 and BL890c i4 blade servers

Integrity iLO 3 offers these benefits over older versions of Integrity iLO

- **Scalable management**: automatically grows with your multi-bladed Integrity servers, easily managed through a consolidated iLO interface
- **Virtual Front Panel**: for at-a-glance system status
- **Virtual media**: connect to your server remotely forfile transfers and updates
- **Mirrored system console:** enables multiple users to work together on system tasks
- **Serial Console log**: captures the serial server console, expressly for "headless" server administration
- **Forward Progress Log**: to help troubleshoot systems that can not boot correctly
- **Enhanced Integrated Remote Console**: for VGA consoles, one-click buttons for recording and playing video console information
- **Direct System Firmware updating**: use HP SUM, or iLO 3 directly, to easily update system firmware without OS assistance, even while the OS is running or the server power is off

Supported systems:
BL860c i4
BL870c i4
BL890c i4

Overview

rx2800 i4
BL860c i2
BL870c i2
BL890c i2
rx2800 i2

NOTE: An Integrity iLO 3 Advanced license is factory installed in every model of BL8x0c i2 and i4 blade,and every rx2800 i2 and i4 server.

Integrity iLO 3 v1.6

This section covers the Advanced features of Integrity iLO 3 not available in other Integrity iLO products.

Hard Partitions (nPars)

BL870c i4 and BL890c i4 blades ship with a built-in Hard Partition (nPar) license; this is displayed in the Integrity iLO 3 Licensing tab. nPars are managed via the Domain Management Processor (DMP), which is the Master iLO on the Monarch blade of a BL870c i4 or BL890c i4 system. nPars are created, sized, and changed visually using the DMP's iLO 3 web GUI interface. nPars may also be viewed and modified by text command using the iLO 3 text interface. nPars may contain one, two, or four physical blades. When nPars are created, additional Master iLOs for the monarch blade of each new partition are automatically assigned and displayed in the Blade System Onboard Administrator (OA) or Virtual Connect Manager as "system name nPar". To create nPars, the blades to be assigned must be powered off, must have matching processors (frequency and cache size), and must have the same firmware revision levels. Partitions may be "locked" from a nPar iLO to prevent changes, allowing them to be managed by separate administrators.

iLO 3 Scalable Manageability

iLO Scalable Manageability is available only in Integrity iLO 3 products. For BL8x0c i2 platforms, every blade in a multi-blade server (BL870c i2 or BL890c i2) contains a physical iLO 3. A BL860c i2 contains one iLO, a BL870c i2 contains two iLOs, and a BL890c i2 contains four iLOs. All iLOs in the server get assigned a management LAN IP address by the BladeSystem OA. However, only the master iLO's user interfaces are active, and the BladeSystem OA will only provide management interface links to the active, Master iLOs. For multi-bladed platforms such as the BL870c i2 and BL890c i2, the iLO contained on the Monarch blade is the master iLO which communicates and consolidates information from all other iLOs. Master iLOs are automatically designated the system's master iLO if they are on the Monarch blade in a multi-blade platform.

iLO 3 Direct System Firmware Update

HP SUM, a remote firmware management tool with repository checking, uses the Integrity iLO 3 Direct System Firmware Update interface to upload and install new firmware. Integrity iLO 3 also supports system firmware updates directly through iLO user interface for updating one server at a time. The Direct System Firmware Update feature works independently of the host OS and therefore can be used any time. i.e. when the OS is running, or not yet installed, or even when the system is powered off. After new system firmware is loaded via iLO 3, the final NVRAM flash cycle (requires a system reboot or power cycle operation) may be scheduled at time convenient for system maintenance.

iLO 3 Advanced Licensing

An Integrity iLO 3 Advanced license containing a model-based keycode value is built into every physical Integrity iLO 3. All Advanced features supported in this release are fully licensed and enabled automatically – no additional licensing is required. Because Integrity iLO 3 uses model-based license keycode values, every iLO in a multi-bladed server contains identical keycodes. This allows blades to be easily swapped, reordered, or replaced without needing to change or transfer license keys.

Overview

Integrity iLO, iLO 2, and iLO 3 Advanced Features

This section covers the Advanced features found various Integrity iLO products.

Advanced Licensing

For all Integrity iLO products, Advanced features are built into the Integrity iLO firmware and may be activated with an iLO Advanced license key. iLO Advanced features vary by product, as covered by this QuickSpec. iLO Advanced keys are available as options for certain Integrity systems. Integrity BL60p, BL860c and BL870c server blades, rx2800 i2 servers, and all Integrity iLO 3 systems include an iLO Advanced license key factory installed so no additional licensing is necessary for these systems.

