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Contents

Remote Insight Lights-Out Edition II

Service Overview

Abstract: This white paper describes the Compaq Remote Insight Lights-Out Edition II (RILOE II) option card for Compaq ProLiant™ servers. Information provided includes features, drivers, supported operating systems, installation, startup, initial configuration, optimization, security, and troubleshooting tips; as well as internal links to a video and a tutorial lab in the Remote Access Lab (RAL) covering navigation, configuration, the Remote Console, Virtual Devices, and a variety of administrative procedures.

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Product Description

The Compaq Remote Insight Lights-Out Edition II (RILOE II) is a board that fits into the PCI slot of Compaq ProLiant servers, to provide remote server manageability. A built-in processor, memory, Network Interface Card (NIC), ROM, and standard external power supply make RILOE II independent of the host server and its operating system. It can be accessed from a network client using a standard Web browser[1] and it provides remote keyboard, mouse, and video access to the host server.

This product targets distributed remote sites, dense data centers, authorized service providers, and internet service providers, or anyone else requiring remote site administration.

New Features

New features include a:

- Faster processor for increased performance.
- New user interface for easier browsing.
- Virtual CD for increased server manageability.
- USB controller for Virtual Media, 32MB SDRAM, ATI Rage XL chipset, and a 30-pin connector.
- Pocket PC access.
- New operating system support for Microsoft.NET and SuSE.
- Browser access across the network to Microsoft.NET Server Emergency Management Services (EMS) console (no serial connection required).

Based on a new architecture around the IBM Power PC 200MHz processor, RILOE II focuses on reducing the latency of remote console operations. Mouse movements, mouse clicks, and typing responsiveness are all improved over the previous Lights-Out products.

USB-based Virtual Media requires the 30-pin internal ribbon cable connection to the server system board so RILOE II can emulate the USB device. When the server system board only supports the 16-pin connection, then USB devices cannot be emulated by RILOE II.

[1] RILOE II is browser accessible via Microsoft Internet Explorer 6.0 or 5.5 (with Service Pack 2), Netscape Navigator 6.2.2.

Lights-Out Products Comparison

Table 1: Lights-Out Features Comparison Table

iLO	RILOE II	RILOE[2]
Hardware-based, circuitry embedded on host system board OS independent	Hardware-based, board fitting into PCI slot OS independent	Hardware-based, board fitting into PCI slot OS independent
• Virtual Media USB applet option with Virtual Floppy	• Virtual Media USB applet with Virtual CD and Virtual Floppy • Legacy Virtual Floppy	• Legacy Virtual Floppy only
• Integrated so no cables needed	• 30-pin internal connector supports Virtual CD and Virtual Floppy via USB • 16-pin connector supports legacy Virtual Floppy	• 16-pin legacy connector only supports legacy Virtual Floppy (No Virtual CD nor Floppy via USB emulation)
• Virtual Indicators (Unit ID LED) • Virtual Power Button o Momentary Press (graceful shutdown) o Press and Hold (force power off) o Server Reboot	• No Virtual Unit ID • Server Reboot • Force Server Power Off/On • Graceful Server Shutdown and Power Off	• No Virtual Unit ID • Server Power Cycle (reset) • Virtual Power Button
• Graphical Remote Console option (requires iLO Advanced Pack)	• Graphical Remote Console	• Graphical Remote Console
• SSL encryption for all iLO web pages • Key strokes in remote console obscured • 128-bit encryption only	• SSL encryption for all RILOE II web pages • 128-bit encryption for remote console • 40-bit or 128 bit encryption (configurable in same firmware)	• SSL encryption for login and network traffic • Key strokes in remote console obscured • 40-bit or 128 bit encryption (using separate firmware)
• Lock F8/RBSU access • Move HTTP/HTTPS/Virtual Media and Remote Console ports • Increased granularity of user privileges • Digitally signed firmware images	• Security enhancements to generate Certificate Request from a Certificate Authority • Import trusted certificates • Lock F8/RBSU access • Hide remote console access • Move HTTP/HTTPS/Remote Console ports	• Security enhancements to lock F8/RBSU access • Hide remote console access • Move HTTP/HTTPS/Remote Console ports
• New tab-based UI	• New tab-based UI	• New tab-based UI via future firmware upgrade
• Future Pocket PC support	• Pocket PC access support	• Pocket PC access as technology preview only. Available via future firmware upgrade.
• Customizable accounts, 12 users	• Customizable accounts, 25 users	• Customizable accounts, 12 users

[2] A firmware upgrade planned for early Q4 will provide support for the new UI, SSL security for remote console, directory support, and Pocket PC access. USB-based Virtual Media and faster performance are hardware-based enhancements and thus can not be supported on the RILOE card

iLO	RILOE II	RILOE[2]
• Access Compaq Insight Management agents on the host via iLO web interface • SNMP pass thru with agents supports a separate management network	• Access Compaq Insight Management agents on the host via RILOE II web interface • SNMP pass thru with agents supports a separate management network	• Access Compaq Insight Management agents on the host via RILOE web interface • SNMP pass thru with agents supports a separate management network
• Compaq Insight Manager 7 integration • Compaq Insight Manager 7 associates iLO with its server	• Compaq Insight Manager 7 integration • Compaq Insight Manager 7 associates RILOE II with its server • Option to configure agents to not report missing AC Adapter	• Compaq Insight Manager 7 integration
• 10/100 MB/s NIC • DNS/DHCP/WINS	• 10/100 MB/s NIC • DNS/DHCP/WINS	• 10/100 MB/s NIC • DNS/DHCP/WINS
• iLO Event Log • Server IML log stored natively in iLO memory	• RILOE II Event Log • Server IML log copied/synchronized in RILOE II memory	• RILOE Event Log • Server IML log copied/synchronized in RILOE memory
• Previous and Current Reset Sequence and Failure Sequence replay available in a future firmware release	• Previous and Current Reset Sequence and Failure Sequence replay	• Previous and Current Reset Sequence and Failure Sequence replay
• Windows .net EMS console across network available in a future firmware release (1.10)	• Windows .net EMS console browsing across network	• Not available
• XML scripting available in a future firmware release (1.10)	• XML scripting supported across network to administer RILOE II singly or in groups with CIM7	• XML scripting supported across network to administer RILOE singly or in groups with CIM7
User privileges: • Administer User Accounts • Remote Console Access • Virtual Power and Reset • Virtual Media • View Logs • Clear Logs • Configure iLO Settings • Update iLO Firmware • Diagnose System	User privileges: • Virtual media access • Remote console access • Remote server reset • Power button access • Login	User privileges: • Remote console access • Remote server reset • Power button access • Login
• Upgrade iLO firmware across the network	• Upgrade RILOE II firmware across the network	• Upgrade RILOE firmware across the network

iLO	RILOE II	RILOE[2]
• Headless server support available in a future firmware release (1.10)	• Headless server support	• Headless server support
• No integrated Survey support, but can review Survey's report using remote console	• Survey data is integrated as a separate page served by RILOE II displayed by the client browser (must be loaded on host) • Survey keeps an HTML copy of server data updated on RILOE II rather than a copy of its "idi".	• Survey data displays in a separate browser window opened automatically by Survey on the client (must be loaded on host and on client) • Survey copies an updated "idi" file to RILOE.[3]

[3] Survey must be loaded on the server to capture the server data and save a copy with RILOE. And, Survey must be loaded on the client so the downloaded idi file can be translated to human readable form.

Features

RILOE II offers the following features:

- **Graphical Remote Console**
  This feature turns any standard browser into a virtual desktop, giving the user full control over the host server's display, keyboard, and mouse. You can access the remote file system and network drives, change hardware and software settings as well as install applications and drivers on the host server, change host server screen resolution, and gracefully shut down the host system.

  You can also observe POST messages as the host server restarts and initiate ROM-based setup routines to configure the host server's hardware. When installing operating systems remotely, the graphical Remote Console lets you view and control the host server screen seamlessly throughout the installation process.

Note: If your server has a Unit Identification (UID) LED and it has the Remote Insight Internal 30-pin Cable installed, the LED will flash when a Remote Console session is initiated and during firmware upgrades so the user will know not to remove power until the flash finishes.

- **Virtual Devices**
  This is a tab in the RILOE II browser that houses the Virtual Floppy drive, Virtual Media applet, and the Virtual Power Button. With these first two features, an administrator can easily direct a server to use:
  - A 1.44-MB floppy diskette on a client machine
  - A CD on the client machine, or
  - An image of the floppy or CD from anywhere on the network.

  Used in combination with the Virtual Power Button, these two features enable you to:
  - Run Compaq User Diagnostics on remote host servers.
  - Apply Compaq ROMPaq™ upgrades to remote servers.
  - Deploy an operating system on remote servers from a CD or network drives.
  - Perform disaster recovery of failed operating systems.
- **Virtual Power Buttons**
  These enable the user to remotely operate the host server's power button. Choices include power cycling the server (**Reboot Server)**, gracefully turning it off and on (**Shutdown Server and Power Off** – this button toggles), and a button used to perform an ungraceful shutdown when the server freezes or hangs (**Force Server Power Off)** [4].
- **Remote Firmware Update**
  The RILOE II firmware can be updated through the RILOE II browser interface, Remote Insight Board Command Language (RIBCL).

[4] The virtual power button feature works on the ProLiant CL, DL, ML, 8000, 8500, and all Compaq TaskSmart™ servers. The power cycle option is available on all ProLiant servers that RILOE II supports.

- **Compaq Insight Management Suite Integration**
  Integration with Compaq Insight Manager 7 provides:
  - Support for SNMP management and trap delivery to a Compaq Insight Manager 7 console. Using a management console you can access SNMP alerts and unauthorized access alerts.
  - Support in Compaq Insight Manager 7 for management processors as device types. In Compaq Insight Manager 7, all RILOE II boards installed in servers on the network are discovered as management processors and are associated with the servers in which they are installed.
  - Access to all RILOE II boards from one point in Compaq Insight Manager 7 by logically grouping the boards together and displaying them on one page.
  - The query results of a Compaq Insight Manager 7 device query can use Insight Manger 7's task launch to initiate group configuration for a set of RILOE II boards. The group configuration of RILOE IIs can be executed on demand or scheduled to run automatically at a specified date and time.
- **Dedicated LAN Network Connectivity**
  An auto-selecting 10/100-Mbps Ethernet connection on the RILOE II board provides a dedicated network connection to RILOE II, giving real-time in-band and out-of-band[5] SNMP notification of server problems without separate telephone connections or modem sharing devices.
- **Dial-up Support**
  RILOE II supports dial-up access when using a modem router or external Remote Access Service (RAS) connection to logon to the network.
- **Reset and Failure Sequence Replay**
  Video text sequences stored on RILOE II allow an administrator to replay server startup and shutdown sequences. You can view the last two server resets and the last server failure. These sequences include all system and operating system error messages and fatal error screens that are generated at the server when the graphics controller is in text mode such as server POST messages and operating system boot messages.
- **User Administration and Security**
  RILOE II supports:
  - **25 customizable user accounts**
    Users with supervisor status can create, modify, or delete other users. Users without supervisor status can be denied access to RILOE II login, the host server's Remote Console, the remote reboot features (Virtual Power buttons), and Virtual Media.
  - Secure password encryption
  - Event logging and alert for failed log in attempts
  - Secure Sockets Layer (SSL) encryption (up to 128-bits) for http/https port
  - Progressive delays for failed login attempts

[5] Out-of-band — i.e. it can notify users of events without requiring that the server be running.

- User actions logged in the Remote Insight Event Log with user name and IP address of client
- Optional lockout capability for the remote console port. Choices include: always enabled and always disabled, enabled only when an authenticated user with remote console privilege initiates a remote console session.
- Optional inbound IP address or DNS name verification/lockout can be enforced for each user

- **External Power**
  The RILOE II kit provides the AC Power adapter, an external power connector that allows independent power to RILOE II for continuous access to the host, even when there is a host server power failure, power supply failure, fan failure, over heating, or the server has simply been turned off.
- **Auxiliary Power**
  On ProLiant servers with the Remote Insight 16-pin or 30-pin connector, RILOE II can get its power from the auxiliary power plane of the server by using the internal 16 or 30 pin cable. If the server provides Redundant Power Supplies (RPS), RILOE II will use redundant power and will continue operation when there is a power supply failure. The external power adapter is not required when using the internal 16-pin or 30-pin cable.
- **Auto Configuration of IP Address via DNS/DHCP**[6]
  The RILOE II board comes with a default name and DHCP client that leases an IP address from a network DHCP server. For systems that do not use DNS/DHCP, RILOE II allows static IP configuration.
- **Diagnostic Tools**
  To assist with troubleshooting host server problems, even when the host server is not operational, the RILOE II web interface displays the following diagnostic tools:
  - **Survey**
    This is the Compaq survey configuration file, which displays in the browser, but currently is not a downloadable file like it was with RILOE.[7]
  - Integrated Management Log
- **ROM-Based Setup Utility (RBSU)**
  If network troubleshooting prevents configuring RILOE II via the web browser interface, then RILOE II can be configured by locally pressing the **F8** key during POST on the host server to access the RBSU.
- **Pocket PC Access**
  RILOE II provides support for wireless and dial-up access from the Compaq iPAQ™ Pocket PC handheld devices. RILOE II provides a special interface when connecting from the iPAQ Pocket PC. Refer to Chapter 5 in the *Remote Insight Lights-Out Edition II User Guide* for Pocket PC access and navigation.

[6] **DNS/DHCP**
Domain Name Service/Dynamic Host Configuration Protocol
[7] Survey is supported on Windows NT, Windows 2000, Windows XP, and NetWare.

- **Group Administration**
  Group administration for RILOE II can be executed using either batch processing or Compaq Insight Manager 7's device query mechanism. Both use the Compaq Lights-Out Configuration Utility and Remote Insight Board Command Language (RIBCL)[8] for writing group administration procedural scripts that enable an administrator to configure user accounts, as well as network and global settings for a group of cards, rather than one at a time. In addition, RILOE II allows group actions on one or many servers, including power on/off, power cycle, ROM upgrades, and even remote deployment of servers.

  Refer to the *Remote Insight Lights-Out Edition II User Guide*, Chapter 6 for a sample batch file and to Appendix C for RIBCL tags, error messages, and sample scripts.

- **EMS Console**
  Microsoft's Emergency Management Service (EMS) console provides a text-based screen to access the host server. The EMS console choice will be available on future Compaq ProLiant servers using Windows .NET Server.

  Windows EMS (Emergency Management Services) is a feature that is new to Windows .NET. It provides a console to the serial port that allows a server that is headless to be managed. RILOE II redirects this console to the remote client via the Ethernet. This feature only works on Compaq servers with the latest ROMS. If a valid ROM is not detected, the EMS choice will be grayed out in the browser interface.

Important! To have access to all RILOE II features (excluding EMS console), you must use the 30-pin internal cable, which means using a host server that uses the 30-pin connector. In addition, the host server BIOS must support USB devices.

[8] RIBCL is a dialect of Extensible Markup Language (XML). Information presented in the XML file is not designed to display in a web browser, but is designed to enable secure communication between RILOE II and the host application.