NOTE: ProLiant iLO Advance license keys cannot be installed on Integrity iLO products, and vice versa.

First-generation Integrity iLO Advanced: p/n AB500A
Integrity iLO 2 Advanced: p/n AD301A
Integrity iLO 3 Advanced is included in all systems with Integrity iLO 3 management processors and therefore is not offered as an option
Try Integrity iLO Advanced for free, contact your HP Sales representative

Power Meter and Power Regulation

Integrity iLO Power Meter measures instant power usage and temperature and can graph 24 hours of power and temperature data. Integrity iLO Power Meter is a feature of iLO 2 and greater. Integrity iLO 3 systems ship equipped with an iLO 3 Advanced license which enables iLO Power Meter with 24-hour graphing and integration with Insight Control power management. iLO Power Meter is supported on iLO 2 entry-class servers and blades with the appropriate firmware level. On iLO 2 systems, instant power and temperature readings are standard features and do not require additional licensing. An iLO 2 Advanced Pack license is required for 24-hour power and temperature graphs and integration with Insight Control power management. First-generation Integrity iLO systems do not support iLO Power Meter. Specific Power Meter features and licensing requirements per platform are described in the table "Integrity iLO Products and Features Summary".

iLO Power Regulation is a standard feature of some iLO systems. Learn more about iLO Power Regulation in the section "Integrity iLO, iLO 2, and iLO 3 Standard Features".

Integrated Remote Console (graphical console with virtual keyboard, video, mouse)

Integrity iLO Integrated Remote Console provides a Java-free remote VGA-based graphical console supported with both the host OS and the EFI environment. IRC provides remote graphics console access specifically for Windows Server environments which use a VGA console as the server "head". For Integrity iLO 2 systems, IRC is supported in two ways: in entry-class and blade server systems IRC can be activated with an Integrity iLO 2 Advanced Pack license key (AD301A), in cell-based servers the Lights-Out Advanced / KVM card (LOA) provides both physical VGA/USB and enables partition-based IRC through the iLO 2 management processor. The LOA card is described in further detail below.
NEW: IRC is supported with Integrity iLO 3 v1.3 and later management processors. Older iLO 3 systems can obtain IRC with a system firmware upgrade. No additional licensing is required.

NOTE: IRC is not supported in first-generation Integrity iLO systems or on Superdome 2. IRC requires a physical VGA video chip be installed on the server. VGA video is an optional accessory on some Integrity server models. IRC requires ActiveX control and is supported only with clients running Windows Internet Explorer.

Overview

Virtual Media

The USB-based Virtual Media feature allows an IT administrator to attach a CD, DVD, or ISO 9660 image file image to a remote server, and then boot from, run applications, or transfer files from that virtual device. Virtual Media can be used to save time and travel when making a trip to the data center is impractical or inconvenient. Virtual media devices are available before an OS is loaded and may be used to boot the remote server, install updates or applications, or run software directly from the media. After the remote server has booted a USB-capable operating system (e.g., HP-UX 11i, Windows Server 2003 or 2008, Linux (Red Hat and SUSE), or OpenVMS 8.3-1H1), the virtual device is available as if it were a local read-only USB device. This feature allows administrators to carry out any of the following functions remotely from an applet user interface, text user interface, or script.

- Install applications or updates on the remote server from a Virtual CD
- Run HP User Diagnostics on remote host servers
- Update firmware using HP Firmware Manager tools
- Perform disaster recovery of failed operating systems'
- Deploy an operating system on remote servers from a Virtual CD network drive (Note that Virtual Media performance varies with network performance. Physical USB media drives generally have faster performance than virtual media drives. This may be especially noticeable when transferring large files or doing OS installation.)

Virtual Media for CD, DVD, or ISO file image is supported on both Integrity iLO 2 and iLO 3 systems. Virtual Media presents the device to the server as a CD/DVD-ROM read-only device. Virtual Media is not available for first-generation Integrity iLO. Integrity iLO 3 ships with the Advanced licenses which automatically enables this feature. iLO 2 systems require either the optional Advanced license (entry-class and blades) or the LOA card (mid-range and Superdome) to enable this feature.