Supported Hardware

RILOE II can be used in Compaq ProLiant servers. A detailed list of servers with the slots the board can fit in, and possible cable configurations is shown below:

Table 2: Server PCI Slot and Cable Table

Servers	PCI Slot	Remote Insight Internal Cable	AC Adapter	Keyboard Mouse Adapter Cable	Disable Onboard Video Using the Dip Switch
ProLiant CL380 1 GHz	2, 3, 4	A	Y	Y	
ProLiant DL320	1	B	N	N	
ProLiant DL360	1	C	N	N	
ProLiant DL360 G2	1	G	N	N	
ProLiant DL380	1	A	Y	Y	
ProLiant DL380 G2	1	G	N	N	
ProLiant DL580	6	A	Y	Y	
ProLiant DL760	7, 8, 9	H	Y	N	
ProLiant ML330 866 MHz	4, 5	B	Y	N	Y
ProLiant ML330 1 GHz	5	G	N	N	Y
ProLiant ML330e	4, 5	B	Y	N	Y
ProLiant ML350 733 MHz	4, 5, 6		Y	Y	Y
ProLiant ML350 1 GHz	6, 7	B	N	N	Y
ProLiant ML350 1.2 GHz	6	G	N	N	Y
ProLiant ML370	1, 2	A	Y	Y	
ProLiant ML370 G2	3, 4, 5, 6	G	N	N	
ProLiant ML530	1	A	Y	Y	
ProLiant ML570	6	A	Y	Y	
ProLiant ML750	1, 2, 3, 4	E	Y	Y	
ProLiant 7000 Xeon 500 MHz	3, 4, 5, 6		Y	Y	
ProLiant 8000 Xeon	1, 2, 3, 4	E	Y	Y	
ProLiant 8000 Xeon (shipped with 550 MHz processors with configuration codes CL61, CL64, BX71, or BX72)	7, 8, 9	D	Y	Y	
ProLiant 8000 Xeon (shipped with 700 MHz & higher processors))	7, 8, 9	A	Y	Y	

Table Legend

A = P/N 160011-001 (4-pin Virtual Power button cable) ships with RILOE II kit.
B = P/N 177634-001 (16-pin cable) ships with RILOE II kit.
C = P/N 177634-002 (16-pin cable) ships with ProLiant DL360 servers.
D = P/N 195254-B21 (split 4-pin cable) available as a spare kit P/N 195724-001.
E = P/N 162816-001 (split 4-pin cable) available as a spare kit P/N 166655-001.
F = P/N 233763-001 (split 16- to 30-pin cable) ships with ProLiant DL380 G2 server, for use with previous RILOE board as legacy support.
G = P/N 241793-010 (30-pin cable) ships with RILOE II kit.
H = P/N 216373-001 (16 to 13-pin cable) ships with the ProLiant DL760.

Important! *All* servers support the keyboard/mouse external cable as well as the AC adapter. However, the default configuration always relies on having the internal cable connected so RILOE II can provide the virtual power buttons, **Virtual Floppy**, and **Virtual Media** USB applet. Whenever the 16- or 30-pin internal cables are used, the external cables should ***not*** be used. Frequently, customers try to use the external mouse/keyboard cables with the internal cables, causing conflicts with the mouse and keyboard functions.

Note: The above table is more recent than Table 2-1 in the user's guide and includes corrections.

Supported Operating Systems

You can use RILOE II with the following operating systems:

- Microsoft
  - Windows NT 4.0 Server
  - Windows 2000 Server
  - Windows 2000 Advanced Server
  - Windows 2000 Datacenter (Compaq certified versions only)
  - Windows.NET Server
  - Windows XP Client
- Linux
  - Red Hat 7.x
  - Red Hat 64
  - SuSE 7.0
- Novell
  - NetWare 5.x
  - NetWare 6.x

RILOE II Software

Most of RILOE II's functionality is available without any operating system-based software or drivers. Four component packages, however, need to be loaded on the host server to enable full RILOE II functionality:

- **Compaq Remote Insight Lights-Out Edition II Driver**
  This is the interface that allows the software application to communicate to the hardware.
- **Compaq Management Agents**
  This allows system software and SNMP Insight Agents to communicate with RILOE II.
- **Survey**
  This is an online information-gathering agent that runs on Compaq ProLiant servers. It gathers critical hardware and software information from various sources and saves it to a text file. This utility facilitates problem resolution without taking the server off-line, thereby maximizing server availability.
- **Compaq RILOE II Advanced Server Management Controller Driver**
  Also known as either the Compaq Health Driver or the Compaq Systems Management Driver, this health driver provides system management support, including monitoring server components, event logging, as well as support for the Compaq Management Agents and Survey.

The *Appendix* provides instructions for installing RILOE II drivers for Microsoft (p. 40), Novell (p. 41), and Linux (p. 42) operating systems. The Smart Start for Servers CD contains the latest versions of these drivers. The latest drivers can also be found at:

http://www.compaq.com/support/files

Manageability & Utilities

- Integration with Compaq Insight Manager™ 7
- Compaq Health Drivers and Management Agents

Kit Contents

The RILOE II kit contains the items shown below:

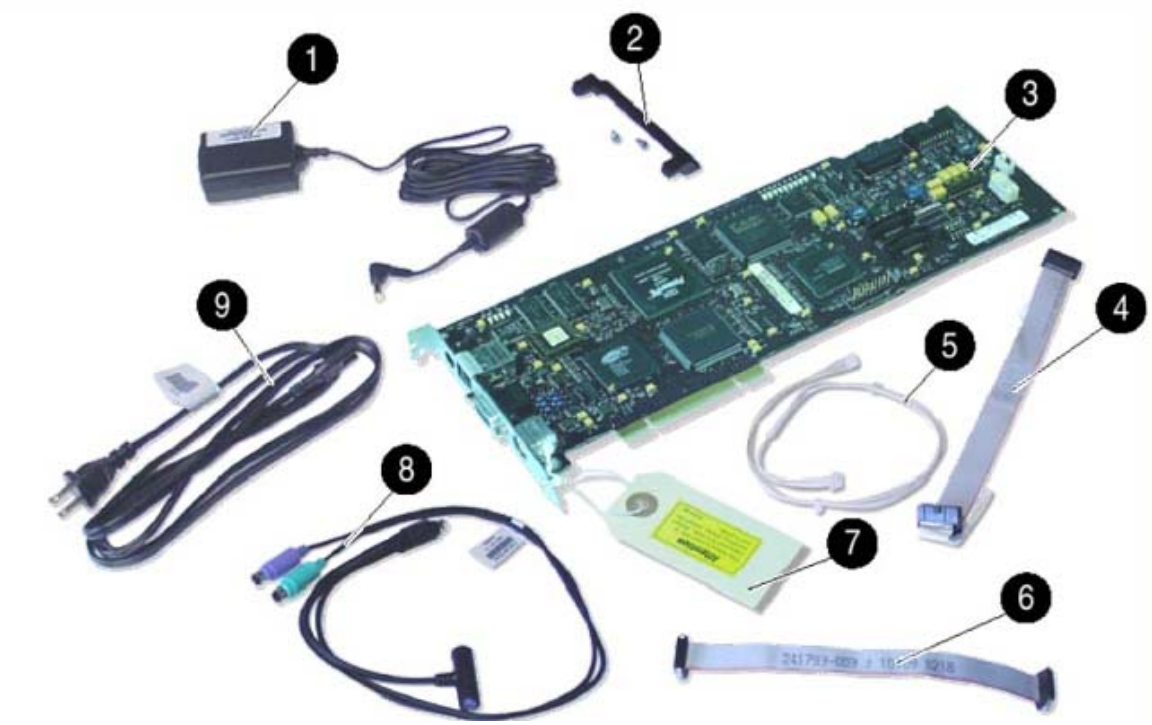


Table 3: Contents of the RILOE II Kit

Item	Description	Item	Description
1	AC power adapter	6	Remote Insight Internal Cable (30-pin) (G*)
2	PCI extender bracket	7	Network settings tag
3	RILOE II	8	Keyboard/mouse adapter cable
4	Remote Insight Internal Cable (16-pin) (B*)	9	Power cord
5	Virtual power button cable (4-pin) (A*)		System documentation and support software CDs (not shown)

* This letter is used to indicate which cable can be used with which server in Table 2 on page 11.

16 vs. 30-pin Connector

The 30-pin connector is required on the server to enable the USB-based Virtual Media functionality. The 16-pin connector is retained to allow support on legacy servers that have the embedded 16-pin connector. Newer servers will include the 30-pin connector.

30-Pin Cable Importance

With the 30-pin cable (241793-010) that ships in the kit you get:

- AUX power[9]
- Virtual Power button functionality
- Remote keyboard and mouse functionality
- USB support giving the Virtual Media applet functionality
- UID functionality on the server (not the browser), blinking when someone is in the Remote Console.

Assuming your host server BIOS supports USB devices, the 30- pin cable gives access to these RILOE II features. However, keep in mind the EMS console can only run with Windows.NET Server.

Virtual Media USB Support

Virtual Media devices are supported on servers that use the 30-pin remote insight internal cable. Future servers and server ROMs that support bootable USB devices can use RILOE II's **Virtual Media** USB floppy and CDROM as bootable devices.

After the operating system is booted, RILOE II's **Virtual Media** USB floppy and CDROM are available for those operating systems that support USB devices. Operating systems that have been tested with USB floppy and USB CD are:

- Microsoft:
  - Windows 2000 Server
  - Windows 2000 Advanced Server
  - Windows 2000 Datacenter (Compaq certified versions only)
  - Windows .NET Server Beta 3
- Linux Red Hat 7.2

[9] **AUX Power**
This is auxiliary power supplied by the server when it's still hooked up to AC power. This is switched off except when the AC power fails, the power supply fails, the fan fails, or it's triggered by over heating.

Option Part Numbers

Table 4: RILOE II Kit Option Part Numbers

Option Part Name	Locations	Option Part Number
RIB/Lights-Out II US	NA & LA	227251-001
RIB/Lights-Out II EURO	EMEA	227251-021
RIB/Lights-Out II A/P	All Others	227251-371

Spare Part Numbers

Table 5: Spare Part Numbers

Spare Part Name	Description	Spare Part Number
SPS-BD, PCI, REMOTE INSIGHT II	RILOE II Kit	232386-001
SPS-CA, VPB, KYBD/MOUSE	RILOE II Cables*	166655-001

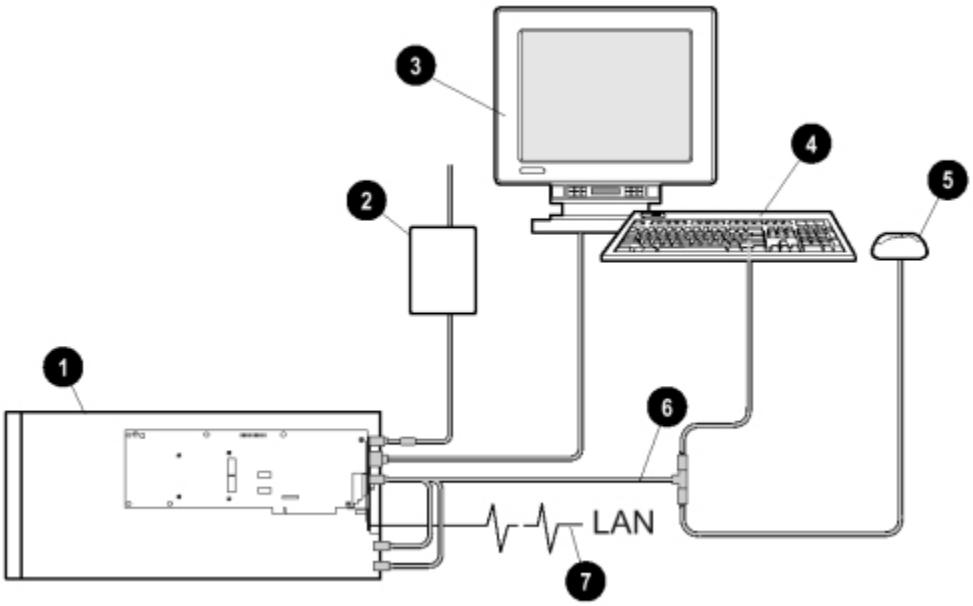
Connecting Cables – Two Methods

There are two methods of connecting the keyboard/mouse. One uses the keyboard/mouse adapter cable. The other uses either of the two internal remote insight cables instead of the keyboard/mouse adapter cable.

Note: Some servers will let you use either configuration. *All* servers support the keyboard/mouse external cable as well as the AC adapter. This can be considered the "default" configuration. However, if a server supports either the 16 or 30-pin internal cable, then the external cables are no longer needed.

Keyboard/Mouse Cable Configuration

The figure below shows how RILOE II connects to the host server, peripheral devices, power source, and LAN for servers that use the keyboard/mouse adapter cable.



Note: The order of the above connections is inaccurate in this graphic. Refer to page 23 for the correct order.

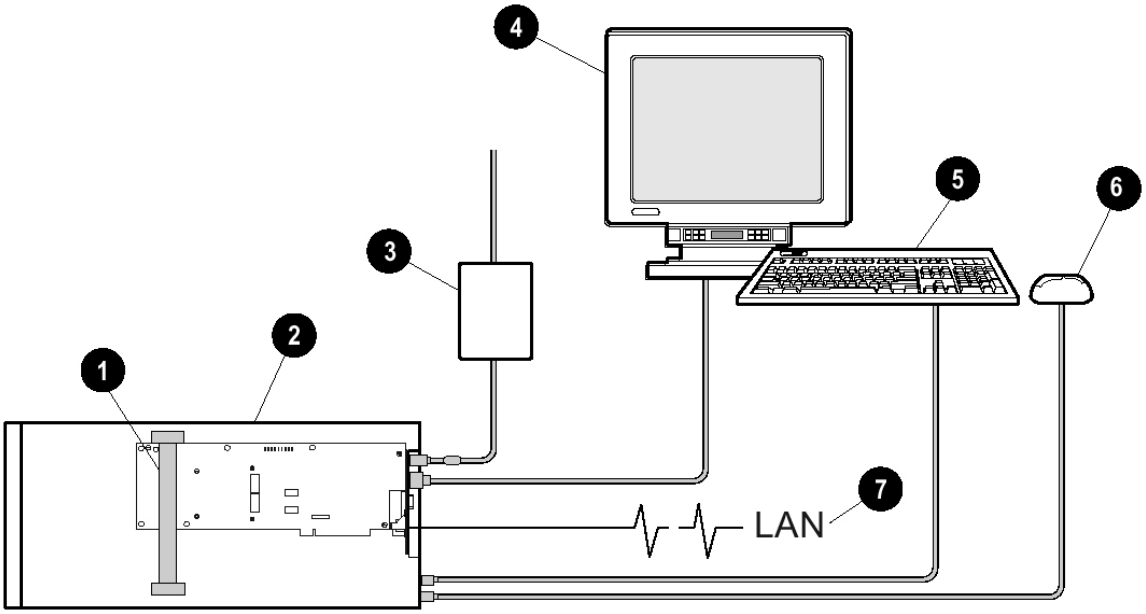
Table 6: System Configuration Using Keyboard/Mouse Adapter Cable

Item	Description
1	RILOE II installed in a server
2	AC adapter connected to RILOE II
3	Monitor connected to RILOE II
4	Keyboard connected to RILOE II keyboard/mouse adapter cable
5	Mouse connected to RILOE II keyboard/mouse adapter cable
6	Keyboard/mouse adapter cable
7	LAN connected to RILOE II

Remote Insight Cable Configuration

The figure below shows how RILOE II connects to the host server, peripheral devices, power source, and LAN for servers that use any (i.e., as opposed to just the two shipped in the kit) of the internal remote insight cables.

Important! Remember, however, for the 30-pin cable (241793-010) that ships in the kit, you will not need to use the AC adapter cable.



Note: The order of the above connections is inaccurate in this graphic. Refer to page 23 for the correct order.

Table 7: System Configuration Using Remote Insight Cable

Item	Description
1	Remote Insight cable
2	RILOE II installed in a server
3	AC adapter connected to RILOE II
4	Monitor connected to RILOE II
5	Keyboard connected to RILOE II
6	Mouse connected to RILOE II
7	LAN connected to RILOE II

Whether to use the AC Power Adapter

RILOE II can operate without the external power adapter by relying on the server's AUX power when the server is turned off. Users who deploy RILOE II without the AC power adapter save one power cord connection. However, the AC adapter provides the extra feature of redundant power for the board.

With the power adapter, RILOE II will deliver an alert to Compaq Insight Manager 7 that distinguishes whether a power failure occurred, or whether the server shutdown due to over heating when the computer room got too hot, etc. Without the adapter, RILOE II can't deliver the alert when the server's AUX power stops and Compaq Insight Manager 7 can't distinguish these failures from a simple LAN interruption.

In addition, Compaq Insight Manager 7 will report the component's missing power adapter as a degraded condition causing the server to also indicate its aggregated status as degraded. To clear the degraded status, RILOE II provides a global setting to "**Bypass reporting of external power cable**".

Compaq ProLiant™ ML330e, ProLiant ML350 G2, and ProLiant DL760 servers require the AC power adapter. For detailed information, refer to the documentation provided with the server.