Virtual Media for USB Flash is supported in some Integrity iLO 2 and iLO 3 systems. In Integrity iLO 3 v1.00, Virtual Media Flash is supported as a read-only device in the EFI environment where it provides a convenient way to attach I/O firmware update files for updating through EFI tools. In iLO 3 v1.00, iLO vMedia Flash can be initiated through the ILO 3 user interface, but not from the BladeSystem Onboard Administrator.. On Integrity iLO 2 entry-class and blade systems with optional Advanced license, Virtual Media additionally supports read-only devices for virtual USB-Floppy as well as virtual USB flash (2GB devices or smaller, FAT file format) for use with Windows Server and EFI environments. Virtual floppy eliminates the need for an external USB floppy device. Virtual floppy can be used to remotely boot your server from a 1.44MB floppy diskette or diskette image file, run diagnostics, inject Windows boot drivers, or do a floppy-based Windows ASR recovery boot. Virtual USB flash can be used to conveniently attach a USB flash memory stick to transfer files such as Windows drivers and patches.

NOTE: Virtual Media is not supported in first-generation Integrity iLO systems.

Overview

IRC and VMedia Feature Support by OS

Integrity iLO 3 Advanced v1.6

Operating System	Integrated Remote Console	Virtual Media CD/DVD/ISO (read only)	Virtual Media Flash
EFI	Not supported	Supported	Read-only, must be initiated through iLO interface, not supported from OA interface
HP-UX 11iv31.6.0_31	Not supported	Supported	Not supported
Windows Server 2008	Supported	Supported	Not supported

Integrity iLO 2 Advanced Features support for entry-class and server blades

Operating System	Integrated Remote Console	Virtual Media CD/DVD/ISO (read only)	Virtual Media Floppy/Flash
EFI	Supported	Supported	Supported
HP-UX 11iv2 and v3	Not supported	Supported	Not supported
Windows Server 2003 and 2008	Supported	Supported	Supported
Linux	Not supported	Supported	Not supported
OpenVMS 8.3-1H1	Not supported	Supported	Not supported

LDAP and schema-free Directory Integration

Integrity iLO user accounts support directory services such as Microsoft Active Directory which 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. Download "HP Directories Support for ProLiant Management Processors" from the HP website at: http://h20000.www2.hp.com/bizsupport/TechSupport/SoftwareDescription.jsp?lang=en&cc=us&swItem=MTX-2e1f27919420449abb3021d62c&jumpid=reg_R1002_USEN

First-generation Integrity iLO and entry-class with iLO 2 require an Advanced license to enable LDAP support feature. Integrity iLO 3 systems and Integrity iLO 2 systems for blades ship with iLO Advanced licenses included. Integrity iLO 2 for cell-based servers supports LDAP as a standard feature.

First-generation Integrity iLO Advanced Features

SSH for first-generation Integrity iLO products

First-generation Integrity iLO products require an Advanced license to enable Secure Shell (SSH). Secure Shell Access is standard on all iLO 2 and iLO 3 products.

Overview

Integrity iLO 2 Advanced Features for Cell-Based Servers

Integrity iLO 2 Advanced features on cell-based systems are enabled per OS hard partition (nPar) through installation of the optional the Integrity Lights-Out Advanced / KVM card (AD307A). No Advanced licenses are required - the card enables the Advanced features per partition and no additional licensing is required. One card should be installed in each nPar where the Lights-Out advanced features are desired. This PCI-X mode 1 card is a physical graphics/USB card, and also enables Lights-Out advanced features. The LOA card may be used to attach a physical monitor, keyboard, and mouse, and should be used instead of other graphics/USB cards such as A6869A in an nPar. Only one graphics card of any type should be installed in any nPar. The LOA card is supported on Integrity rx7640, rx8640, and Superdome sx2000 servers.

For Integrity cell-based servers, the iLO 2 web GUI includes pull-down controls to select IRC or vMedia for each individual hard partition (nPar) where LOA cards are installed. Because the card is powered by the PCI slot, the card features will not be available when the I/O slots are not powered on.

LOA Card – Integrated Remote Console (graphical console with virtual keyboard, video, mouse)

The Integrity LOA card enables the same Integrated Remote Console feature as found in Integrity iLO 2 for entry-class systems. IRC is supported for environments with Microsoft Windows host and client operating systems. Only one IRC session may be opened per iLO GUI browser session, but multiple IRC sessions may be run by opening multiple iLO GUI session.

LOA Card – Virtual Media

The Integrity LOA card enables the same Virtual Media for CD, DVD, or ISO file as found in Integrity ILO 2 for entry-class systems. LOA Virtual Media is supported by HP-UX 11i, Windows Server, and OpenVMS 8.3-1H1. Multiple Virtual Media connections to separate partitions can be made from one iLO GUI session.