Installing RILOE II

Upgrading from RILOE

If you are replacing a Remote Insight Lights-Out Edition (RILOE) with a RILOE II in a server using a Windows operating system, you need to upgrade to the Advanced Server Management Controller Driver[10] before installing the RILOE II in the server. This driver can be found on the Compaq SmartStart 5.40 CD and at:

http://www.compaq.com/support/files/

Determining an Available Slot

RILOE II is server slot specific. Before installing RILOE II, refer to Table 2 on page 11 to determine a compatible PCI slot, the cables to use, and the video switch settings for your server. If your server is not listed in this table, or after May 7, 2002, refer to an updated version of the table at:

http://www.compaq.com/manage/remote-lightsout-server-slot-matrix.html

Installation for EISA/PCI Slots

If you are installing RILOE II in a combination EISA/PCI slot, attach the PCI extender bracket to the board before installing the board in the server. This bracket is not needed when installing the board in PCI-only slots. Refer to the *Remote Insight Lights-Out Edition II User Guide* for detailed installation instructions.

[10] The Advanced Server Management Controller Driver is also known as the Compaq Health Driver, or the Compaq Systems Management Driver.

Use Latest ROM

In addition, your server should have the latest system ROM revision that is available for your server. Refer to your server's documentation for instructions and download the latest ROMPaq for your server at:

http://www.compaq.com/support/files.

Installation Procedure

Important! Ensure you first have performed the preliminary actions cited above, as needed.

1. Loosen the retaining screw and remove the slot cover. If RILOE II is being installed into a hot-plug slot, release the slot lever and then remove the slot cover.
2. Press the RILOE II board firmly into the slot.
3. Secure the board in place with the retaining screw, or close the hot-plug slot lever, as appropriate.
4. Some servers may require the onboard video to be disabled. (See Table 2 on page 11)

Installation in a Server with Integrated Lights-Out (iLO)

Important! You must use at least version 1.05 of the Integrated Lights-Out (iLO) firmware.

A customer may decide to install RILOE II in a server with Integrated Lights-Out (iLO), to get the faster Remote Console performance. You can either use the iLO web page or the iLO RBSU locally to load version 1.05 of the iLO firmware and disable iLO functionality, before you can install the RILOE II card.

Note: A future release of the iLO firmware will automatically detect the RILOE II board.

Using the Browser to Load the Image and Disable iLO

Follow these steps to use a .BIN image in the web browser to update the DL360 G2 server so it will recognize and operate with RILOE II:

1. Download SP19759 from www.compaq.com or http://www.compaq.com.
2. Expand SP19759 and save the **.BIN** file to a location on your hard drive.
3. Login to the iLO using a userid/password with the "Upgrade iLO Firmware" privilege.
4. Update the iLO firmware using the "Upgrade iLO Firmware" web page on the **Administration** tab.
5. iLO will automatically reset when the iLO firmware upgrade is complete.
6. Reboot the server and use the server **F8** RBSU to disable the iLO feature.
7. Continue the server boot so the operating system is loaded. Uninstall the Compaq Integrated Lights-Out Management Interface driver.

8. Power down the server and install RILOE II, following the instructions included with the RILOE II kit.
9. Boot the server a final time and install the latest Compaq Support Paq to install the RILOE II drivers and agents to support the server's operating system.

Note: Steps 1-5 are not needed if your server is already running iLO firmware version 1.05 or greater.

Using a Floppy Diskette Image Locally on the Host Server

Follow these steps to use a floppy diskette image to update the DL360 G2 server so it will recognize and operate with RILOE II:

1. Download SP19758 from www.compaq.com or http://www.compaq.com.
2. Expand SP19758 to copy the ROMPaq files to a blank floppy diskette.
3. Boot the server using the ROMPaq floppy diskette and reflash the Integrated Lights Out (iLO) to the v1.05 firmware release.
4. Boot the server a second time and use the server's **F8** RBSU to disable the iLO feature.
5. Continue the server boot so the operating system is loaded. Uninstall the Compaq Integrated Lights-Out Management Interface driver.
6. Power down the server and install RILOE II, following the instructions included with the RILOE II kit.
7. Boot the server a final time and install the latest Compaq Support Paq to install the RILOE II drivers and agents that support the server's operating system.

Note: Steps 1-3 are not needed if your server is already running iLO firmware version 1.05 or greater.

Connecting External Cables

After you have installed the RILOE II board in your server, you must make external cable connections. The connectors on the RILOE II are shown below.

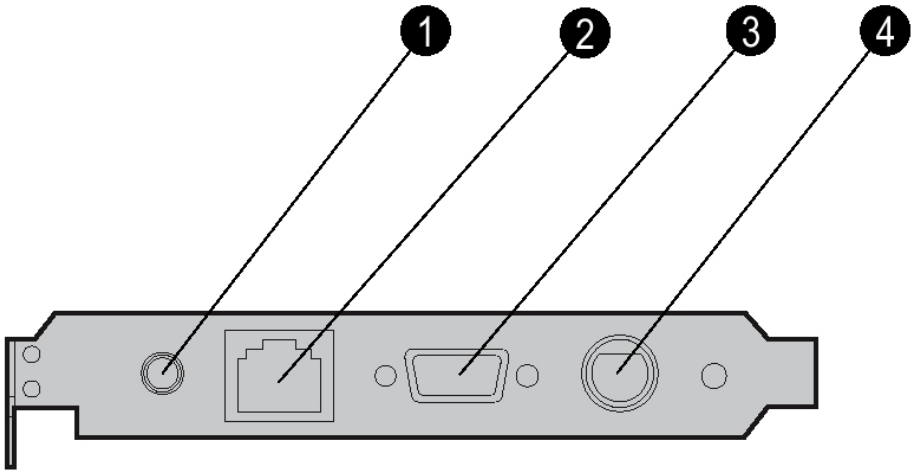


Table 8: RILOE II Connectors

Item	Description
1	AC adapter connector
2	LAN connector
3	Video connector
4	Keyboard/mouse connector

Refer to Chapter 2 in the *Remote Insight Lights-Out Edition II User Guide* for cable connection illustrations and instructions, based on your specific server's requirements and your chosen configuration.

Important! To have remote keyboard and mouse capabilities, you must use either the keyboard/mouse adapter cable included in the RILOE II kit, or the 16 or 30-pin remote insight internal cable included in the kit (177634-001 or 241793-010, respectively).

Important! For servers that do not use the 16 or 30-pin insight internal cable, you should use the AC power adapter cable and connect it to a separate power circuit than the server.

Important! The power cord to the host server should be the last cable that you connect.

Monitor Cable Connection

RILOE II contains its own VGA controller to ensure that a compatible controller is available for remote console operation. To use a monitor in a server that has RILOE II installed, connect the monitor to the RILOE II video connector.

Important! Some servers require the onboard video to be disabled for RILOE II to work properly. Refer to either Table 2 on page 11, or the online version at http://ww.compaq.com/lights-out, and to documentation provided with the server.

LAN LEDs

The green indicator close to the video connector indicates a link, if it is on then a link is established.

The green LED indicator close to the A/C adapter connector indicates the speed of the connection. If this indicator is on, then the connection is 100 Mb. If it is off, then the connection is 10 Mb.

Three Configuration Options

RILOE II offers three configuration options:

- Browser-Based Setup
- ROM Based Setup Utility (RBSU)(**F8**)
- SmartStart Setup

Note: Some Compaq servers contain a DIP switch, called the Configuration Lock Switch, on the system board to control certain security settings. Before beginning configuration, if the server has a Configuration Lock Switch, set this switch to off (unlocked). For more information, see the documentation or hood labels that shipped with the server. When configuration is complete, return the switch to the on (locked) position.

Browser-Based Setup Overview

The RILOE II web browser interface allows any authorized network client to remotely configure RILOE II once the board is installed in the host server. The Remote Console feature, accessed within the browser interface, lets you change all of the RILOE II configuration options without having to alter the state of the host. Whereas, to configure RILOE II via the RBSU, you have to reboot the host system.

Once you logon to RILOE II via the browser interface, you will be able to change the default network and user settings from within the interface. You will also be able to install operating system drivers and Insight Manager agents on the remote host server using the graphical Remote Console. See p.25 for how to logon to the browser interface.

RILOE II ROM-Based Setup Utility (RBSU)

The RILOE II ROM-Based Setup Utility (RBSU) is used to set up RILOE II during host server boot up. It is useful for setting up servers that do not use DNS/DHCP. It is available locally every time the server is booted. Unlike, iLO, it can not be run remotely using the Remote Console in the RILOE II web interface.