Integrity Lights-Out Advanced / KVM card (LOA) p/n AD307A

Standard Features

RJ45 port for LOA management LAN 10/100Base-T
Two USB 2.0 ports
DB15 VGA port
PCI-X mode 1 card full length
iLO Advanced Features of Integrated Remote Console and Virtual Media (CD, DVD, and ISO file)
(Serial port on this card is for manufacturing use only)
VGA supported resolutions: 75Hz@640x480, 800x600, 1024x768, 1280x1024, 60Hz@1600x1200

Card Installation

On Superdome sx2000

PCI-X backplanes install in slots 0-4, 7-11
PCI-X/PCIe backplanes install in slots 0-1, 8-11
On Windows partitions, install in slot 0

On rx7640 and rx8640

PCI-X or PCI-X/PCIe backplanes install in slots 1, 2, 7, or 8
For all systems, a maximum of one card can be installed in each hard partition (nPar)

Supported platforms: rx7640, rx8640, Superdome sx2000
Windows Support Packs: Windows server environments require Integrity Support Pack for Windows v5.2 or greater

Overview

The Integrity Lights-Out Advanced / KVM card is an optional accessory which combines a physical graphics/USB card with additional logic to enable the Lights-Out Advanced features of Virtual Media and Integrated Remote Console. This card should be used instead of other graphics cards such as A6869B. No Lights-Out Advanced license key is needed. This PCI-X accessory card is supported only in Integrity rx7640, rx8640, and Superdome sx2000 systems. Install one LOA/KVM card in each OS hard partition (nPar) where Lights-Out Advanced features are required. Use the Integrity iLO 2 web GUI to access virtual media and remote console for each partition where an LOA/KVM card is installed.

Integrity Lights Out Advanced / KVM card OS support:

Operating System	Integrated Remote Console	Virtual Media CD/DVD/ISO (read only)	Physical VGA	Physical USB
EFI	Supported	Supported	Supported	Supported
HP-UX 11iv2 and v3	Not supported	Supported	Not supported	Supported
Windows Server 2003 and 2008	Supported	Supported	Supported	Supported
Linux	Not supported	Not supported	Not supported	Not supported
OpenVMS 8.3-1H1	Not supported	Supported	Not supported	Supported

Integrity iLO, iLO 2, and iLO 3 Standard Features

Power Regulation

The Integrity iLO Power Regulator is enabled on certain Integrity iLO 2 and iLO 3 server platforms with Intel Itanium 9100 or 9300 series processors. Integrity power regulation works in cooperation with a host OS enabled with power management control. Changes to processor power efficiency modes initiated through Integrity iLO 2 or HP Insight Power Manager are enacted by the server operating system. The Integrity iLO Power Regulator interface provides an easy way to manually set power efficiency modes. iLO Power Regulator does not require an Advanced Pack license, but does require a power-aware operating system such as HP-UX 11iv3. A supporting operating system must be installed and booted before the Integrity iLO Power Regulator tab will display the choices for power modes: Dynamic Power Savings, Static Low Power, Static High Power, or OS Control modes. Integrity iLO Power Regulator can be accessed via the iLO web GUI, the Integrity MP text user interface, or scripts.

Integrity iLO 3 supports the Power Regulation OS control mode.
Integrity iLO 2 supports the Power Regulation OS control mode and all manual modes on entry-class server and blades.
First-generation Integrity iLO does not support Power Regulation.

Virtual Serial Console

All Integrity iLO products support a virtual serial console into the host OS. All Integrity iLO systems support multiple mirrored connections to the virtual serial console, allowing several users to simultaneously access the console for collaboration during troubleshooting. Integrity iLO 3's console log holds four times more data than the iLO 2 log.

Virtual Power Button

Users can remotely operate the power button of a server using the iLO GUI or command line interface. The Integrity iLO can remotely power a server on, gracefully or force power off, reset a system, or force a crash dump.

Overview

Virtual Indicators

In all Integrity iLO systems, Virtual Front Panel indicators are displayed in the text user interface session for at-a-glance status information. For Integrity iLO3, the Virtual Front Panel indicators are also displayed in the web GUI. iLO monitors and controls the operation of these indicators, even if the host OS causes their status to change. iLO can control the blue Unit ID (locator) LED on the front and rear of the server that is used for identifying systems in a rack full of servers. On Integrity cell-based servers, iLO 2 can also control the cabinet locator LED. Locator LEDs can be turned on or off using iLO web GUI interface, SSH, or Telnet interfaces.

---

iLO Firmware updating

Integrity iLO, iLO 2 on entry-class and server blades, and all iLO 3 products can be updated remotely through the browser interface, the text user interface, or using online flash components for Windows, OpenVMS, Linux, and HPUX. Refer to the HP Firmware Manager tools for more information. In addition, iLO 3 products are supported by HP SUM for remote firmware updating with repository checking.

Embedded System Health

iLO monitors fans, temperature sensors, power supply sensors and VRMs without having any System Management Driver or OS management agents loaded. The status of these components is accessible from the iLO browser interface as well as other interfaces, independent of the host operating system. The management processor also reports sensor status to the operating system through an IPMI standard interface.

Browser Accessibility

Integrity iLO 3's web GUI is supported with Microsoft Internet Explorer version 7 or 8, , or FireFox version 11 or greater. The Remote Serial Console and vMedia applets require the 32-bit Java Plug-in 1.6.0_31.

First-generation Integrity iLO and Integrity iLO 2's web GUI standard features are supported with Microsoft Internet Explorer 6.0 SP1 or Internet Explorer 7, Mozilla Firefox 2.0.0.10.02 or Firefox 3, and HP Secure Web Browser 1.7-13. iLO 2's advanced feature of Integrated Remote Console, a graphical remote console, is supported only with Internet Explorer browsers and required DirectX control. All browsers support the iLO 2 Remote Serial Console and vMedia applets using the 32-bit Java Plug-in 1.6.0_31.

Text User Interface

All Integrity iLOs support a text user interface through a serial port console connection, and an identical version is available via Telnet of SSH sessions. The menu-driven text MP interface is available in all generations of HP9000/Integrity management processors, from Superdome to the smallest rackmount system. The text console interface can be used instead of the web GUI to manage and control all iLO functions, and also provides access to the server's Virtual Serial Console. Some versions of Integrity iLO supplements the menu and command-line text interface by also supporting commands from the industry standard command line, DMTF System Management Architecture for Server Hardware, Server Management Command Line Protocol (SM CLP) specification. Either the HP commands or the SM CLP commands can be used for scripting and automation.

Secure Shell (SSH)

Secure Shell Access is standard on all iLO 2 and iLO 3 products.

NOTE: First-generation Integrity iLO products require an Advanced license to enable Secure Shell (SSH).

Overview

Auxiliary Power

iLO management processors obtain their power from the auxiliary power plane of the server. They are always on when the server is plugged into a power source. If the server provides redundant power supplies, then iLO will use redundant power and will continue operation in the event of a power supply failure.

NOTE: Integrity cell-based servers equipped with iLO 2 and Lights-Out Advanced / KVM cards, the Integrated Remote Console and Virtual Media features enabled by the cards, are only available when the PCI slots have power.

DDNS/DHCP support

In Integrity rackmount servers, the Integrity iLO's management LAN can accept an IP address through DHCP, or can accept a static IP number assigned through the text user interface and serial port connection. In Integrity iLO 2 systems, the ARP/Ping method of LAN-based IP assignment from a console on the same subnet as the iLO management LAN. See the iLO Operations Guide for information on this method.

In Integrity server blades, the Integrity iLO is typically assigned an IP number for the iLO Management LAN through the BladeSystem's Onboard Administrator. Both static IP's and dynamically assigned IP's (through a DHCP server and dynamic DNS) are supported.

Unless otherwise noted, Integrity iLO's Management LAN do not supported a shared-LAN function with the server LAN.

User Account Setup Options

Integrity iLO user accounts can be setup via the browser or text user interface over the management network. In addition, for Integrity iLOs that support SIM group actions, commands can be sent from HP Systems Insight Manager to configure large numbers of Integrity iLO's simultaneously.

Local User Accounts And Logon Records

Integrity iLO supports up to 19 local user accounts with customizable access rights, individual logins and passwords.

Security

Integrity iLO 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 ensures that the HTTP information is secure as it travels across the network. In addition, Integrity iLO uses Secure Shell (SSH) 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 iLO over a Secure Shell connection. The iLO web GUI is accessed through a secure web connection (SSL).

With the newer versions of entry-class and blade firmware, iLO 2 supports SSH-Exec scriptable commands. A white paper on the subject is available through http://www.hp.com/go/integrityilo

NOTE: First-generation Integrity iLO systems require an Advanced License (AB500A) to enable SSH.