Access the RILOE II RBSU by pressing the **F8** key during POST while the server is booting. The RBSU may be used to configure network parameter, global settings, and to configure user accounts. And, it can be disabled on the **Global Settings** screen located under the **Administration** tab, within the RILOE II web browser interface. Refer to the *Compaq Remote Insight Lights-Out Edition II Installation and ROM-Based Setup Utility (RBSU) Video* for further information.

SmartStart Setup

You can use *SmartStart for Servers* to configure RILOE II in either an existing server or a newly deployed server. With *SmartStart for Servers,* installation and setup are performed locally at the host server.

Disabling DNS/DHCP

Compaq recommends using DNS/DHCP with RILOE II to simplify installation. If DNS/DHCP cannot be used, follow the procedure in Chapter 4 of the user's guide to disable DNS/DHCP and configure the IP address and the subnet mask.

RILOE II Browser-Based Setup

RILOE II comes preconfigured with a default user account, password, and DNS name. Thus, if RILOE II is connected to a network running DNS/DHCP, it can be used immediately without changing any settings. However, Compaq recommends changing the default settings after accessing RILOE II for the first time.

Default Logon Values

The default logon values are:

- **User name:** Administrator
- **Password:** The last eight digits of the RILOE II serial number
- A pre-set, **DNS name:** RIBXXXXXXXXXXXX, where the 12 Xs are the MAC address of the RILOE II

The Network Settings Tag attached to the board lists these values. Use these values to access RILOE II remotely from a network client using a standard web browser.

Accessing RILOE II for the First Time

To access RILOE II for the first time, from a network client:

1. Either verify that you have configured your browser to not use a proxy server for your RILOE II DNS name(s) or IP address(es), or add the IP address to your proxy server exceptions list.[11]
2. Enter the RILOE II address or DNS name in the address bar of the web browser.
3. Click **OK** and **Yes** to proceed past the Security Alerts to the login screen.
4. When the browser completes the SSL connection to RILOE II, the **Remote Insight Lights-Out Edition II Account Login** screen will prompt you for a user name and password. Use the default user name and password from the Network Settings Tag, and click **Log In**.
5. After the default user name and password have been verified, the **Remote Insight Status Summary screen** is displayed.

[11]To add an exception to your proxy server, perform the following steps:

1. In Internet Explorer, select **Tools → Internet Options**.
2. From the **Internet Options** dialog box, click on the **Connections** tab and click on the **LAN Settings** button near the bottom of the screen. Ensure the **Automatically detect settings** checkbox is **NOT** checked.
   Note: There is a proxy address and port displayed in the **Proxy server** section. If this isn't the case, you do not need to perform any of this procedure.
3. From the **Local Area Network LAN Settings** screen, click on the **Advanced** button.
4. In the **Proxy Settings** dialog box, type the IP address of the server, e.g., ***.zko.dec.com**, into the **Exceptions** list. Use a semicolon (**;**) to separate it from the other entries.
5. Close the first two screens by clicking on the **OK** buttons. When you reach the **Internet Options Connections** tab, click on the **Apply** button and then click on **OK**. Your server is now on your exception list and you are ready to access the management utilities on your server.

Standard Capabilities

Once logged onto RILOE II, you will be able to use the web browser interface to:

- Change default network values.
- Change user privileges/information.
- Change SNMP alerting settings.
- Use the Virtual Floppy and Virtual Media drives to:
  - Upgrade host server ROM firmware.
  - Deploy an operating system using an “over-the-network” deployment diskette or image.
  - Install operating system drivers.
- Use the Remote Console to:
  - View graphical operating system screens.
  - Check or modify operating system settings, even if the main network is not functioning.
  - View operating system “blue screens”.
  - Install Insight Manager agents, located on the remote host server.

Browser Navigation

Once logged onto RILOE II, you will see the default **Remote Insight Status Summary** screen, shown below:

The web browser interface is outlined in the table on the following page.

Continued on the next page . . .

Use the following table to help orient you to the browser screens and functions:

Table 9: Browser Navigation

Tabs (Click on the tabs to access each of the major sections.)	**Functions**	**Left Menu Items/Screen or Option Names** (Accessed by clicking on the left menu or the pop-up menu over the Tab.)
System Status	• General & Server status information • Event & Management log data • Diagnostic data	• Status Summary (default screen) • Remote Insight Status • Server Status • Survey • Remote Insight Event Log • Integrated Management Log
Remote Console	• Toggle between dual or single cursor mode within same the Remote Console window • Define hot keys (keystroke sequences that transmit at the press of a key) • Playback of previous, current, or failure POST sequences • Windows.NET EMS access	• Remote Console • Program Hot Keys • Reset Sequences • Windows .NET EMS
Virtual Devices	• Virtual Power Button • Virtual Floppy (for boot only) • Virtual Media (works after OS is up and running)	• Virtual Power Button (default screen) • Virtual Floppy • Virtual Media
Administration	• Manage individualized user settings • Manage Global Security • Manage SNMP alerts • Manage the network • Configure access to web agents • Upgrade RILOE II firmware	• User Settings (default screen) • Global Settings • Network Settings • Certificate Administration • Upgrade Firmware

Optimizing Remote Console Performance

Host Operating System

Use the following recommendations to configure your host server operating system for RILOE II:

- **Windows**
  - Set the mouse **Scheme** to **None** (**Control Panel → Mouse → Pointers** tab) and keep the **Enable pointer shadow** checkbox checked.
  - Set the mouse **Acceleration**[12] to **None** (**Control Panel → Mouse → Motion** tab)
  - Set the mouse **Speed** to the middle setting (**Control Panel → Mouse → Motion** tab)
  - Set the **Display Properties**, **Background** to **None**, to use a plain background.
  - Set the **Display Properties**, **Settings** to 1024x768 (or 800x600 to eliminate excessive vertical scrolling in the window).
- **Linux**
  - Ensure the Client Remote Console Applet can display the entire host server screen.
  - 1024x768
- **NetWare**
  - 1024x768

Note: There is no screen resolution recommendation; however, depending on your network load, you may prefer to lower resolution to increase performance.

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[12] Under different operating systems, *mouse acceleration* may have a different name. For example, under Windows .NET Server, it is called *advanced pointer precision*.

Client-Side

Use the following recommendations to configure the client for optimal Remote Console viewing:

- **Proxy Settings:**
  Either configure your browser to not use a proxy server for your RILOE II DNS name(s) or IP address(es), or add the IP address to your proxy server exceptions list[13].
- Set your **Display Properties**, **Settings** to 1024x768, to avoid excessive scrolling to access windows.
- 700MHz or faster processor with 128MB or more of memory
- 128-bit high encryption pack
- Medium text size setting in the browser
- **Supported Browsers[14]:**
  - *Minimum:* Microsoft Internet Explorer 5.1, or later, for Windows 95, Windows 98, Windows ME, Windows NT 4.0, Windows 2000, and Windows XP.
  - *Recommended:* Microsoft Internet Explorer 6.0, or later. Netscape Navigator 6.2.2, or later.

Note: Netscape 6.2.2 has encryption protocols enabled by default that are not compatible with RILOE II. To turn on the compatible protocols:

1. Click **Edit** from the menu bar.
2. Click **Preferences**.
3. Click **Privacy & Security,** then click **SSL**.
4. Deselect both **Enable SSL version 3** and **Enable TLS**. The only SSL version that should be selected is **Enable SSL version 2**.

---

[13]To add an exception to your proxy server, perform the following steps:

1. In Internet Explorer, select **Tools → Internet Options**.
2. From the **Internet Options** dialog box, click on the **Connections** tab and click on the **LAN Settings** button near the bottom of the screen. Ensure the **Automatically detect settings** checkbox is **NOT** checked.
   Note: There is a proxy address and port displayed in the **Proxy server** section. If this isn't the case, you do not need to perform any of this procedure.
3. From the **Local Area Network LAN Settings** screen, click on the **Advanced** button.
4. In the **Proxy Settings** dialog box, type the IP address of the server, e.g., ***.zko.dec.com**, into the **Exceptions** list. Use a semicolon (**;**) to separate it from the other entries.
5. Close the first two screens by clicking on the **OK** buttons. When you reach the **Internet Options Connections** tab, click on the **Apply** button and then click on **OK**. Your server is now on your exception list and you are ready to access the management utilities on your server.