Automated and Scripted Group Administration & Actions

In systems which are enabled for SIM Group Actions, HP Systems Insight Manager can be used to configure and control groups of iLO management processors, performing such tasks such as setting user rights, network configurations, and remote power control. In addition to the SIM group actions, the Integrity iLO 2 and iLO 3 text user interface supports simple scripting that can be used to create custom automation of all features for large groups of iLO installations.

Overview

Integration with HP Systems Insight Manager and other management applications

Integrity iLO 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 iLO devices and associates them with their host servers for fast access to iLO during fault management activities. Intelligent discovery and launch of the iLO 2 or iLO 3 browser is supported in HP OpenView Operations for Windows and Network Node Manager, and Microsoft Operations Manager. SIM License Manager does not manage Integrity iLO licensing. Integrity iLO and iLO 2 Advanced Pack licenses should be installed manually through the iLO management processor command line interface or through the iLO web GUI interface.

Dedicated Network Connectivity

Integrity iLO includes an embedded 10/100 MB Ethernet NIC for remote management of HP Integrity Server. This NIC is dedicated to the iLO, so users can choose to place iLO on a management network isolated from the server payload network. The dedicated NIC can auto-select speeds between 10 Mbps and 100 Mbps. Integrity Blade servers route iLO management LAN through the BladeSystem Onboard Administrator management LAN interface. Unless otherwise noted, Integrity rackmount servers do not support routing the iLO management LAN through the server's embedded NIC.

Virtual Private Network (VPN) support

Integrity iLO functionality is available securely over the Internet around the world when used in conjunction with VPN technology. iLO LAN-based remote management is VPN compatible.

System Event Log

Integrity iLO captures and stores the server's System Event Log for access via browser or text interface even when the server is not operational. This capability can be helpful when troubleshooting remote host server problems.

Forward Progress Log

The Integrity iLO stores a detailed Forward Progress Log of system operation during boot, crash and any other abnormal conditions that can be used to extensively troubleshoot the server. This log goes far beyond the capabilities of standard IPMI for fault management. The Forward Progress Log is available via the text interface only.

SNMP and WBEM

SNMP alerting for power problems or fatal server errors is supported on Integrity iLO 2 systems only. Integrity system firmware version F.02.23 supported this feature on Integrity BL860 and BL870 blades, and Integrity system firmware version F.02.25 added this feature to Integrity rackmount servers with Integrity iLO 2. This feature was added for compatibility with ProLiant. iLO 2. Please note that all Integrity systems with any version of iLO management processor use WBEM providers to send administrative alerts directly from the OS for all critical and non-critical system health information.

System Diagnostics

The iLO remote host console options, Integrated Remote Console and Virtual Serial Console, may be used to monitor the system for POST error messages. The System Event Log and Forward Progress Log record events useful for diagnostics. Where supported, iLO Virtual Media may be used to remotely boot and run System Diagnostics.

Overview

Microsoft Emergency Management Service Console Integration

The Microsoft Emergency Management Service console provides a text-based screen to access the host server. Integrity iLO 2 provides the option to access the EMS console from the iLO 2 browser interface, or from telnet, SSH, or the Serial interface. The Emergency Management Service console option is available on all HP Integrity servers using Windows Server and Integrity iLO 2 Standard.

Integrity iLO Products and Features Summary

	Integrity iLO	Integrity iLO 2 for entry-class and blades	Integrity iLO 2 for cell-based	Integrity iLO 3
Systems supported	rx1620 (optional) rx2620 (optional) rx4640 rp3410 rp3440 rp4440 BL60p (includes Advanced Pack license)	rx2660 rx3600 rx6600 BL860c and BL870c (include Advanced Pack license)	rx7640 rx8640 Superdome sx2000	BL860c i4 BL870c i4 BL890c i4 rx2800 i4 BL860c i2 BL870c i2 BL890c i2 rx2800 i2 Superdome 2 **NOTE:** Advanced license included in all systems
Optional Advanced Licensing	AB500A	AD301A	Lights-Out Advanced / KVM card	None – Advanced license included in all systems
Hard Partitions (nPars)				BL870c i4 BL890c i4
Web GUI	X	X	X	X
Text interface	X	X	X	X
Remote health monitoring and status, forward process log, console log	X	X	X	X
Console log	X	X	X	Four times larger log than iLO 2
Virtual Serial Console (Host OS console)	X	X	X	X
Virtual Power control	X	X	X	X
Dedicated Management LAN	X	X	X	X
DHCP/DDNs for management LAN	X	X	X	X
Remote iLO Firmware Update	X	X	X	X
Secure Shell (SSH)	Advanced License required	X	X	X
LDAP Directory services integration	Advanced License required	Advanced License required	X	X

Overview

SSH-Exec scripting		X Requires firmware F.02.23 or T.03.10		X
SNMP alerting for power faults and fatal errors		X Requires firmware F.02.25 rackmount or T.03.14 blades		
Virtual Media – CD/DVD/ISO (read only)		Advanced License required	LOA card required per partition	VMedia performance three times faster than iLO 2
Virtual Media – USB Flash and Floppy		Advanced License required		Read-only Flash supported in EFI.
Integrated Remote Console (VGA)		Advanced License required	LOA card required per partition	Windows Server or Linux only
Power Regulation		X		X (ver1.00 – OS controlled power regulation mode only)
Power Meter (24 hour graph)		Instant measurement standard. Advanced License required for 24 hour graph.		X
Integration with Insight Control power management		Advanced License required		X
Direct System Firmware update				X
Integration with HP Systems Update Manager (HP SUM)				X
iLO system scalability with consolidated user interface				X
Blade Scalability, Field Upgrade				X Requires firmware F.1.30.30 or later

NOTE: This QuickSpecs document describes features based on these versions of Integrity iLO 2 management processor firmware:
F.02.24 for entry-class systems
T.03.15 for server blades
4.1 for rx7640, rx8640
8.7f for Superdome sx2000

iLO3 01.30.30 Adds support for rx2800 i2 server and support for field upgrade of BL8x0c i2 blades to larger BL8x0c i2 models

iLO 3 01.60.07 Adds support for rx2800 i4 servers and BL8x0c i4 blades.

Compatibility

Integrity Server Family supported platforms

Integrity iLO 3: BL860c i4, BL870c i4, BL890c i4, rx2800 i4, BL860c i2, BL870c i2, BL890c i2, rx2800 i2
Integrity iLO 2: BL860c, BL870c, rx2660, rx3600, rx6600, rx7640, rx8640, Superdome sx2000
Integrity iLO: rx1620 (optional), rx2620 (optional), rx4640, rp3410, rp3440 rp4440, BL60p

Integrated Remote Console (IRC)

For rx2660, rx3600, rx6600, IRC requires a Unified Core I/O card with VGA interface, p/n AD044A.
For BL860c and BL870c, IRC is fully supported by the VGA integrated on the blade
For rx7640, rx8640, Superdome sx2000, IRC requires a Lights-Out Advanced / KVM card (LOA), p/n AD307A.

IRC, Supported Server Operating Systems: Microsoft Windows Server 2003 Enterprise Edition for Itanium (full functionality), **EFI IRC, Supported Client Browsers**: Internet Explorer v6.0 with SP1 or higher, Maximum supported video resolution is 1024 x 768 (Up to 85 Hz, 32-bit color)

Virtual Media, Supported Clients: 32-bit Windows with Java Plug-in 1.5.0_08 or above, 32-bit Linux with Mozilla.

Virtual Media, Supported Server Operating Systems: HP-UX11i v2 and v3, Microsoft Windows Server 2003 and Enterprise Edition and Data Center for Itanium, Windows Server 2008 for Itanium, Linux (SUSE and Red Hat, BL860c, BL870c, rx2660, rx3600, rx6600 only), and the pre-boot environment of EFI. In EFI, Virtual Media supports the El Torito bootable CD format.

Virtual Media for OS install using virtual USB CD, Supported Server Operating Systems: HP-UX 11.v2 and v3, Microsoft Windows Server 2003 Enterprise Edition and Data Center for Itanium, Linux (Red Hat and SUSE)(Linux supports BL860c, BL870c, rx2660, rx3600, rx6600 only)

Virtual Media for run-time use of virtual USB CD, Supported Server Operating Systems: HP-UX 11iv2 and v3, Microsoft Windows Server 2003 Enterprise Edition and Data Center for Itanium, Linux (Red Hat and SUSE) (Linux supports BL860c, BL870c, rx2660, rx3600, rx6600 only)

Options

License Products

Integrity iLO Advanced Pack, AB500A
For rx1620, rx2620, rx2540, rp3410, rp3440, rp3410, BL60p (License included with purchase of BL60p)

Integrity iLO Advanced Pack	AB500A Software Option Kit – 1 Server
	AB500A #0D1 Software Option Kit – 1 Server, factory integration

Integrity iLO 2 Advanced Pack, AD301A
For rx2660, rx3600, rx6600,BL860c, BL870c servers
(License included with purchase of BL860c and BL870c)

Integrity iLO 2 Advanced Pack	AD301A Software Option Kit – 1 Server
	AD301A #0D1 Software Option Kit – 1 Server, factory integration

Licensing and Packaging

One 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 Agreement.