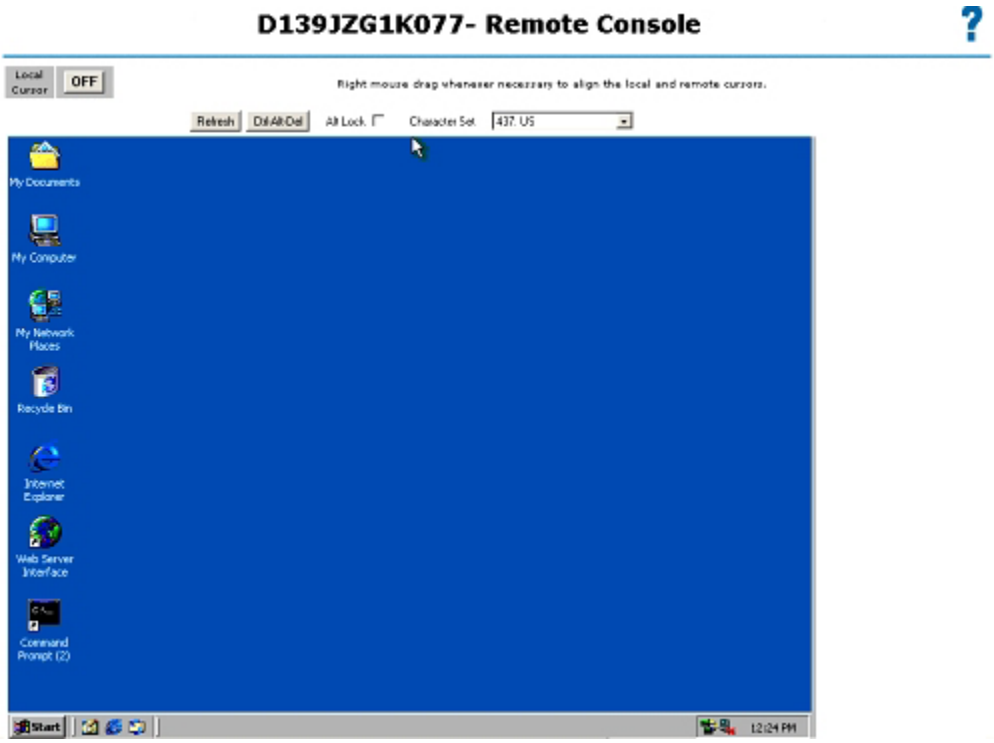
[14] Additional browsers, or the browsers mentioned, used with different operating systems, may or may not work correctly, depending on their implementations of the required browser technologies.

Cursor Options

To determine the best cursor setting:

- Use the single cursor option for graphical operating systems.
- Use the dual cursor option for text operating systems, or if you prefer to see the applet's cross-hair cursor.
- Use Right-Mouse click-and-drag to reposition the applet cursor.

Note: Unlike iLO, RILOE II has only one Remote Console window with a **Local Cursor** button at the top of the screen, above the applet window, that toggles ON/OFF to select dual/single cursor mode, respectively. This is shown below.



User Privileges

User privileges are set under **Administration → User Settings**. The following list of privileges can be assigned (the default is **Yes**) or denied to individual users:

- Supervisor Access
- Login Access
- Remote Console Access
- Remote Server Reset and Power Button Access
- Virtual Media Access

Refer to the *Remote Insight Lights-Out Edition II User Guide* for descriptions of each of these privileges and the *Remote Insight Lights-Out* RAL lab for instructions on how to add or modify users.

Additional Information

The RILOE II Help option links, designated by a large question mark graphic, provide summary information about features and helpful information for optimizing operation. Use the *Remote Insight Lights-Out* RAL lab for practice navigating the screens and performing some of the available functions.

Password Requirements

The password has a minimum length of 8 characters. The password is case sensitive, cannot contain both single and double quote characters, and can never be blank. The maximum character length for the password, username, and login name is 40 characters.

Troubleshooting

Troubleshooting Features

In addition to the Remote console, you have the:

- **Server Status** screen, providing:
  - Server information
  - POST diagnostic results
- Video replay of prior server resets
- Information gathered by the Compaq Survey utility
- Remote Insight Event Log
- Integrated Management Log
- Full integration with Compaq Insight Manager 7, providing SNMP trap alerts on a Compaq Insight Manager 7 console.

To achieve integration with Compaq Insight Manager 7, you must install and configure Compaq Insight agents on the remote server.

Resetting the RILOE II Board

When to Reset

You may need to reset RILOE II if:

- RILOE II is not responding to the browser
- A hardware failure is detected[15], or
- You make changes to the network settings of RILOE II

How to Reset

Resetting via the Browser

To reset RILOE II when it is not responding:

1. Click on the **Administration** tab and the **Network Settings** submenu.
2. At the bottom of this screen, click the **Apply** button. You do not need to change any parameters before clicking the **Apply** button.
   Result:
   Your browser's connection to the Remote Insight Board will be terminated, and you will need to wait before you can reestablish communication, while the RILOE II board is restarted automatically.

[15] The board will not boot if a hardware failure is detected. It may reboot by itself if a firmware error is detected.

Manual Reset

If RILOE II is not responding to the browser connection and you have verified that your RILOE II network settings and your client/browser are configured correctly, then you may need to manually reset the board.

It is also possible to force RILOE II to reset even when it is responding to the browser. You may want to do this if you are seeing slower than normal performance or if you suspect the RILOE II firmware is experiencing problems.

To manually reset RILOE II in a Windows environment:

1. Navigate in the host server to the **Control Panel → Administrative Tools → Services → Compaq Server Agents** and stop the Compaq Server Agents.
   Result:
   A dialog box will inform you that this also stops Compaq Web Agent and Compaq Foundation Agent.
2. Click **Yes**.
   Result:
   This will stop all three agents.
3. Navigate to the **Control Panel → Compaq Management Agents** and to the **Remote Insight** tab within the agents' dialog box.
4. Click on the **Reset Remote Insight Board** button and then **OK**.
   Result:
   This resets the RILOE II board.
5. Return to **Services** and restart the:
   - **Compaq Server Agents**
   - **Compaq Web Agent**
   - **Compaq Foundation Agent**

Note: This process does not set the board back to the factory defaults; your passwords will remain intact.

For manual resetting in Novell and Linux, refer to your operating system documentation.

Self-Resetting

RILOE II may reset itself in certain instances, e.g.:

- If the firmware detects an RILOE II problem.
- When a firmware upgrade or a network setting change is completed.

No action is required on your part if RILOE II performs a self-reset.

Interpreting LED Indicators

The LED indicators are located on the front, top of the RILOE II board. The LED indicators have the following assignments:

FB	7	6	5	4	3	2	1

During RILOE II initial boot, the LED indicators will flash randomly. After the board has booted, the number 7 LED will flash every second. Indicators 0 through 6 along with the FB light up after the system has booted to indicate a hardware failure. If a hardware failure is detected, perform these steps in order, *as needed*, to resolve the problem:

1. Reset the RILOE II board. (See p. 34 for resetting RILOE II.)
2. Reflash the RILOE II ROM.
3. Replace the RILOE II board.

If the red LED is on or pulsing on and off, then the 8-bit value shown in the yellow LEDs is a halt code. A halt code typically signifies a hardware failure or firmware bug.

Table 10: LED Halt Codes

Code	Description
0x00	Reserved
0x01	Frame error while loading the FPGA configuration code. The FPGA has reported that the CRC in the image does not correspond with the one calculated.
0x02	The FPGA did not start up after being loaded with the configuration code.
0x03	Unable to redirect STDIO and STDERR to the debug server. This only applies to developer builds and will never be seen by customers.
0x04	Unable to initialize the IIC unit.
0x05	Unable to access one of the EEPROMs.
0x06	Unable to initialize the EEPROM configuration structures.
0x07	Unable to initialize the event log.
0x08	Unable to initialize the shared memory interface.
0x09	Unable to initialize the ROM upgrade subsystem.
0x0a	Reserved
0x0b	Unable to initialize the host power detection system.
0x0c	Unable to initialize the FPGA handling routines.
0x0d	Unable to initialize the browser interface.