Integrity iLO and iLO 2 Advanced Pack Evaluation License

A FREE license key is available to temporarily activate Integrity iLO or iLO 2 Advanced features on Integrity entry-class systems for evaluation purposes. The evaluation key provides one temporary license to unlock all of the advanced remote management features, for up to 30 days. Contact your HP Sales representative for a free evaluation key.

Warranty

HP will replace defective delivery media replacement for a period of one year (12 months) following the date of purchase.
Startup technical software support – Available for no additional charge by calling Support up to 90 days from the date of purchase. Phone support assisting customers with installation, set-up and questions pertaining to the canned scripts and respective usages are supported. Worldwide numbers for Support are available at: http://welcome.hp.com/country/us/en/wwcontact.html

Complete warranty can be found at: http://www1.itrc.hp.com/service/home/home.do

Option Cards

Integrity Lights-Out Advanced / KVM card
For rx7640, rx8640, and Superdome sx2000 servers

LOA card	AD307A
LOA card factory integration	AD307A#0D1

One card is required for each OS hard partition (nPar) where the Lights-Out Advanced features for every server on which the product is installed and used. Licenses are non-transferable. Full details are contained in the End User License Agreement.

Options

Documentation

Search on the following:

- "HP Integrity iLO Operations Guide "
- "HP Integrity and HP 9000 iLO MP Operations Guide"

For assistance with configuring iLO IRC for use with HP-UX, refer to:

- "HP-UX Graphics Administration Guide"

To configure HP-UX USB support for use with iLO, refer to:

- "Update to USB Driver Support on HP-UX"

Download the new white paper: Scripting techniques: Integrated Lights-Out (iLO & iLO 2) for Integrity and HP 9000 entry-level servers (PDF, 221 KB)

Locating Firmware Updates

1. Go to the HP Support web page
2. Click "download drivers and software (and firmware)
3. Enter your product, for example rx3600
4. Select an OS and "Firmware – System", or select "Cross operating system (BIOS, Firmware, Diagnostics, etc.)"
5. Look for iLO Firmware (entry-class and blade products) or server firmware (cell-based server products)

Technical Specifications

MP Upgradeability	Firmware remotely upgradeable via MP LAN, offline update via EFI, and OS-initiated firmware updates for all Integrity support OS.
MP Interfaces	One dedicated Ethernet network connection (10/100 Mb/s), one RS-232 serial connection
Client System Support	For Integrated Remote Console: Windows For telnet, SSH, and web interface: HP-UX, Windows, Linux, and OpenVMS
Client Browser Support	For BL8x0c i2 and i4, and rx2800 i2 and i4: Microsoft Internet Explorer 7.0 or 8.0, Firefox version 11 For rx2660, rx3600, rx6600, BL860c, and BL870c: Microsoft Internet Explorer 6.0 SP1, Mozilla 1.7.12.01.00 (HP-UX), Mozilla 1.78 (Linux SuSe), Firefox 1.0.7-4.3.ia64 (Linux Redhat ES.RHEL 4) For rx7640, rx8640, and Superdome sx2000: Microsoft Internet Explorer 6.0 SP1
Text Interface Support	Telnet, Secure Shell and serial port access
Security	Secure Socket Layer Secure Shell (SSH) version 2 (Password and certificate), SSL, and integration with enterprise directory services
Directory Support Services	Active Directory V1.0 (iLO and iLO 2: Windows 2000, 2003. iLO 3: Windows 2003, 2008) Novell eDirectory V8.6.2, V8.7 (Novell NetWare 5.X, 6.X, Red Hat 7.1, Windows 2000, Windows Server 2003)
Integrated Remote Console (graphics console for Virtual Keyboard, Video, Mouse)	With optional core I/O video or LOA card, the Integrated Remote Console provides support for remote graphical console for Windows Server systems via Windows Clients and Internet Explorer web browser.
Virtual Media	Connects a CD/DVD-ROM drive or CD-ROM disk image files on client system to the remote server so they appear local to the server during system boot or while the operating system is available. Supports HP-UX, Windows, and Linux server operating environments via Windows and Linux clients