Continued on the next page . . .

If the red LED is off, then the 8-bit value shown in the yellow LEDs is a progress code. The progress codes shown below are in chronological order from reset. If a progress code remains on, then the firmware has locked up attempting to initialize the previous subsystem in the list.

Table 11: LED Progress Codes

Code	Description
0x00	FPGA configuration code has loaded and the FPGA has started up.
0x01	The interrupt subsystem has been in initialized.
0x02	Timers initialized.
0x03	PCI initialized.
0x04	Network initialized.
0x05	Serial port(s) initialized.

Upgrading RILOE II Firmware

The RILOE II firmware can be upgraded from any network client using a standard web browser. Only users with the supervisor status can perform the upgrade. The most recent firmware for RILOE II is available at:

http://www.compaq.com/lights-out

(Refer to the instructions in Chapter 5 of the *Remote Insight Lights-Out Edition II User Guide* for instructions on upgrading the firmware from the **Upgrade Firmware** screen under the **Administration** tab.)

Note: An XML script works best for group administration, allowing an administrator to upgrade RILOE II firmware on many RILOE II boards simultaneously.

If Unable to Upgrade Firmware

If you attempt to upgrade the RILOE II firmware and the board does not respond or does not accept the upgrade, you must force the ROM upgrade by changing the default switch settings of SW2 as shown in the table below. SW2 is a bank of four switches located on the end opposite the bracket, close to the bottom of the board (i.e., where the gold contacts are located).

Table 12: Switch Settings (SW2) Force ROM Upgrade

Position	Default	Force ROM Upgrade
1	OFF	OFF
2	OFF	OFF
3	OFF	ON
4	OFF	OFF

Upgrade the firmware of the RILOE II using a ROMPaq diskette. When the firmware upgrade is complete, return the switches to the default position.

Additional Troubleshooting Tips

Please refer to Chapter 7, *Troubleshooting the RILOE II*, in the *Remote Insight Lights-Out Edition II User Guide* for additional information, including:

- Login name and password not accepted
- Troubleshooting video and monitor problems
- Troubleshooting alert and trap problems
- Troubleshooting NetWare driver problems
- Time/Date in Event Log incorrect
- Can't reboot the server
- Resetting RILOE II to factory defaults
- Event Log entry explanations

Service Considerations

Please refer to the list of known issues documented via Engineering Advisory or in the documentation addendum for the first release of RILOE II firmware. In addition, you can refer to the *Service Considerations* section in the internal version of this white paper.

References

Important! Visit http://www.compaq.com/lights-out for the latest:

- RILOE II firmware image
- Compaq Diskette Image Utility
- Version of Table 2 (the server-specific PCI slot, cable, and video dip switch matrix)
- Software to run XML scripts
- User's guide (listed below) and other documentation

For further information on configuring and troubleshooting the Integrated Lights-Out refer to the:

- *Remote Insight Lights-Out Edition II User Guide*, First Edition (May 2002), Part Number 232664-001.
- *Compaq Remote Insight Lights-Out Edition II Installation and ROM-Based Setup Utility (RBSU) Video* on the Compaq Remote Lights-Out Edition II Service Overview CD (E9-10159-CD) (located on the Compaq Learning Utility). (This is an internal Compaq link.)
- *Remote Insight Lights-Out Edition II RAL Lab*
  This is an internal Compaq link to a tutorial lab, on the Remote Access Lab (RAL) web site, covering RILOE II navigation, configuration, the Remote Console, Virtual Devices, and a variety of administrative procedures, including Compaq Insight Manger 7 and web-enabled agent integration, as well as group administration via query definition and creating Application Launch tasks.

Appendix

Microsoft Windows NT, Windows 2000, and Windows.NET Server Driver Support

The device drivers that support RILOE II are part of the Compaq Support Paq that is located on the *SmartStart for Servers CD* and the Compaq website. Before you install the Windows drivers, obtain your Windows documentation and the latest Windows Service Pack.

Relevant Files

- **CPQRIB.SYS** provides RILOE II Advanced Server Management Controller Driver support.
- **CPQCIDRV.SYS** provides RILOE II Management Interface Driver support.

Installing or Updating the RILOE II Drivers

The Compaq Support Paq for these operating systems is an advanced software delivery tool that replaces the familiar *Software Support Diskette (SSD)* used for support of previous versions of Windows server operating systems. The Compaq Support Paq for Microsoft Windows 2000 includes an installer that analyzes system requirements and installs all drivers.

The Compaq Support Paq is available on the Compaq website and on the *SmartStart for Servers CD* in the **\CPQSUPSW\NTCSP** subdirectory.

Important! If you are updating the RILOE II drivers, ensure RILOE II is running the latest version of the RILOE II firmware. The latest firmware can be obtained through ROMPaq from the Compaq website:

http://www.compaq.com/lights-out

To install the drivers in the Support Paq, download the Support Paq from the Compaq website, run the **SETUP.EXE** file included in the download, and follow the installation instructions. For additional information about the Support Paq installation, read the text file included in the Support Paq download.

You can also download and install the individual Smart Component file from the Compaq website:

http://www.compaq.com/support/files/

Microsoft Windows NT 4.0 Video Controller Support

RILOE II incorporates the ATI RAGE XL video controller. Adding RILOE II to a Windows NT 4.0 server replaces the server's embedded video controller with the ATI RAGE XL video controller. Windows will load a generic video driver to support RILOE II's video. The generic video driver works, but lacks support for the ATI RAGE XL features. To update the driver install the latest ATI RAGE XL driver from the Compaq Support Paq for Microsoft Windows NT 4.0 located on the SmartStart 5.40 CD.

Novell NetWare Server Driver Support

The device drivers that support RILOE II are part of the Compaq Support Paq that is located on the *SmartStart for Servers CD* and the Compaq website.

Relevant File

CPQRIB.NLM provides RILOE II Management Interface Driver support.

Installing or Updating the RILOE II Drivers

The Compaq Support Paq for Novell NetWare 5.x and 6.x is an advanced software delivery tool that replaces the familiar *Software Support Diskette (SSD)* used for support of previous versions of NetWare server operating systems. The Compaq Support Paq for Novell NetWare includes an installer that analyzes system requirements and installs all drivers.

The Compaq Support Paq is available on the Compaq website and on the *SmartStart for Servers CD* in the **\CPQSUPSW\NTCSP** subdirectory.

Important! If you are updating the RILOE II drivers, ensure RILOE II is running the latest version of the RILOE II firmware. The latest firmware can be obtained through ROMPaq from the Compaq website:

http://www.compaq.com/lights-out

To install the drivers in the Support Paq, download the Support Paq from the Compaq website from the Compaq website to your NetWare server. Then follow the NetWare component installation instructions. For additional information about the Support Paq installation, read the text file **CPQDPLOY.TXT** included in the Support Paq download.

You can also download and install the individual Smart Component file from the Compaq website:

http://www.compaq.com/support/files/

Red Hat Linux and SuSE Linux Server Driver Support

The device drivers that support RILOE II are located on the *SmartStart for Servers CD* and the Compaq website:

http://www.compaq.com/support/files/

Relevant Files

CPQRID-x.x.x-x.I386.RPM provides RILOE II Management Interface Driver support, where:

- **x.x.x-x** are version numbers.
- **D** is the Linux Distribution and Version.

Installing or Updating the RILOE II Drivers

You can download the Compaq *SoftPaq*™ files containing the RILOE II driver, the health driver, and agents from the Compaq website. The instructions on how to install or update the RILOE II driver are available on the website.

Important! If you are updating the RILOE II drivers, ensure RILOE II is running the latest version of the RILOE II firmware. The latest firmware can be obtained through ROMPaq from the Compaq website:

http://www.compaq.com/lights-out

Log in as the system administrator and place the RPM file in your current working directory by using the following command:

```
rpm –ivh cpqcrid-x.x.x-x.i386.rpm
```

If necessary, you can uninstall, stop, or start the RPM file by using the following commands:

- **Uninstall**
  `rpm –e cpqcrid`
- **Stop**
  `/etc/rc.d/init.d/cpqcrid stop`
- **Start**
  `/etc/rc.d/init.d/cpqcrid start`

For additional information see the Software & Drivers web pages on the Compaq website:

http://www.compaq.com/support/files/